

The local pattern of mental healthcare in different states/territories in Australia: a comparison of the Australian Capital Territory with other urban Australian regions and with international benchmark areas

A thesis submitted for the degree of Doctor of Philosophy of The Australian National University.

Mary Anne Courtenay Furst

February 2021

Corrections submitted August 2021.

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Declaration

To the best of my knowledge and except where acknowledged in the customary manner, the material presented in this thesis is original and has not been submitted in whole or part for a degree in any university. Where work has been performed in collaboration with others, I have acknowledged the contributions of all authors.

Additional signed declarations from my co-authors are included separately as part of this thesis submission.

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14 February 2021

Re: Doctoral Thesis Mary Anne Furst

TO WHOM IT MAY CONCERN

As the senior (last) author of the papers numbered below, I hereby state that the type and percentage of Mary Anne Furst's contribution to these papers is as follows:

Paper	Study concept and design	Analysis and interpretation	Drafting and revising	Average
1	80%	90%	90%	87%
2	65%	90%	90%	78%
3	10%	10%	10%	10%
4	70%	80%	90%	80%
5	80%	80%	80%	80%
6	80%	90%	90%	87%

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Luis Salvador-Carulla'.

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Abstract

This thesis is a comparative demonstration study, using a novel approach to mental health systems research, to: (i) analyse the pattern of care provision in the Australian Capital Territory; (ii) compare it with that of other health districts in Australia, Europe and South America; and (iii) demonstrate its usability as a decision support aid for mental healthcare planners.

Background. The outcomes of policy interventions in mental health systems are shaped not only by the intervention, but also by the characteristics of systems themselves. Knowledge of the local context is critical to enable planners to identify gaps and pathways in the system, to inform modelling, and to guide resource allocation. However, current services research and planning is based on a limited, component-based approach, with service provision at local level often informed by data aggregated at national level. In Australia, this has resulted in a system of mental healthcare delivery described as fragmented, with gaps in key areas and disproportionate investment in others, poor interaction between the different sectors of care, and confusion about accountability between different levels of responsibility. A new approach has been developed--the mental health ecosystems research approach (MHESR). MHESR provides an analysis of the whole system of care delivery at small area level, allowing identification of patterns of care and gaps in service provision, and providing more reliable data for local planning and modelling. In this thesis, I demonstrate the usability of an innovative tool based on this approach-- The Integrated Atlas of Mental Healthcare--in an analysis of the mental health system in the Australian Capital Territory, and a comparison with eight other health districts in Australia, Europe, and South America.

Method. Integrated Atlases (Atlases) of Mental Healthcare provide an analysis of the whole system of care delivery in a defined region. Data, including service availability, capacity, and diversity, is collected at local level using a standardised, multi-axial service classification instrument, the Description and Evaluation of Services and Directories for Long Term Care (DESDE-LTC). Atlases also include key socio-demographic indicators and other local context information and present data using visualisation tools including Geographic Information Systems (GIS).

Results. My research identified gaps in service provision in key areas in the ACT common to the Australian, but not to the international regions; as well as patterns in service provision of some types of care, particularly community care, where the ACT more closely resembled the international regions than it did its national comparators. I found that some types of care were absent or lacking in all regions of the study. ACT showed a unique difference to all

other regions in its balance of psychiatrists and psychologists. The Atlas has had a moderate impact on planning agencies in the ACT.

Conclusion: Integrated Atlases using a MHESR approach provide more comprehensive and reliable information about the whole system of care delivery, and are useful tools to support decision makers to improve mental healthcare planning in Australia.

Foreword to Chapter 1

Understanding the local context of health systems is critical for decision makers in health policy and planning: from the analysis of interventions, to prioritisation and planning. Geographic variation in the outcomes of policy interventions shows the impact of environment on health outcomes. Yet planning approaches based on traditional evidence-based research, which assumes a simple linear translation of scientific knowledge from the phase of discovery, through corroboration, and to implementation, fail to adequately allow for the complex nature of the context of care in mental health systems: the diversity of system components, and their sometimes unpredictable interactions and behaviour within the system.

An evidence-*informed*, rather than evidence-based, approach is needed: one which can integrate generalised research based evidence “based on positivist research standards” [1] with a more inclusive systems based approach [2]: “enriched by prior research but not limited to it” [1], while still using “standards of relevance, rigor, and logic (that) are currently available” [3]. It is an approach that is able to incorporate the multiple sources of evidence, and high degree of uncertainty inherent in healthcare, and in the pathways of interventions in systems of healthcare delivery. It is especially relevant in the case of mental healthcare systems, which are characterised by even greater complexity: the many different types and levels of care; the involvement of multiple service sectors; and the nature of mental illness itself, including the complex and diverse needs to which it may give rise.

A new approach to the analysis of mental healthcare systems is the emerging discipline of mental healthcare ecosystems research (MHESR). MHESR is founded on a broader concept of scientific knowledge than that of the traditional evidence-based (Cochrane) “pyramid.” It draws from conceptual frameworks developed in the ecological sciences, which are also engaged with complex and dynamic systems. It also incorporates disciplines relevant to the implementation sciences, such as systems dynamics and context analysis [26]. An example of this approach is provided in studies using Integrated Atlases of Mental Healthcare. These atlases follow an innovative method of service classification across all sectors providing long term care: the Description and Evaluation of Services and directoriEs for Long Term Care (DESDE-LTC). They include composite socio-economic and socio-demographic indicators, together with information on epidemiology, the service delivery system and other relevant data, to provide a standard and comparable description of the context of the whole system of mental healthcare delivery in a defined region. This aligns with the WHO “One Health” model [4], which calls for the integrated assessment of programs, policies, legislation, and research in which multiple sectors communicate and work together to achieve better public health outcomes.

My research provides the first comparative demonstration study of the application of this approach to mental health services research in Australia. It demonstrates the usefulness of an international evaluation system in the analysis of mental healthcare delivery, and its comparison across national and international jurisdictions. In this thesis I compare data on service availability, capacity and diversity, and workforce capacity and profiles from the Integrated Atlas of Mental Healthcare of the Australian Capital Territory (ACT) to three Australian, and five international regions, including Europe and South America, where data has been obtained in the same way.

Introduction

Healthcare systems as complex entities

Characteristics of complex systems

One of the major advances in the last decade has been the recognition of health systems as complex systems [5]. This recognition has major implications for public health, and for health services research [6]. The systems thinking approach has elucidated the complexity of healthcare systems, which are comprised of multiple but interconnected components at different levels. Agents within the system have the “freedom to act in ways that are not always totally predictable, and whose actions are interconnected so that one agent's actions changes the context for other agents” [7]. This non-linearity in system behaviour means that a small input can have a disproportionately significant effect, creating “leverage” or “tipping points” within the system [8]. A minor input, such as a change in the hours of availability of a service at one point of the system, could have significant unintended consequences in another part of the system. Emergent patterns of system behaviour may only be discernible at whole system level, and over time. Resource allocation should therefore be seen within the context of the system as a whole. This means that health systems are characterised by high levels of uncertainty, which presents a considerable challenge to attempts to predict the likely effects of proposed, or planned, changes or interventions within the system.

There is ongoing debate about whether traditional approaches to evaluation in healthcare research, including Evidence-Based Care, can provide the knowledge needed to guide decision making in key complex issues under these conditions of uncertainty, non-linearity, emergent self-organisation, and context and time-dependence [9]. The linear and acontextual approach is relevant to the discovery and corroboration of knowledge, but not to its implementation [10]. Systems dynamics approaches to scientific evidence and to the framing of scientific knowledge have questioned the traditional Cochrane “pyramid of evidence” model of knowledge in the Evidence-Based Medicine (EBM) approach [9,10]. The hierarchical approach to evidence of the EBM approach prioritises internal validity and experimental knowledge, located in randomised controlled trials and systematic reviews, over other domains of scientific knowledge, such as evidence from the local context of an intervention; observational studies; and expert and experiential knowledge (defined as formalised, consistent, stable understanding and insight based on expertise; including tacit knowledge) [9].

A broader view of knowledge, based on a “Greek temple” view of scientific knowledge (figure 1), lends itself better to situations of complexity such as healthcare systems, where multiple sources and types of evidence, including expert assessment of appropriateness, consumer acceptability, and resource availability, play a role in the process of implementation and the outcome of interventions [11]; where data may be “flawed, uncertain, proximate and sparse” [12]; and where complexity and uncertainty are part of the implementation process. Under these circumstances, standards of decision making should be appropriate to the decision being made, and relate to “reasonable chance” rather than “beyond reasonable doubt”. The principles of using such data should include transparency about the data and its limitations, the use of “simple and transparent statistical approaches to allow maximum opportunity for debate and consideration” among its disparate end users, and triangulation of the data [12].

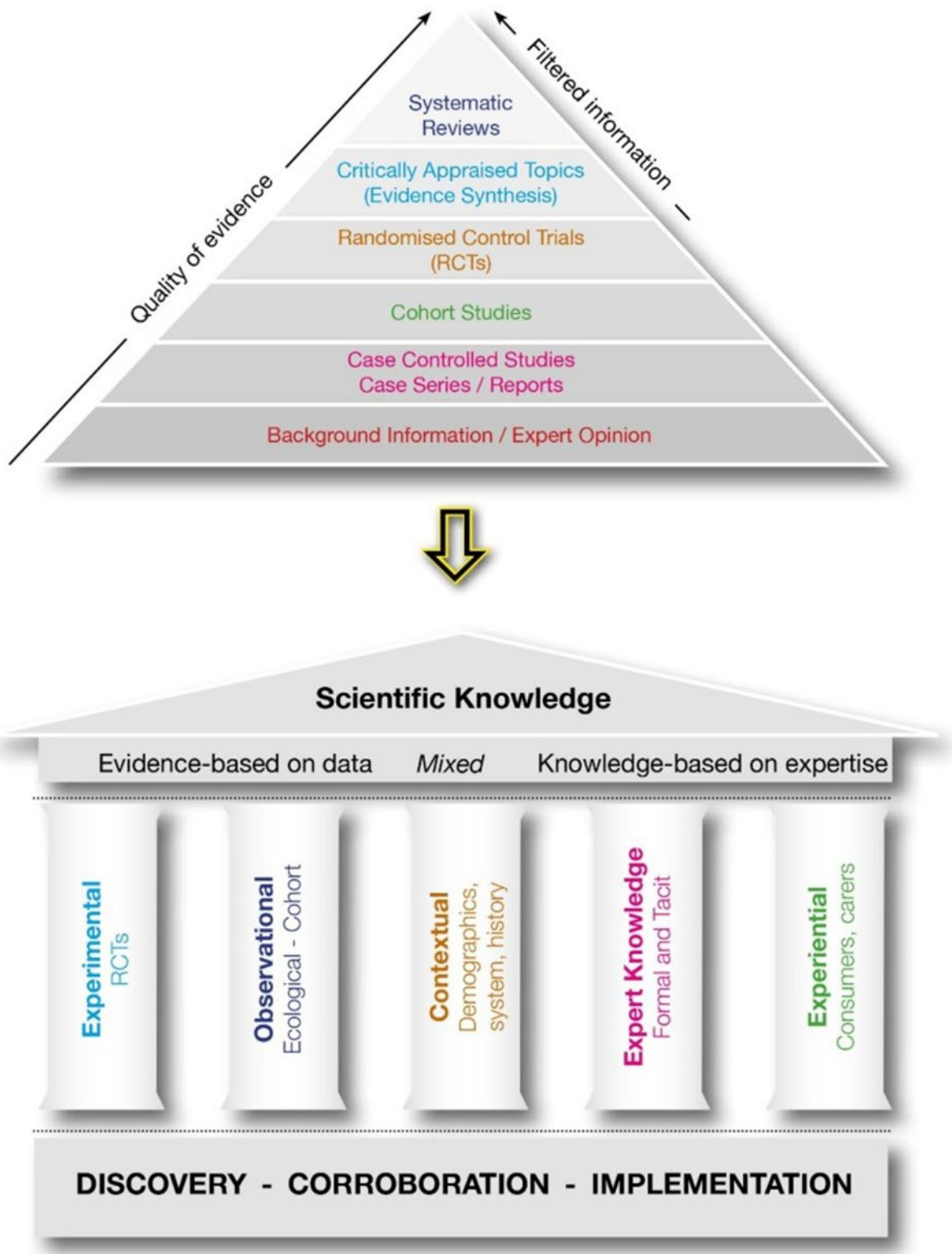


Figure 1: Moving from the pyramid model of scientific knowledge to the general framework: Greek temple mode of scientific knowledge [11].

Mental health systems are a prototype of complex systems in healthcare research [13]. As the de-institutionalisation of mental healthcare, and the development of balanced care models have progressed globally [14], a complex and often ad hoc network of services and programs at different levels of the system has emerged, typically driven by the principles of more community based and integrated care.

In Australia, this has resulted in a system of care described as “fragmented” and “siloeed”, and in which access to services for vulnerable people cannot be guaranteed [15]. Potential inequities in service availability that have been identified include differences in the availability of services between urban and rural areas [16], and in different populations (for example, children and adolescents, adults and older people) [17].

The World Health Organisation (WHO) Mental Health Gap Action Programme (mhGAP) [18] has called for a comprehensive and systematic description of all the mental health resources available in areas, and their utilisation, stating that it is important to know not only how many services are in every health area, but also what they are doing, and where they are located. In addition, the report of The Health Foundation “Perspectives on Context [19] highlights the importance of standard context analysis in health systems to understand any health-related intervention, and to design evidence-informed planning. Local context evidence is relevant to the planning and implementation of interventions. It can identify local need, the nature of a problem, relevant intervention options, and modifying factors [20]. Further, the more complex the intervention, the greater the role context plays in its implementation.[21]

Analysis of the local context in healthcare

Context is defined as all sources of evidence of the local system: geography, social and demographic factors; other environmental factors; service availability and capacity; service use; and costs. It could also include legislation, other normative aspects and expertise on the milieu (e.g., the historical account and current state of the art) [22]. Table 1 shows the uses of evidence from the local context in healthcare [20]. The first analyses of the local context were related to geographical variations in health service provision and utilisation [23]. Geographic variation in medical practice has continued to be the focus of research [24,25], but these studies do not provide a perspective which takes into account the context of the whole system of care.

Table 1: Uses of local context evidence in informing decision making in healthcare [20].

<i>Table 1: Uses of local evidence in informing decisions on options</i>
Local evidence can be used to:
• Estimate the magnitude of the problem or issue that the policy aims to address
• Diagnose the likely causes of the problem
• Contextualise, and make relevant, evidence from global reviews of the effects of interventions
(e.g. by providing comparative information on the range and outcomes of interventions implemented locally)
• Help select priorities for the development of evidence-informed policies and programmes
• Describe local delivery, financial, or governance arrangements for healthcare
• Inform assessments of the likely impacts of policy options (i.e. due to the existence of modifying factors)
• Inform judgements about values and preferences regarding policy options (i.e. the relative importance that those affected attach to possible
impacts of policy options) and views regarding these options
• Estimate the costs (and savings) of policy options
• Assess the availability of resources (including human resources, technical capacity, infrastructure, equipment) needed to implement an
intervention
• Identify barriers to implementing policy options
• Monitor the sustainability of programme effects over time
• Examine the effects of a policy option on particular local groups
• Examine the equity impacts of a programme following implementation

Healthcare ecosystem research

Healthcare ecosystem research belongs to the implementation sciences. In addition to context analysis, it incorporates health economics and knowledge discovery from data, to improve reasoning and guide decision making in healthcare. It facilitates the analysis of environment and context, and its knowledge translation to policy, for decreasing research

waste and guiding decision making in complex questions in healthcare. This new approach incorporates elements from other disciplines, including systems dynamics and complexity theory, while also drawing conceptually from the study of ecosystems and ecosystems services in the biological sciences [26]. Realism and realistic evaluation, heuristics, and the ecological model of the production of care are relevant conceptual frameworks in healthcare ecosystems research.

Mental healthcare systems are particularly complex due to the great diversity of services, the overlap with other sectors; and the complex nature of mental illness: the varied ways in which it presents, and its often episodic nature and lifelong trajectory. A MHESR approach has the capacity to reduce the high level of uncertainty inherent in mental health systems by improving knowledge about system structure and behaviour [26].

W. Edwards Deming [27], a leading thinker in quality improvement in organisational management, challenged systems to understand themselves through the perspective of their place in the bigger picture, or the “whole”, by examining their position in relation to other systems, and to changes over time. In the case of the mental healthcare ecosystem, this should include a mapping of the system: the number, location and availability of services and their workforce in the relevant jurisdiction; service and workforce composition and distribution; and the relationship of these to the local context. This knowledge can be used to identify gaps in the system, inform comparisons with other systems, model implementation scenarios, and, over time, to plan, monitor and evaluate policy implementation and effectiveness. A systems dynamics approach to healthcare planning was adopted in Scotland [28] and the Basque Country in Spain [29] over a decade ago. On the other hand, the consequences of adopting a linear perspective versus a systems dynamic one has been analysed in the Province of Alberta in Canada [27].

Research Methods in Healthcare Ecosystem Research

This decade has seen an evolution of ways in which to conceptualise and analyse the complex nature of the healthcare context. The comparison of context across different jurisdictions and countries requires further understanding of the typology of scientific knowledge, as well as new designs to improve the incorporation of expert and experiential

knowledge to data analytics, new techniques of analysis, and new tools to facilitate standard comparisons.

Conceptual frameworks

Context analysis has been incorporated into realistic evaluation [6]. Context Mechanism Outcome configuration (CMOc) of realist evaluation in implementation sciences [30] incorporates context as a key component of the evaluation (figure 2).

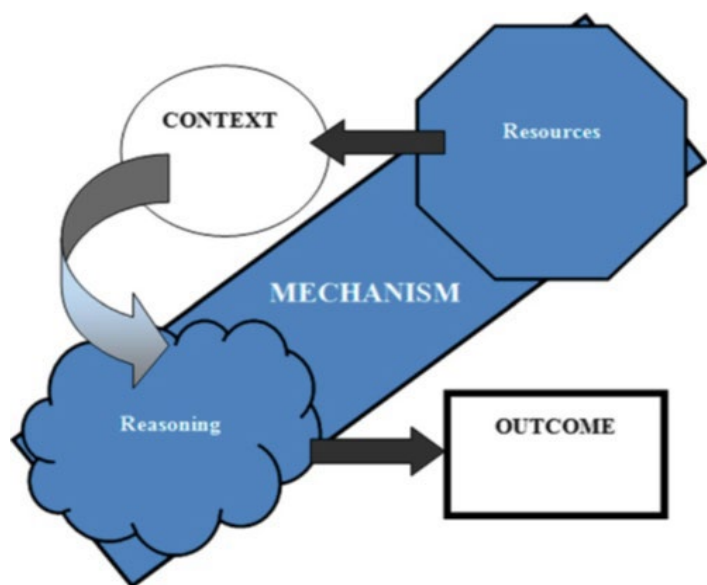


Figure 2: Representation of the Context, Mechanism, Outcome configuration [30].

The idea that underlying, generative mechanisms give rise to causal regularities has become a guiding principle across health service and health systems research, where realist evaluation is gaining momentum in the evaluation of complex phenomena. It focuses on 'what works, how, in which conditions and for whom', using context, mechanism and outcome configurations [30] as opposed to asking whether an intervention 'works' following the traditional PICO questions in evidence-based care.

The incorporation of context analysis to health service research is very recent. The seminal report by the Health Foundation in the UK was published in 2014 [19], followed by its incorporation to realistic designs in 2015 [30], and the recommendation to incorporate it into the analysis of complex interventions in healthcare in 2016 [21]. Realistic evaluation of complex healthcare questions have been used to evaluate the integration of the regional and

the academic health system in Singapore [31], and in the evaluation of the Healthy Homes and Neighbourhoods (HHAN) Integrated Care Initiative, which was established to improve the care of families with complex health and social needs living in Sydney Local Health District [32]. It has also been used to understand the evaluation at different organisational levels in one system (Policy, Organisation, Intervention), such as in the assessment of the Schematic of Integrated Client Care Project Case (Ontario); and the analysis of local prevention in several healthcare regions in France (Provence-Alpes-Côte d'Azur , Normandie, Bretagne, Martinique) [33].

Heuristics and pattern recognition plays a key role in systems research under conditions of uncertainty [34]. Heuristic decision aids are transparent, speedy, and rely on key pieces of relevant information, rather than detailed analysis of very large bodies of information which may include vast amounts of noise [56]. In this case, where the main aim is to support decision making processes in the real world, the body of scientific expert knowledge held by domain experts can help identify and interpret patterns and associations, and create meaning from the (incomplete) data.

An ecosystems model of the process of care has been developed, describing processes of care through an ecological systems lens [35]. The ecological production theory had been applied to systems analysis in mental health even before an environmental framework was applied to general health systems research by Tansella and Thornicroft when they developed the Matrix Model [36]. These authors combined the model of production of healthcare developed by Avedis Donabedian [37] to describe health systems in terms of structure, process, and outcomes with an ecological approach, stratifying the decision-making levels within health services, and describing these as “micro” (between patient and clinician); “meso” (community level, including healthcare services) and “macro” (governmental) [8]. The Thornicroft and Tansella matrix enabled a more holistic and systemic analysis of integrated care across the different components of the system. This model has been used for mental health planning in New Zealand [38] and Canada [39]. Several additions have been made to improve its use in mental health planning. The DESDE system and its previous version, the European Service Mapping Schedule (ESMS) [40] has added “services” as the “micro level” in the spatial axis (table 2).

Table 2 Modified Mental Health Matrix [36].

	Input (A)	Throughput (B)	Output (C)
Macro Country/region (1)	1A	1B	1C
Meso Local area (2)	2A*	2B	2C
Micro Service (3)	3A	3B	3C
Nano Individual (4)	4A	4B	4C

Main Components in healthcare ecosystem studies

The components of mental healthcare ecosystems research are like the building blocks in a wall (figure 3). The base sections of this wall, including Integrated Atlases, provide foundational knowledge and data about the system, without which the integrity of the structure, and the validity of further analysis is compromised. However, mental health services research has been critically lacking in validated and standardised methods of obtaining this information. While there is recognition of the role of system resources in models of healthcare organisation [41], most studies attempting to describe or compare mental health systems provide limited, ambiguous or ecologically fallacious information about service availability [22].

System thinking in MH Planning

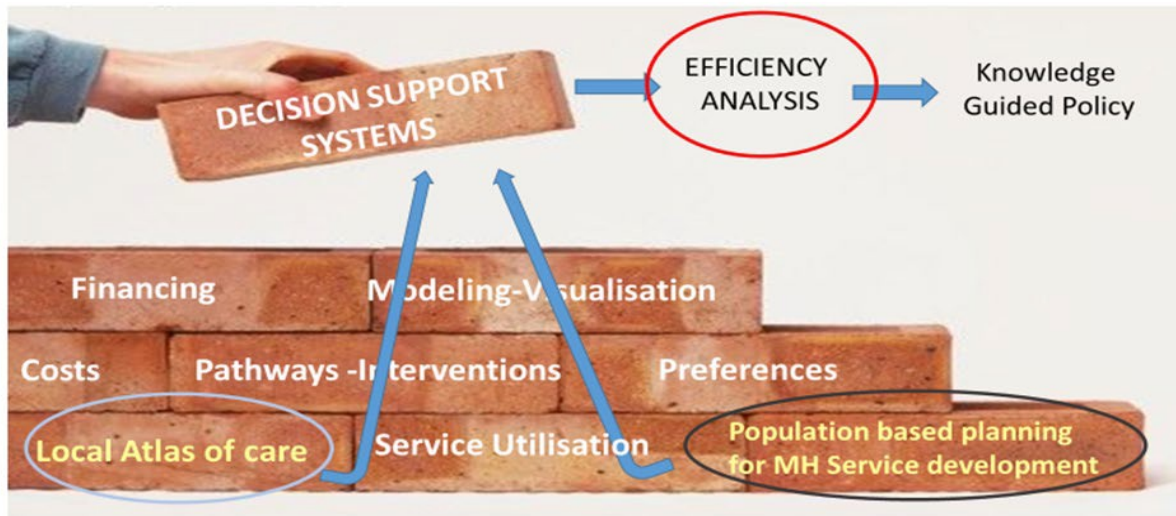


Figure 3: Components of health ecosystem research

Healthcare ecosystem analysis should consider the available resources and constraints, including the people employed within the systems and the roles they play within it; the population using the available services and their views, traditions, demographic and socio-economic characteristics; the built components and infrastructure of the system and its institutional capacity; relevant legislative or policy parameters or goals; and activity within the system, such as the flows of finances or of information [26]. Visualisation of these components is a key element in healthcare ecosystem research: service mapping and visualisation enables the identification of patterns of care in service availability, capacity, and diversity to a range of stakeholders in mental health systems: increasing knowledge of what services are available, where they are, and what they are doing.

For planners and policy makers, Integrated Atlases of Healthcare are key decision support tools. Atlases provide a knowledge base of the current state of the system through identifying patterns of care and gaps in service provision. This can guide resource allocation; facilitate the monitoring and evaluation of policy decisions and interventions over time; provide data for policy modelling, and for effectiveness analyses. For clinicians and consumers they can assist with navigating pathways of care through better understanding of what services are available, where they are and what they are doing. Despite thus being a fundamental component of any system of mental healthcare provision, the mapping of patterns of service provision continues to be missing from analyses of mental health ecosystems [22], and a

focus on the “ideal” or “where we would like to be” [42] situation, in failing to consider “where we actually are,” cannot realistically plan to get to “where we want to be”. Atlases of healthcare such as the Ontario Atlas of Care [43], the Dartmouth Atlas [44] and the WHO Mental HealthAtlas [45] have provided relevant evidence of system variability, but national data should always be completed with local information [20]: care always occurs in a local context, and there are a series of biases that cannot be resolved unless the information is collected at local level using internationally standardised instruments.

Mapping the landscape of mental health systems research is hampered both by the complexity of mental health systems, and by methodological barriers arising from issues of non-commensurability and ambiguity in terminology in mental healthcare. The non-commensurability bias arises from the different units of analysis in healthcare: for example “services” and “interventions” could apply to units of analysis at different levels of the system, thus making comparisons using these terms risks the ecological fallacy. Traditional listings of services do not necessarily distinguish between these groups. To enable comparison of like-with-like (commensurability), comparisons should only be made across a single unit of analysis [40]. Ambiguous and variable terminology is also a limitation in mental health services research. Traditional directories of mental healthcare classify services by their official names. However, changes in the function of services over time, and differences in meaning of even basic terms such as “services” means that official names may not always reflect the actual service being provided [46]. Additionally, the name of a service does not necessarily reflect its actual activity. Aggregation of services using their official names therefore does not provide reliable information for service planning. These methodological obstacles should be overcome in order to provide an accurate picture of service provision.

Figure 4 provides a graphic summary of the conceptual framework of context analysis and an ecosystems approach to studying the context of mental health care. The analysis of context is an integral component of scientific knowledge as well as a key element to be considered in implementation research. In mental health care systems, which are characterised by a high level of complexity, context can be conceptualised using an ecosystems or whole systems approach, considering all components that make up the system, and the different geographic levels at which they operate. Tools using this approach include Integrated Atlases of Care, which include comprehensive data on service availability and capacity of mental health systems at the meso or local level as well as local area information relevant to mental health care such as socio-economic indicators and geolocation of services. These Integrated Atlas can then provide

fundamental contextual information about a local mental health care system from which other analyses, including modelling of intervention pathways, can be developed.

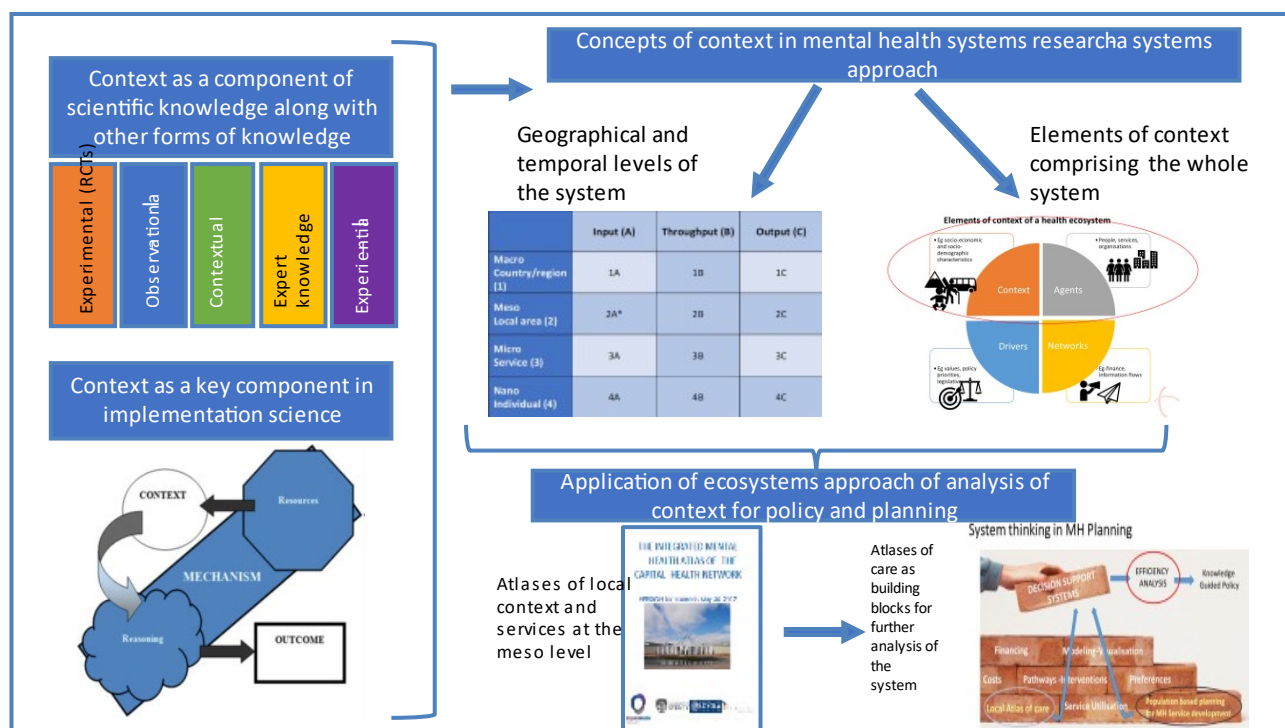


Figure 4 Context analysis and a health ecosystems approach to policy and planning

Aims

My aims in this thesis are to identify:

- 1) What are the commonalities and the differences identified in the mental healthcare provision in ACT in comparison to other urban areas in different territories/states in Australia, and with benchmark areas in other OECD countries in Europe and South America?
 - a. Availability of services
 - b. Placement capacity
 - c. Workforce capacity
- 2) What are the common main gaps in the delivery system of mental healthcare in every region, and when compared to the European models?

- 3) What is the usability of Atlases of Mental Health as useful decision support tools for evidence informed policy in Australia?

Method

Study Design

Comparative demonstration study using an ecological cross-sectional study design. Demonstration studies answer questions about an information resource, exploring such issues as the resource's value to a certain professional group or its impact on the processes and outcomes of healthcare [16]. To answer questions via a demonstration study, appropriate evaluation strategies and study designs must be formulated, the sample of participants and tasks defined, any threats to validity (in the demonstration sense) identified and either eliminated or controlled for, and the results analysed. An heuristics approach was used to identify patterns of care and care gaps. In conditions of uncertainty and complexity, where datasets are relatively small, an heuristics approach can be more accurate than complex analytical tools. In health systems policy and planning, the transparency, speed and accessibility of an heuristic approach make it ecologically rational [34]. This information constitutes a prior knowledge base for domain experts to improve, interpret and refine the results.

Catchment areas

The Australian Capital Territory is an Australian federal territory with a population of around 429,000. Geographically an enclave within the state boundaries of New South Wales, it is home to Canberra, the territory's only city and the nation's capital. The territory is a relatively socio-economically advantaged region: its SEIFA (Socio-Economic Index for Areas) score at 1075 is the second highest of all PHN regions in Australia. Despite this, there are areas of great disadvantage. Canberra's story has been called "a tale of two cities", its overall relative affluence and education masking pockets of significant and entrenched disadvantage.

Mental healthcare in Australia is provided by a combination of state funded public organisations and non- government organisations (NGOs). PHNs are funded centrally and have responsibility for co-ordinating healthcare at the regional level: geographically, their areas of jurisdiction correspond broadly with those of Local Health Districts or Local Health Networks, which are funded by their respective states and are responsible for

management of public hospitals and community mental health centres. The ACT Primary Health Network is one of 31 Primary Health Networks (PHNs) in Australia, and its area of responsibility covers the whole territory. PHNs were established in 2015. Part of their role is to develop and commission new services to meet the needs of people with moderate to severe mental illness who are able to be appropriately managed in the primary care setting.

I have compared the pattern of mental health care using the DESDE-LTC in ACT with a total of eight other health jurisdictions in four OECD countries. The international jurisdictions have been identified as benchmark areas in a series of studies which compared characteristics of mental health systems including service availability and in assessments of technical efficiency[54,55,56]. The Australian comparators were the urban regions of Perth North on the western seaboard, and South East Sydney (SES), Sydney Local Health District, and Western Sydney (WS) to the east. Internationally, the comparator areas were Talcahuano (Chile), Gipuzkoa (Spain), Helsinki-Uusimaa (Finland) and Verona (Italy).

Instruments

The Description and Evaluation of Services and Directories of Long Term Care (DESDE-LTC)

The DESDE-LTC is an open-access international instrument for the standardised description and classification of services for Long Term Care (LTC). It can be used to describe any or all types of long term care, and its use overcomes the problem of the ecological fallacy and terminological unclarity biases [47,48]. DESDE-LTC is a multiaxial instrument for the classification of services providing long term care. DESDE-LTC disambiguates the assessment of systems of mental healthcare delivery, using a standardised and validated taxonomy of services, standardised terminology, and operationally defined units of analysis, and according to the axes of: target population; sector providing care; type of care; and workforce capacity. Services are classified according first to one of six main branches of care (Residential, Outpatient, Day care, Accessibility, Information for care and Self help and Volunteer) and then to service characteristics such as acuity, mobility, intensity of care available (how often service users can access the service if needed), and sector (such as health, education, or housing), and placement and workforce capacity. The unit of analysis used in DESDE is the smallest unit of care delivery, the professional team providing

support, known as Basic Stable Inputs of Care, and classification is based on the Main Type of Care that the team provides. Service information is gathered “bottom up” from service managers to reflect the real capacity of a system, and to avoid ecological fallacy arising from the use of data aggregated at higher levels of the system. Based on a healthcare ecosystems approach, DESDE-LTC can be used to describe and classify any type of service in any sector of service delivery in a small healthcare jurisdiction.

Use of the instrument reveals patterns of service delivery and system capacity across the whole system in the defined jurisdiction. DESDE-LTC is internationally standardised and psychometrically validated, and so can be used to describe and compare systems across regions and internationally. In an evaluation by a multidisciplinary team of stakeholders including service researchers, geographers, and representatives from disability health services its feasibility, consistency, ontology, inter-rater reliability, and face, content and construct validity were rated as good [48]. It has been used in 34 countries to describe service delivery at different levels. Seventy one scientific papers have described its use in service research and planning [40]. A full description of the instrument is provided as part of the Integrated Atlas of Mental Healthcare of the ACT PHN region in Appendix 2.

The instrument enabled the following tasks: a) compilation of a standardised inventory of mental healthcare services; b) recording service availability; and c) establishing and comparing the structure and capacity of mental health services in different catchment areas. The units of analysis, based on DESDE-LTC, are focused on the evaluation of the minimal service organization units or Basic Stable Inputs of Care (BSICs). The typology of care provided by the service/BSIC is described by smaller unit of analysis called “Main Type of Care” (MTC). Services/BSICs are classified according to a number of descriptors (types and qualifiers), such as status of user, care typology, intensity, time of stay, and mobility.

Meaningful indicator sets

Meaningful indicator sets are a component of Integrated Atlases. They provide a tool for measuring and monitoring relevant information about the context of mental healthcare systems, such as socio-economic and socio-demographic determinants of health. Indicators should be defined according to their characteristics and their geographic level. Service utilisation and outcomes provide other possible sources of data for indicator sets. Merging multiple indicators into composite or synthetic indicators may be necessary for ease of use. An example of a relevant synthetic indicator is the Social Fragmentation Index, which combines information on seven indicators: lone person household; non-family household; rented households; married people; people living < 1 year in the neighbourhood; families with school children; and people who have lived more than 5 years in the neighbourhood [49].

Geographic Information systems

Geographic Information systems (GIS) enable the spatial analysis and visualisation of the system at different geographic scales. This can include the identification of geographic clustering of indicators, and of the relationship between these and patterns of service distribution. Information provided by GIS is therefore relevant to service planners and decision makers, particularly in relation to gap identification and the allocation of resources. Combined with other visualisation tools, GIS provides an accessible means of representing complex information such as the association between different indicators, and for recognising patterns in the system, for example, patterns of service availability.

Integrated Atlases of Mental Healthcare

Integrated Atlases of Mental Healthcare are based on the above three tools. Atlases of Mental Healthcare incorporate use of the DESDE-LTC tool to gather and classify service information across all sectors. They integrate this, using GIS and other visualisation tools, with additional information from the local context, including socio-economic and demographic indicators, assessments of local need, and legislative structures and policy aims, to provide a picture of the whole mental health ecosystem. Unlike other types of Atlas, such as the World Health Organisation Mental Health Atlas, Integrated Atlases provide information on the mental health system at local rather than national area level; provide information on relevant local indicators; and use GIS as an intrinsic component. This provides planners with real world information about their own region: evidence which is more reliable for decision making processes than assumptions made from evidence aggregated at a higher geographic level.

Figure 5 shows the role of the health ecosystems approach in the development of an Integrated Atlas. Integrated Atlases use the top two components of a health ecosystems approach: i) the local context of the defined region, including related indicators, ii) the agents of the system-services and workforce in the region, to provide a picture of the overall location and rates of service availability and workforce capacity. Information is provided by the services from all relevant sectors of care, and the locations of available services are mapped according to distribution of related indicators such as unemployment, and levels of psychological distress. The rates of service provision, according to the number of different main types of care provided by professional teams, are calculated per

100,000 residents and provided in a radar graph showing the overall pattern of care.

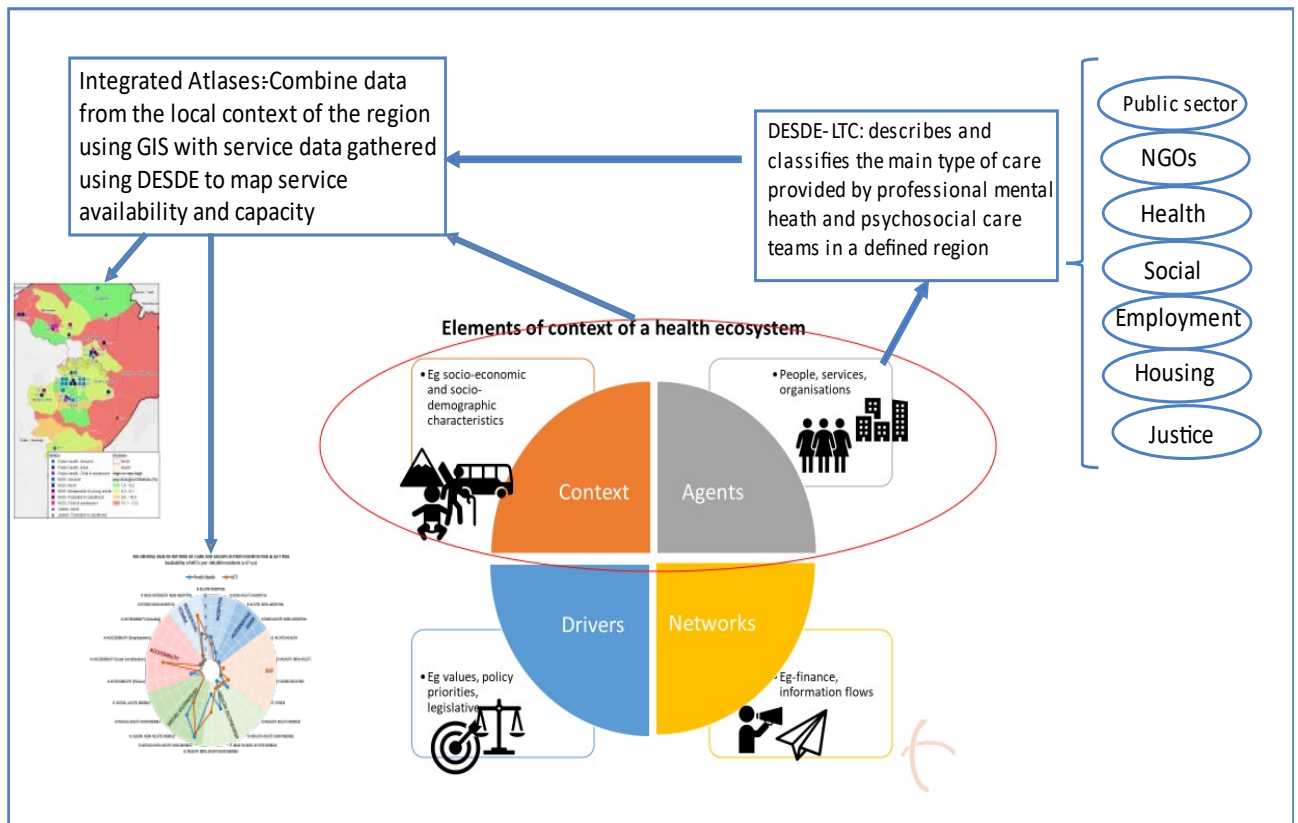


Figure 5 The health care ecosystems approach in relation to Integrated Atlases of Health Care

Procedure

Development of the Integrated Atlas of Mental Health of the ACT PHN region

All publicly funded mental health services providing direct care to people with mental illness within the boundaries of the ACT were included in the study, providing they had organisational stability, and that at least twenty percent of their target population were people with a lived experience of mental illness, with this being their reason for using the service. This information was compared to services data in the metadata repository of information on service provision and workforce capacity as part of the GLOCAL project [50]. This repository synthesises information from all published studies using the ESMS/DESDE system in the world. (The European Mapping Schedule (ESMS) is an earlier version of DESDE-LTC). "It [the repository] incorporates local health system metadata sets based on published local atlases of health care and regional directories of health care around the world. This information has been available in a metadata repository to enable international comparisons of health systems' characteristics and services. This provides a

knowledge base for evidence-informed policy and planning - including national and international comparisons, benchmarking, and technical efficiency analysis The comparator areas in this study are Perth North, South East Sydney, Sydney Local Health District and Western Sydney; the European benchmark areas of Donostia, Gipuzkoa (Spain), Helsinki (Finland), and Verona (Italy); and Talcahuano (Chile).(See Appendix 4 for more information about benchmark areas).

The steps of the overall procedure for developing an integrated atlas are shown below (Figure 6).

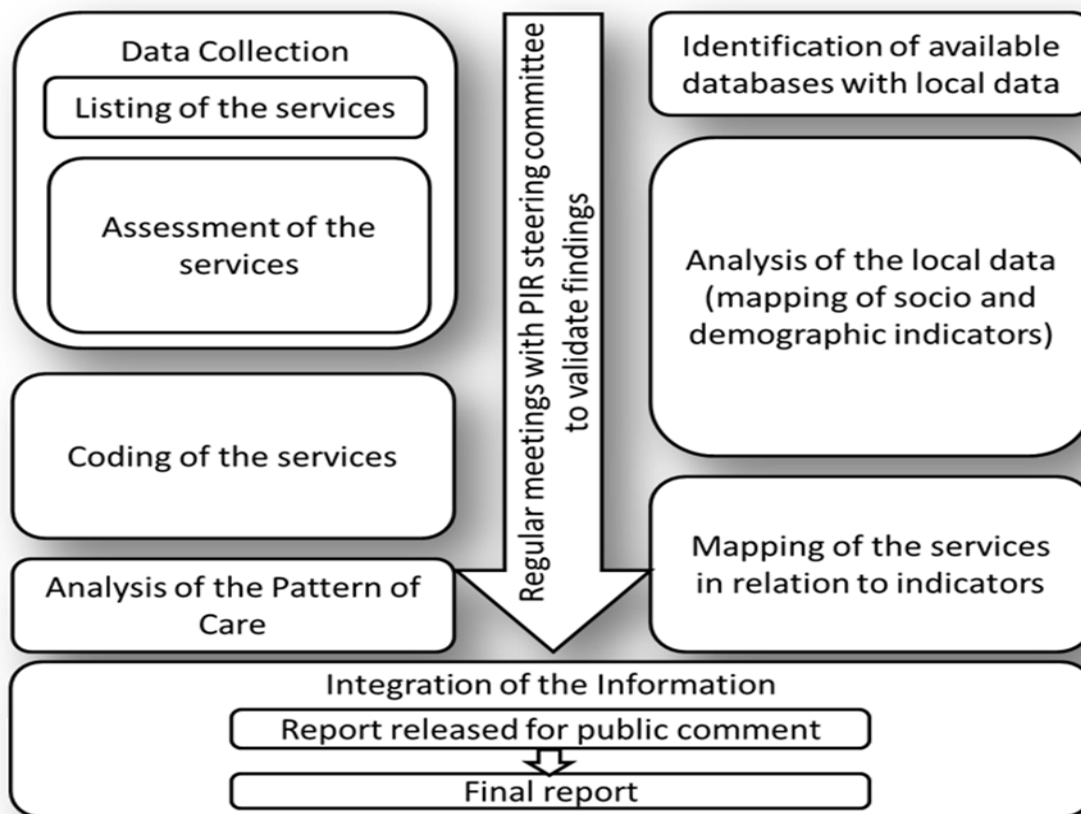


Figure 6: Procedure of data collection and analysis for the completion of an Integrated Atlas of Mental Healthcare.

Data for the ACT Atlas was collected with the assistance of the ACT Primary Health Network (PHN) and a steering committee to identify relevant services and then, iteratively throughout the process, to provide comment on the findings. Following codification of the services following criteria defined in DESDE-LTC, the boundaries and socio-demographic indicators were mapped: for example, geographical divisions within the catchment areas, and social and demographic indicators such as unemployment rates from administrative datasets. Mapping and analysis of service availability, placement capacity, and workforce capacity was conducted according to the basic care units and main type of care, as defined in DESDE-LTC. A second researcher was involved in the collection of data due to the number of services. Data on availability and capacity was entered into Excel files and then converted into visualisation tools, such as spider graphs and other infographics, for presentation to stakeholders.

I conducted a comparative analysis of the mental healthcare gap, based on the comparisons of the provision of mental healthcare with the above mentioned Australian health districts, and with international benchmark areas. I have provided a relative gap analysis, that is a comparative analysis of the gap based on a comparison with other areas. Although there are no specific guidelines for performing gap analyses, I have based the analysis on a systematic search strategy of existing directories and websites, consultation with key local stakeholders such as peak body representatives and health service managers, and iteratively throughout the process of interviews with service managers. Service data was sought not from a representative group but from all services, with a 92% participation rate. Using a standardised and systematic method allows a comparison between health systems in different regions using different models of care provision". In providing an analysis of the gap, the data can also show equality of service provision, the first and necessary step before analysing equity. I have also provided an analysis of the usability of the tool for evidence based policy based on the potential relevance to policy and policymakers of the findings of the study, and the implications of those findings: for example, the relevance and accessibility of the information to policy makers and planners; or differences in the provision of integrated care as identified by the comparative range of available services.

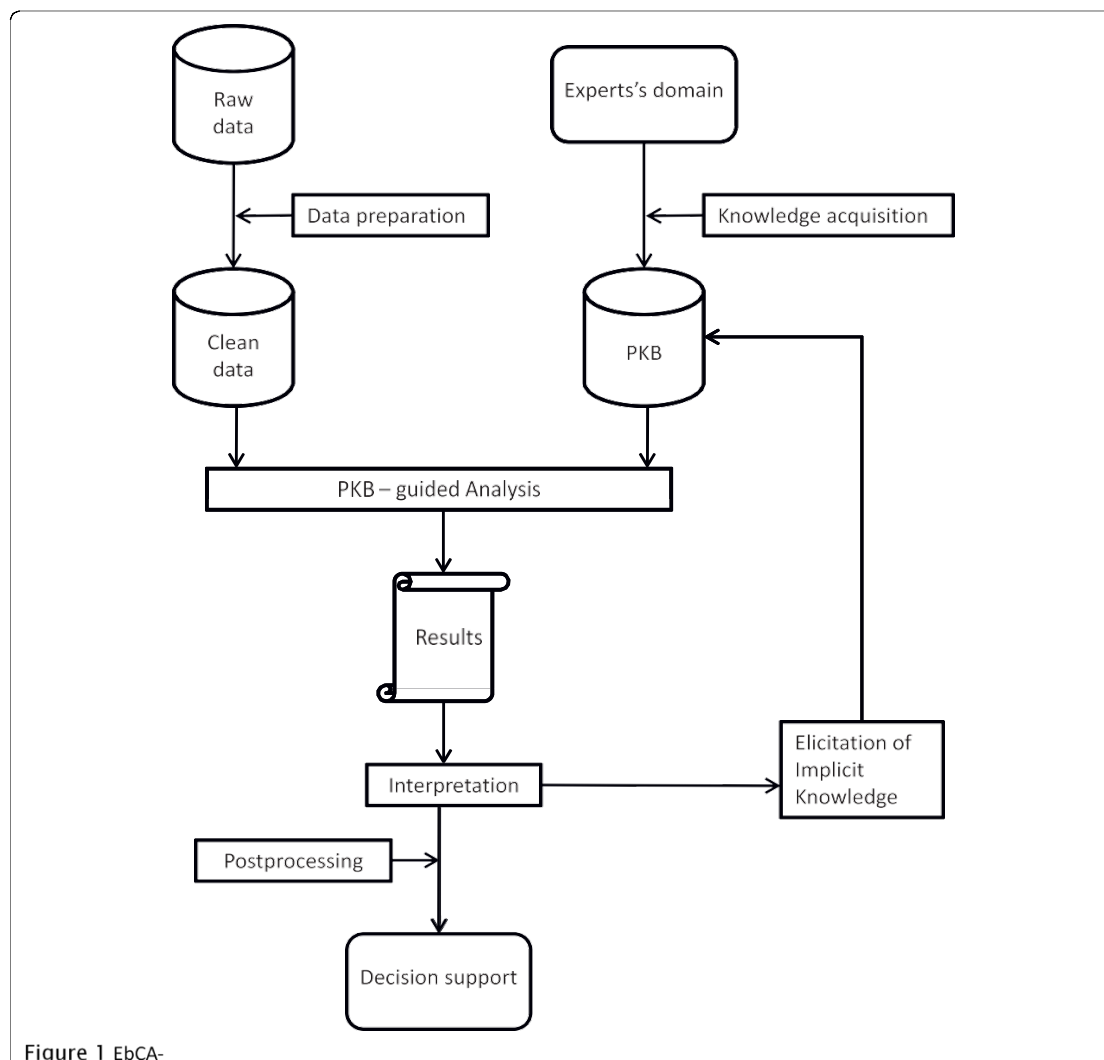
The use of spatial analysis and visual analytics in Atlases to present this information helps to make the large amounts of complex data easier to interpret and analyse by planners and decision makers.

Expert knowledge

Collaboration between researchers and system stakeholders (domain experts) at all stages of Atlas development informs and validates data collection and analysis in the process of Expert Based Co-operative Analysis (EbCA) [51]. EbCA is a process of data analysis which incorporates expert knowledge into the interpretation of complex or incomplete data and which has been used in this analysis (figure 7). The data in this approach includes contextual evidence, or evidence “ available from the specific setting in which a decision or action an option will be taken.. (which can be).. at district, regional or national levels, depending on the nature of the policy issue being considered” [20]. The explicit and/or implicit knowledge base, or expertise, of domain experts is used in an iterative process to guide the analysis of the data and provide interpretation based on knowledge of the logic of the system, enabling pattern recognition and sense making of the results, and aids in converting it into something more amenable to its application in models.

Ethics approvals. Ethics approval for the Integrated Atlas of Mental Health of the ACT PHNregion was granted by ACT Health Human Research Ethics Committee on June 1, 2016: protocol ETHLR.16.094. I was approved to be added to the project in August 2016

Figure 7: Expert Based Co-operative Analysis flowchart [51]



Presentation of thesis

This thesis is presented as a thesis by compilation. It includes six papers, in five of which I am the lead author. These papers describe the conceptual framework, review the literature, and provide the results and discussion of the research project undertaken in this candidature. The published papers, in journal format, are provided in Appendix 1.

Chapter 1 (this chapter) provides the introduction to context analysis as a source of evidence in implementation sciences, and the development of this in the field of health services research, specifically mental health services research. The concept of health ecosystems research as a new approach to understanding the context of mental healthcare systems and providing information to support decision making of policymakers and planners is introduced.

In Chapter 2, I present the first paper of the thesis [26]. It complements and enlarges on the introduction to the healthcare ecosystems approach introduced in Chapter 1.

In Chapter 3, I present the scoping review [22] of available methods of context analysis in mental health systems research. This scoping review was conducted to identify the parameters of the current literature in context analysis of mental health systems, available methods and their characteristics, and any gaps in the current availability of context analysis research. Forty six papers met inclusion criteria out of an initial search of over 10,000 papers, from which six instruments for service mapping were identified, only three of which were psychometrically validated, with only one of these three (DESDE-LTC) taking an ecosystems approach from a service level perspective of the system.

Chapter 4 provides a systematic review in which I was not lead author [40]. This review looks more closely at the DESDE instrument and its usability and impact in health policy and planning. It provides a systematic review of the diffusion and use of the DESDE-LTC, and its antecedent the ESMS in health and social care. It found that the DESDE-LTC classification system (ESMS/DESDE-LTC) has been used across different sectors of care in 585 catchment areas in 34 countries to provide context information at every level of the health system (local, regional, national), for care gap analysis, health economics, for modelling healthcare ecosystems, and has been effectively incorporated into decision support systems to guide evidence-informed planning.

Chapter 5 provides the first of three results papers using data from the Integrated Atlas of Mental Healthcare of the ACT region [52]. Using the DESDE-LTC taxonomy of service classification as a framework, this paper provides a description of service availability and capacity in the ACT, identifies the patterns of care provision, including gaps in the types of care available, and compares these with other urban regions in Australia (Western Sydney, Perth North, and South East Sydney) and to benchmark urban areas in other countries: Spain (Gipuzkoa), Finland (Helsinki-Uusimaa) and Chile (Talcahuano). This paper identified commonalities in the pattern of mental healthcare in urban regions in Australia when compared to urban regions internationally, areas where the pattern of care in the ACT resembled that of international areas more closely than it did its national comparison areas, and gaps in care provision common to all study areas. The identification of service availability using the DESDE-LTC in the ACT in Chapter 5 provides the framework for the paper on workforce capacity in Chapter 6 [53].

Chapter 6 reports the results of the data collection on workforce capacity in the ACT, discusses the capacity, skill level and distribution of the workforce in mental healthcare and compares these with regions in Australia (South East Sydney and Sydney Local Health District) and benchmark areas in other countries: Gipuzkoa (Spain), Helsinki-Uusimaa (Finland) and Verona (Italy). The framework provided by DESDE-LTC enabled understanding of the capacity of the local system by showing the professional composition of teams, their size, and geographic and system distribution, according to location, type of service and sector.

In Chapter 7 I present a paper which provides additional information about the utility of the Atlas to planners in the local system. This chapter presents evidence of the impact on service of recent changes in systems of mental healthcare delivery in Australia [54]. The information thus identified was reported in local and national print and radio media, and demonstrates the impact of the use of this method of context analysis of health ecosystems.

Chapter 8 provides a summary and concluding chapter of the research undertaken and indicates further research directions.

Appendix 1 provides the published journal articles in Chapters 2--4 and Chapter 6, as formatted in the journals.

Appendix 2 provides the full technical report: Integrated Atlas of Mental Health of the ACT Region [55]. This includes a full description of the DESDE-LTC instrument.

Appendix 3 provides more information about the research I have done related to this project but which does not comprise the thesis. I am currently the lead co-ordinator of Integrated Atlases in Australia, and have coordinated eight Integrated Atlases, and two workshops teaching the use of the DESDE-LTC instrument. In addition to the papers in this thesis I have contributed significantly to another six related papers and two technical reports. These are listed in Appendix 3. In 2019 I was awarded the Grace Groom Memorial Scholarship for my PhD research, which is awarded by Mental Health Australia to a research program which has meaningful and real application to the daily lives of people with a mental illness and/or the people who care for them. I was also a recipient of an Australian Government Research Training Program Scholarship, awarded to postgraduate students with an outstanding record of academic achievement and research potential. Projects to which my research has contributed include the Australian and New Zealand School of Government (ANZSOG) State of Play in Human Mapping report, prepared to better understand how service mapping can support decision making in human services, specifically services for people with a disability; and the Bupa Foundation Report in which the Integrated Mental Health Atlas of the ACT was a part of a pilot proof of concept study in the use of simulation modelling to guide mental health planning.

Appendix 4 provides the characteristics defining the areas designated as “benchmark” in this research.

Appendix 5 provides a glossary of terms and description of DESDE code components

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Foreword to Chapter 2

Chapter 2: “ An ecosystems approach to health services research” is the first published paper of my thesis. It develops further the concept of health ecosystems research introduced in Chapter 1, particularly in relation to the model for research into policy provided by biological sciences in the Ecosystems Services framework. It provides an example of how Integrated Atlases have been used in a region in Spain to monitor the evolution of a system, which illustrates one of the ways in which Atlases have been used internationally for planning purposes, with relevance for its future use in Australia.

An ecosystems approach to mental health services research

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Abstract

Mental health ecosystems research is an emerging discipline which takes a whole-systems approach to mental healthcare, facilitating analysis of the complex environment and context of mental health systems, and translation of this knowledge into policy and practice.

Evidence from the local context is needed in the analysis of complex interventions and of geographic variations in the outcomes of care. Technical tools and support have been developed to gather and interpret evidence from the local context and translate it in a meaningful and relevant manner for planners and policy makers to guide their decision-making.

Health ecosystems refer to the totality of the circumstances that relate to a given health phenomenon in a defined environment. They comprise the elements which together provide capital to 'sustain and enhance human wellbeing', including natural capital such as green spaces, and social capital, which includes both built (infrastructure) and human (institutions and human governance) capital [1,2]. A population health system includes four main domains: the places and communities in which we live; the wider determinants of health (for example, the social and demographic characteristics of the environment); our health behaviours and lifestyles; and integrated healthcare provision [3] at the different levels of the ecosystem (nano (patient–professional level), micro (service level), meso (local area level) and macro (region/ country level)). The mental health ecosystem is a subset of the general health system which focuses on domains relevant to mental health, such as the characteristics of the population at risk of or suffering mental illness, the workforce and organisations providing care and support to this target population, and their connections, for example, clinician–patient contacts, and the relationships between patients and organisations and among organisations.

Mental health ecosystems research is a part of implementation sciences, which facilitates analysis of environment and context, and knowledge translation to policy and practice. It incorporates an array of different disciplines, including systems dynamics, context analysis, health economics and knowledge discovery from data. It moves away from a reductionist approach focused on developing individual solutions to complex problems, towards providing an analysis of the environment and context of mental health systems and the development of decision support tools to guide policy makers. This analysis of the context of mental health systems – i.e. of local conditions and system behaviour – can help policy makers and researchers to understand geographic variation in care delivery outcomes, where an intervention which has been implemented successfully in one location has produced a different outcome in another. As shown by international studies of assertive community treatment, the effect of an intervention depends on characteristics of the local context. This indicates that full fidelity to the original model in local implementation of a complex intervention may be questionable unless the local context is considered [4].

Evidence from the local context of care can support decisions about relevant issues such as effectiveness, equity and access to healthcare provision. It requires an approach that goes beyond the traditional evidence-based model [5] and should incorporate a broader concept of scientific knowledge in systems research, with methods and tools developed in other areas of systems research such as policy decision-making in environmental sciences. This broad approach to scientific knowledge, which incorporates experimental, observational and

local evidence together with expert and experiential knowledge for health systems research, has been described in detail elsewhere [6,7].

Ecological science and the study of biological ecosystems and the services they provide to humans (ecosystem services (ESS)) have provided a conceptual framework on which mental health ecosystems can draw: the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)[2]. Like mental health systems research, ESS research brings together knowledge of a broad and often highly complex social, economic and institutional context from researchers in a range of domains and disciplines, with different levels of expertise and experience, and from different research methods. It also includes relevant knowledge held by non-scientific experts on aspects of the local context, for example, indigenous or local culture (in the case of ESS) or implicit knowledge of the workforce (in the case of mental health services). The ESS framework includes the types of capital (natural, built and social) which together improve human well-being, to which we can add mental capital (the mental health service system). Figure 1 shows adaptations of the IPBES approach to scenarios and modelling to policy decision-making in mental health.

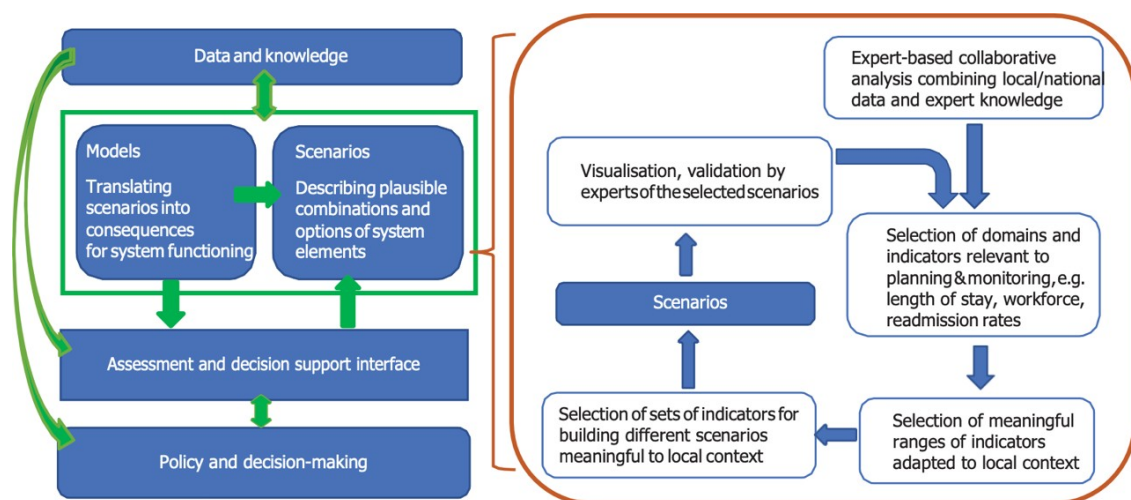


Fig. 1 Modified IPBES conceptual framework (summary for policymakers of the methodological assessment of scenarios and models of systems of mental health care delivery).

Practical tools for mental healthcare ecosystems research include: (a) logic models and conceptual maps of the system, and taxonomies of critical domains and characteristics, for example, classifications of mental health services, lifestyles, demographic characteristics or health system indicators; (b) visual tools including geographical information systems; (c) composite or synthetic indices; (d) integrated atlases and maps of the service delivery system, the financing flows or the spatial epidemiology of the target condition;

(e) navigation tools for consumers and professionals; (f) decision support systems (DSS) that incorporate the former tools, and artificial intelligence, machine learning and other techniques for knowledge discovery from databases; and (g) impact analysis tools to monitor the adoption and performance of the DSS.

In addition, the modified mental health matrix framework [8] allows us to identify all these components, domains and indicators and apply tools at different levels of the ecosystem (macro or country/regional level (level 1), meso or local area level (level 2), micro or service level (level 3), and nano or individual consumer level (level 4)); and at different stages in the process of care (A = input, B = throughput, C = output) (Table 1). Examples of this approach to guiding policy have been developed for regional planning in Catalonia and the Basque country in Spain, and in Finland and Chile, using the ESMS/ DESDE (European Service Mapping Schedule/ Description and Evaluation of Services and Directories) [9]. For example, the agency for mental health planning in Catalonia has constructed a series of integrated atlases of mental healthcare that include health, social, education, employment, justice and housing services [10]. These atlases have been used to monitor the evolution of the system from 2002 to 2017, identifying system changes before and after the implementation of the 2006 regional mental health plan, and the effects of the global financial crisis in this region from 2008 to 2015. This information has been used to carry out spatial analyses of the prevalence of mental disorders and related socio-demographic factors, both in the whole region and in metropolitan areas. It has been used with analysis of service utilisation, burden and costs of mental illness to feed models of comparative technical efficiency and self-organising mapping networks within the region and in comparison with other regions in Spain [11]. This holistic approach facilitates the analysis of health improvement under conditions of uncertainty and broadening of the patterns of service provision as suggested by the meta-community model of mental healthcare [12].

Table 1

Modified mental health matrix^a

	Input (A)	Throughput (B)	Output (C)
Macro Country/region (1)	1A	1B	1C
Meso Local area (2)	2A ^a	2B	2C
Micro Service (3)	3A	3B	3C
Nano Individual (4)	4A	4B	4C

a. This is the level of analysis of the ESME/DESDE approach: input to the system at service level.

The meta-community model describes a suite of aims, including coordinated systems providing care for people with mental illness at a comparable level to that provided for people with physical illness, delivered flexibly and innovatively to people in a range of settings in addition to healthcare settings, such as prisons, asylums, schools and refugee settings.

An ecosystem approach to health systems research is particularly relevant in the study of the characteristics and dynamics of complex mental healthcare systems. This approach recognises the limitations of traditional research methods when dealing with situations of complexity. It is informed by research in other areas, including ecological science. Progress has been made in the development of technical supports and instruments using an ecosystems approach and collaborating with local domain expertise to ensure relevance and meaning for decision makers and so for the development of evidence-informed policy.

Author contributions

All authors contributed equally to the conceptualisation of the paper and to the development of its concept. M.F. was the primary author; L.S.C. and N.B. provided oversight. L.S.C. provided some revision of the final two paragraphs. All authors approved the final article.

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Foreword to Chapter 3

In the first two chapters of my thesis, I have outlined the healthcare ecosystems approach to the analysis of the context of mental healthcare systems, and its benefits to research and planning in mental healthcare. I have introduced a suite of instruments based on this new way of conceptualising systems of mental healthcare delivery. In Chapter 3: “Healthcare ecosystems research in mental health: a scoping review of methods to describe the context of local care delivery”, I look at how the context of mental care has been described and analysed in the scientific literature over the past decade (2005-2016) through the lens of this approach. My aim in this paper is to determine the parameters of research methods examining mental health service availability and capacity in local health systems, and to identify gaps in the literature.

Healthcare ecosystems research in mental health: a scoping review of methods to describe the context of local care delivery

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Abstract

Background: Evidence from the context of local health ecosystems is highly relevant for research and policymaking to understand geographical variations in outcomes of healthcare delivery. In mental health systems, the analysis of context presents particular challenges related to their complexity and to methodological difficulties. Method guidelines and standard recommendations for conducting context analysis of local mental healthcare are urgently needed. This scoping study reviews current methods of context analysis in mental health systems to establish the parameters of research activity examining availability and capacity of care at the local level, and to identify any gaps in the literature.

Methods: A scoping review based on a systematic search of key databases was conducted for the period 2005–2016. A systems dynamics/complexity approach was adopted, using a modified version of Tansella and Thornicroft's matrix model of mental healthcare as the conceptual framework for our analysis.

Results: The lack of a specific terminology in the area meant that from 10,911 titles identified at the initial search, only 46 papers met inclusion criteria. Of these, 21 had serious methodological limitations. Fifteen papers did not use any kind of formal framework, and five of those did not describe their method. Units of analysis varied widely and across different levels of the system. Six instruments to describe service availability and capacity were identified, of which three had been psychometrically validated. A limitation was the exclusion of grey literature from the review. However, the imprecise nature of the terminology, and high number of initial results, makes the inclusion of grey literature not feasible.

Conclusion: We identified that, in spite of its relevance, context studies in mental health services is a very limited research area. Few validated instruments are available. Methodological limitations in many papers mean that the particular challenges of mental health systems research such as system complexity, data availability and terminological variability are generally poorly addressed, presenting a barrier to valid system comparison. The modified Thornicroft and Tansella matrix and related ecological production of care provide the main model for research within the area of health care ecosystems.

Background

The role of context is critical in health services research. Geographical variations in the fate of healthcare interventions have been documented widely. The significance of local context

in such variations is recognised, with the more complex the intervention, the greater the relevance of local factors to its outcome [1]. In healthcare, “context” could be defined as all sources of evidence of the local system: geographic, social and demographic factors, other environmental factors, service availability and scope, capacity, use, costs and the historical development of the healthcare system. Evidence from the context of local health systems is thus highly relevant for research and policymakers. The analysis of context of care of “healthcare ecosystem research” is an emerging discipline that should play a critical role in implementation sciences [2] and in the analysis of complex interventions [1, 3]. However, a broader approach than the traditional unidimensional model of evidence is required [4]. “Contextual evidence” has recently been identified as a major source of knowledge in health systems research together with experimental, observational, expert and experiential knowledge [4]. In spite of its relevance, the need for context analysis in health services and delivery research has not been sufficiently recognised [1, 2, 4].

Evidence about local conditions is important at all stages in the policy process from assessing resource availability and setting policy priorities to examining the impact of policy decisions [5]. The World Health Organization (WHO) has urged exploration of the care context in mental health systems [6]. The WHO Mental Health Gap Action Programme (mhGAP) has called for a comprehensive and systematic description of mental health services, including what those services are doing [6]. A knowledge of care delivery at the service delivery level is critical to evidence informed policy [7], and in the implementation of models of care such as integrated care [8] and the balanced care model [9]. However, this research faces challenges related to the complexity of mental health systems, and to methodological issues. Mental healthcare systems are particularly complex due to the number of sectors, levels, and types of service through which care is delivered, the variability of the service delivery over time and the high ambiguity, partly due to the lack of a stable terminology [1, 7]. Descriptions of local service delivery which do not take this complexity into account risk providing policymakers with an inaccurate or limited assessment of the local pattern of service availability, affecting their ability to plan appropriately.

A review of methods used to describe the context of local mental healthcare is urgently needed. This study sought to take a broad view of available methods of context analysis in systems of mental healthcare delivery at the service delivery level, identifying and mapping their main components and characteristics. This would identify gaps, provide insight into conceptualisation of the context of mental health systems and inform future context analysis in mental health services research. This is consistent with the call by the WHO to specifically reference service location, availability and function [6].

Methods

Rationale for conducting a scoping review

Scoping reviews “examine the extent, range and nature of research activity in a particular field, without necessarily delving into the literature in depth or attempting to assess its quality” [10]. They are used to “identify parameters and gaps in a body of literature” rather than “generat (ing) a conclusion related to the focused question”, with “inclusion/exclusion ... developed post-hoc”, and a broad research question rather than a “focused research question with narrow parameters” [10]. A scoping review was considered appropriate for this study due to the broad scope of the research area, the diversity of study designs already known to the authors, and the absence of a definitive terminology.

General scoping review process

We have used the five stage model for scoping reviews developed by Arksey and O’Malley [11], and extended by Levac [12]. The five stages of this approach are: (i) identifying the research question; (ii) identifying relevant studies; (iii) selecting studies; (iv) charting the data; and (v) collating, summarising, and reporting the results. We have also used the guidance for scoping reviews developed by members of the Joanna Briggs Institute [13].

Identifying the research question

The main research question of this scoping review was:

1. “What are the main gaps in the available literature relevant for context analysis of mental health systems?”

Sub-questions are:

- (i) “What are the available methods for standard description of mental health service delivery which could be applicable for international context analysis of mental health systems?”

- (ii) “What are the key domains or components of methods for context analysis in mental health systems research?”

An additional objective of this scoping review was to identify a workable set of search terms that optimise the literature review in this new research area.

In order to answer these questions we have adopted a systems dynamics/complexity approach [14], and a modified version of Tansella and Thornicroft’s matrix model of mental healthcare (TT-Matrix) [15] (Table 1) as the conceptual framework for our scoping analysis. Tansella and Thornicroft developed this framework to facilitate the “bridging of information between different levels of analysis” [15], and to address issues related to system complexity encountered in mental health systems research: for example, the conflating of proxies of inputs or processes such as the number of psychiatric beds used, with outcome; and a failure to take account of evidence obtainable at different levels of the system through a reliance on experimental evidence gained at the individual or micro level [15]. The matrix concept has continued to be developed in mental health services research to provide a basis for mental health performance measurement [16, 17]. The modified version of the TT-Matrix (mTT-Matrix) provides 12 quadrants of indicators of healthcare according to the Donabedian process of care (input, throughput and output [18]); and the levels of care: 1) macro (country or region); 2) meso (local catchment areas); 3) micro (facilities, services, care teams); and 4) nano (individual agents such as consumers, carers and professionals). We are looking specifically at the care service delivery system at the meso level (quadrant 2A), and the aggregation of information from the micro level to the meso level (quadrant 3A), and from meso level to macro level (quadrant 1A).

Identifying relevant studies

A systematic search was carried out, using the above research questions: the period of reference was 2005– 2016. Databases used were the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science (WoS) and Medline databases. LSC and MF selected the search terms. Broad terminology was required due to the low specificity of the applicable terminology. The search was carried out with the assistance of an academic librarian. The search terms used for the first search using CINAHL, WoS and Medline were (“mental healthcare” OR “mental healthcare delivery” OR

Table 1 Modified version of the Tansella-Thornicroft Matrix of Mental Healthcare (mTT-Matrix)

	INPUT	THROUGHPUT	OUTPUT
Macro Country/Region	1A	1B	1C
Meso Local area	2A	2B	2C
Micro Service ^a	3A	3B	3C
Nano Individual	4A	4B	4C

^aThe micro level at the original TT-Matrix referred to individual patients or consumers. In this modified version "Micro" refers to the process of care at the service level and "Nano" at the level of individual agents (users, peers, carers and professionals)

"mental health service*" OR "mental health system*" OR "psychiatric service" OR "psychiatric care") AND (classification OR description OR availability OR "meso-level analysis" OR "meso level analysis" OR "geographical mapping" OR mapping OR "healthcare instrument" OR "healthcare instrument" OR "healthcare tool" OR "healthcare tool" OR "local care").

Some key articles known to the authors were noted to be missing, so an additional search was carried out using key words from those articles; these were mental health AND ("cross-country comparison*" OR "cross country comparison*" OR "international comparison*" OR "cross-cultural comparison*" OR "cross cultural comparison" OR "health system* research"). A search of the British Library on Demand database was also made using all the above key words. Further titles, by an author with an interest in the area, known to one of the authors (LSC) were added.

Study selection

MF conducted the database search based on the search terms, and conducted a review of titles. Abstracts of potentially relevant papers were identified, and duplicates were deleted. Studies were initially included if they described or conceptualised the context of mental healthcare; mapping of mental health services; service availability, capacity or accessibility in geographic areas, or instruments assessing service availability, capacity or accessibility. Initial exclusion criteria were papers only reporting on service utilisation, interventions, financing and costs, and governance, due to their being not specifically related to availability. Also excluded as being too limited in scope were studies related to specific groups, such as child and adolescent mental health, mental health of culturally and linguistically diverse (CALD) populations, forensic mental health, or veterans' mental health. Conference abstracts and non-scientific literature were excluded as their inclusion would have created an unfeasibly large database. Eligible study designs were broad, and included qualitative

analysis gathered by experts, studies using a mixed approach, modelling studies, secondary analysis from databases, surveys and comparative studies. At this point we decided to include studies where the comparison was within countries and not just international or cross country, in case these methods could potentially also be used in cross country comparison.

The identified abstracts were reviewed by MF and CG, who discussed differences, and, where they could not be resolved, a further discussion was held with LSC. Study selection was an iterative process. In meetings with MF, CG and LSC, and due to increasing familiarity with the scope of papers, the search was refined, with additional exclusion criteria applied: papers reporting only on workforce or placement or bed capacity, or those including data exclusive to only one domain of care (residential, outpatient care, or day services), (unless describing all services in that domain) were excluded, again due to being too limited in scope. Micro level studies were also excluded as not relevant to the level of the system under study. It was noted that papers could be separated into conceptual, analytical and descriptive categories. At this point, a preliminary framework for data extraction was identified and piloted with five papers, based on the emerging picture of study characteristics.

The remaining full texts were read by MF and CG. Papers were excluded at this stage again for limited or incompatible interpretations of the concept of service availability, including service utilisation, service capacity only; or for providing no data on availability. A further number of grey literature articles were excluded. Conceptual papers were also excluded at this point as being outside the scope of the question, which related specifically to methods used. References of included papers were hand searched for further articles by MF and CG and cross checked in the same manner.

MF and CG then met again with LSC, and discussed the different categories of data to be extracted from the included papers.

Charting the data

A data extraction tool was discussed, based on the characteristics of the included papers. It was piloted with five papers by LSC, MF and CG. MF and CG then each used the tool on all the included papers, following which they reviewed each others' decisions. Differences were discussed, and any that could not be resolved were discussed with LSC for a final decision.

The data extraction tool categorised papers into descriptive and analytic studies. It then focused on the key characteristics of the studies, and finally on the methods used in the mental health system descriptions. Extracted study characteristics were those describing the

type or scope of services and included target population (specific target population such as people with lived experience of mental illness, carers, specific diagnostic group such as depression, eating disorders, etc.) and whether this was formally defined; socio-economic context if described; the sectors described (health, social, education, employment, housing, other); service types (hospitals, clinics and so forth); care branches (domains of service delivery); workforce capacity (types of professionals); placement capacity (beds or places where described), and geographic accessibility (distance to services for service users). Variables relating to the methods used included the framework (if the study used a standardised framework); study geographical boundary and whether this was formally defined; level of analysis (macro, meso, or micro as above); classification or taxonomy if included in framework; study design; and presence and type of comparison.

Collating, summarising and reporting the results

We first performed a numerical analysis of the characteristics of the papers to provide an overall picture of the geographic and demographic characteristics of the studies, and basic methodology (whether or not a standardised framework was utilised). As the methods used to describe mental healthcare delivery included several instruments, we then created a table of key analytical characteristics of each instrument. All in all, six instruments were used in the studies (see Table 3). While the scientific literature included many papers using data obtained through these instruments, in several papers only data from selected sections of the particular instrument were used, or in the case of WHO Assessment Instrument for Mental Health Systems (WHO-AIMS) and the Mental Health Country Profile (MHCP), only selected extracts from the whole country report were included in the study. Therefore, where possible, the full characteristics of these tools have been gathered from the original report documentation to enable a full description of the instrument or framework. In the case of the Adult Service Mapping Exercise (ASME), we were not able to locate the core instrument online. Following this, we analysed the key conceptual approaches taken by the identified methods of context analysis of mental healthcare delivery.

Results

Search results

10,911 titles were identified in the initial search. After removal of duplicates, 6149 papers remained. After review of titles, 444 abstracts remained, following review of which 271 were

excluded. Ninety-five were not relevant to the topic; 57 were not mental health related; 94 papers were excluded due to interpretations of the concept that were either limited (one type or branch of care only), or incompatible with the study concept (for example studies of service or resource utilisation, system governance, interventions, or care needs); 10 previously unidentified articles of grey literature were excluded at this point, as were 14 papers relating to areas of care outside the inclusion criteria, such as child and adolescent mental health, or CALD mental health. A previously unidentified duplicate was removed. Members of the team introduced three more papers for consideration based on knowledge of the scope of the study. The remaining 176 full text articles were reviewed independently by CG and MF: 130 papers were excluded either because they were not relevant to the topic; had a too limited scope (i.e. they related only to service capacity or to one type of service such as hospital acute care), or were commentaries and conceptual papers. All in all, 46 studies were eligible for inclusion in our scoping review (Fig. 1).

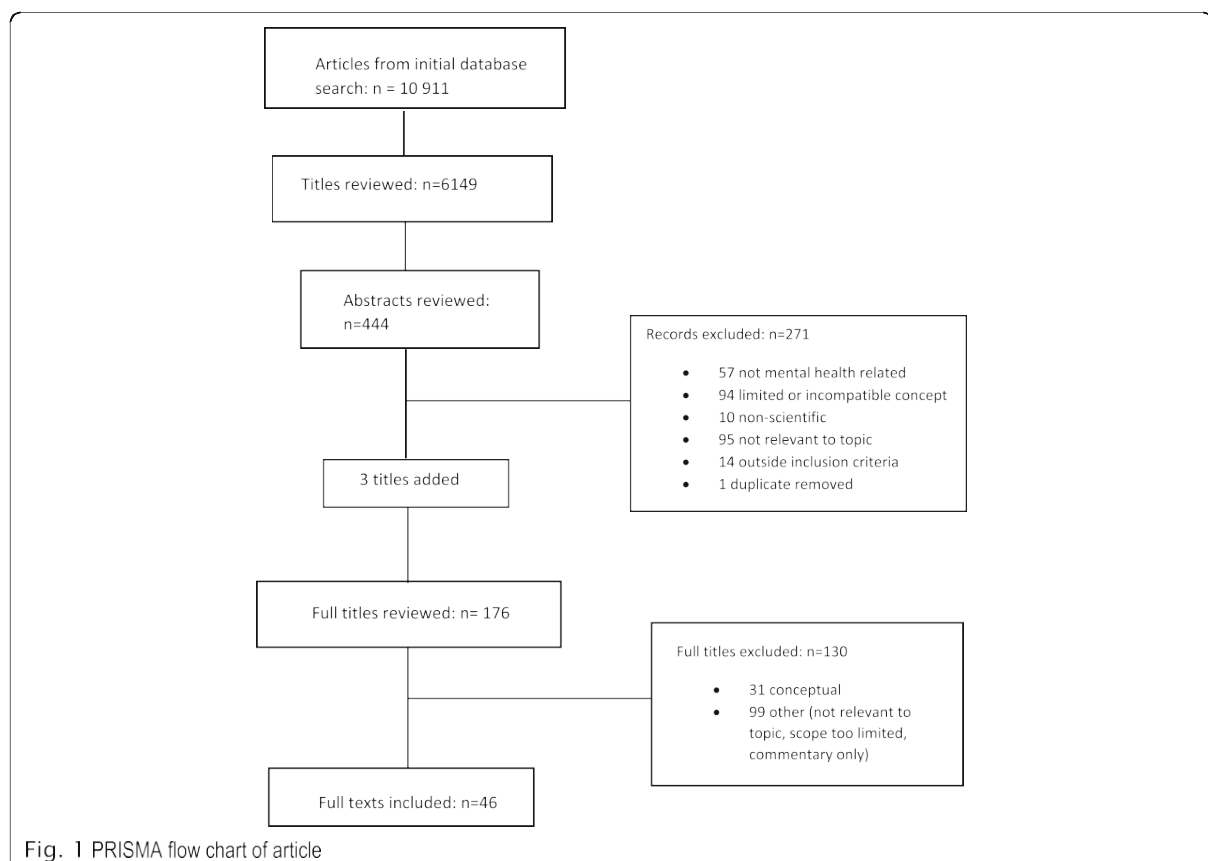
A shared meaning of key concepts in the assessment of mental healthcare delivery was lacking. For example, in full text papers reviewed, a number of papers were excluded where the concept of service availability had been variously interpreted as service utilisation, service workforce and service capacity. Thirty three papers related to service availability were excluded because they provided no data, 17 papers were excluded because they provided data only on workforce capacity, and seven papers were excluded because availability was conceptualized as either service utilisation or as availability of interventions.

Characteristics of included studies

Of the 46 eligible studies, 36 (78.3%) [19–54] were descriptive, and 10 (21.7%) were analytical [55–64]. Thirty six papers (80.4%) presented service availability data from a single country, of which 19 [20, 28, 32–34, 37, 40–42, 50, 51, 53–57, 59, 61, 64] took a regional or local approach, while 17 [19, 21–27, 30, 36, 38, 39, 43–46, 49] looked at availability from a national level. Ten papers presented service data from more than one country, of which seven [29, 35, 47, 48, 52, 58, 60] took a regional or local approach, and three [31, 62, 63] were at the national level. Overall, excluding two papers which included over 40 Lower Income Countries and Lower-Middle Income Countries (LIC/LMIC), not all of which were identified, 22 papers (48%) used data from Europe, most notably Spain and Italy, nine papers (20%) were from Africa, seven (15%) from Asia, four (9%) from the Middle East, two (4%) from the Americas (one from USA and one from Chile), and one (2%) from Australasia. Of the LIC/LMIC countries studied, eight were from Africa, and three were from Asia.

However, in 25 studies (54.3%) the precise boundaries of the study area were not formally defined.

Twenty eight studies (60%) provided socio-demographic context [21, 24, 25, 27, 29, 31, 34, 37–40, 42–45, 47–50, 52, 53, 55–57, 59–62]. Two papers [34, 53] which presented data from atlases of mental healthcare included comprehensive local area data. Of the 16 studies which linked one or more socio-demographic indicators with mental health, only four provided supporting evidence with validated indicators using a standardised instrument (e.g. European Social Demographic Schedule



-ESDS) [34, 48, 59, 60]. These four papers all used the European Service Mapping Schedule (ESMS) for service availability data. Papers based on WHO-AIMS and MHCP instruments also included legislative and policy context at a national level.

Where target populations were formally defined, 11 studies included children and/or adolescents [19, 21, 25, 30, 31, 36, 40, 50, 51, 53, 63]; three studies included people with alcohol and other drug dependence (AOD) [36, 61, 63]; two studies included people with intellectual disability (ID) [21, 36]; three were specific to serious mental illness or psychosis [57, 62, 63]; two included people over 65 years [21, 51]; and one study each included the following subpopulations: maternal/perinatal mental health [36]; people requiring long term

rehabilitation [54]; survivors of suicide attempts [57]; and socially marginalized groups [47]. A further 21 studies did not specify a particular mental health population.

The main characteristics of included studies are detailed in Table 2.

We then analysed the methods used in included studies (Table 3). Six instruments providing data on service availability were identified in the included studies, and these were used in a total of 31 papers. Three of these were psychometrically validated instruments: ESMS/DESDE (Description and Evaluation of Services and Directories for Long Term Care—an evolution of the ESMS and thus described together) (used in 12 papers: [20, 28, 34, 48, 52, 53, 56, 58–61, 64]); WHO-AIMS: (used in 11 papers [21, 22, 24, 25, 27, 31, 33, 50, 51, 62, 63]); and MHCP (used in three papers [43–45]). ESMS/DESDE and WHO-AIMS are based on taxonomies of care (ESMS/DESDE on a hierarchical tree taxonomy), and DESDE has undergone formal ontological analysis [65]. The MHCP is structured into four domains relevant to policy, including context, resources, provision and outcomes. However, while the MHCP provided a taxonomy for mental health systems generally, it should be noted that the domains for health service delivery did not include any classification of service types. Two other instruments-- those of the Best Practice In Promoting Mental Health In Socially Marginalized People In Europe study (PROMO) in 14 European capital cities [47] and the Programme for Improving Mental Healthcare in five LMICs study (PRIME) [29] were designed specifically for those studies, and were included in one paper each. The ASME, used in three papers [23, 54, 55], was designed specifically for the English context. WHO-AIMS, MHCP, and the instruments from the PRIME and PROMO studies are instruments designed specifically for mental health services, while ESMS/DESDE and ASME have a broader health service application. ESMS/DESDE was developed for all long term care services. Fifteen studies did not use a structured framework [19, 26, 30, 32, 35–42, 46, 49, 57], of which five did not provide any method [37, 40–42, 46]. Four of these [37, 40, 41, 42] formed part of a group of seven papers in a special supplement related to a conference on mental healthcare in capital cities: however three of this seven papers were excluded from this study as they did not include any data on service availability.

In the case of ESMS/DESDE papers, the unit of analysis was care teams provided by individual services, aggregated at local level (2A in the mTT matrix), while in WHO-AIMS, ASME and MHCP papers, services data was aggregated at national level (1A in the mTT matrix). Of the 23 papers not using taxonomy based instruments (i.e all those papers not using ESMS/DESDE or WHO-AIMS), eight, including all three papers using the MHCP, counted services provided at a higher organisational level of care, such as psychiatric hospitals in a local area, along with individual services, such as day centres or mental

health departments in larger organisations, thus conflating these different levels of care [30, 36, 37, 39, 40, 43–45]. In a further seven papers [23, 29, 35, 41, 42, 55, 57], including two of the three papers using the ASME, individual services were conflated in the same way with individual care teams (section 4A of the mTT matrix) such as crisis resolution teams, or assertive outreach teams.

Of the 15 papers which did not use a specific instrument to frame their analysis of service availability data, three [30, 36, 39] used internationally based frameworks, five [19, 26, 32, 49, 57] used a framework relevant specifically to the region in which the study took place, four [37, 40–42] categorised their data around service types but did not justify their categorisation or their choice of units of analysis, and three [35, 38, 46] did not specify any framework for their data on service availability. Of those studies using international frameworks, two [30, 36] were based on the Mental and Social Health Atlas of Saudi Arabia, which used the framework provided by the WHO Mental Health Atlas, while the third drew broadly on the WHO Mental Health Atlas, as well as recommendations from the 2001 WHO World Health Report to structure their findings [39]. Three studies described service availability according to the specific structure of the national system under study [19, 26, 49], while one described service availability based on a regionally prescribed framework of services required for the prevention of recurrent suicidal behaviour [57].

Terminology used to identify units of analysis varied widely, but only ESMS/DESDE and WHO-AIMS provide glossaries of terms used. MHCP studies included detailed qualitative data at the local level in order to ameliorate the effect of terminological variability on data interpretation. Terms used in papers for residential care included “psychiatric hospitals”, “supportive homes”,

Table 2 Characteristics of included studies

Framework	Number (% of total studies)	Type of study		Location of study				Includes Com- parison	UC/ LMC*	Socio- demo- graphic context provided	Study population				
		Descriptive	Analytical	International	Single country	Regional approach	Study area boundary formally defined				Target population Formally defined	Adult MH only	Include at least one specific Site, gra... ...	Diagnosis specific	Mental health population not specified
ESMS/DESDE	12 (26%)	6	6	4	6	10	9	7	0	8	9	6	3	0	3
WHO-AIMS	11 (23.9%)	9	2	3	9	9	7	4	7	6	2	0	4	3	4
MHCP	3 (6.5%)	3	0	0	3	0	3	0	3	3	0	0	0	0	3
PRIME study	1 (2.2%)		0		0						0	0	0	0	1
PROMO study	1 (2.2%)	1	0		0		1		0		1	0	1	0	0
Adult Service Mapping Exercise	3 (6.5%)	2		0	3	2	3	3	0		2		2	0	0
Method described	10 (21.7%)	9			10	2		5	0	4			3	0	6
No method provided	5 (10.9%)	5	0	0	5	4	0	0	0	3	0	0		0	4
	46 (100%)	36 (78%)	10 (21.7%)	10 (22%)	36 (78%)	22 (48%)	25 (54%)	21 (46%)	11 (24%)	27 (58.7%)	15 (32.6%)	8 (17%)	14 (30%)	3 (7%)	21 (46%)

* Low Income Countries/Low Middle Income Countries, ** Eg child/ adolescent; socially marginalised; older adults

Table 3 Characteristics of methods used by included studies

Framework	ESMS/DESDE	WHO-AIMS	MHCP	ASME	PRIME study instrument	PROMO study instrument	Other papers (number)
Ontology based	Yes	No	No	No	No	No	0
Taxonomy based	Yes	Yes	No	No	No	No	0
Psychometrically validated	Yes	Yes	Yes	No	No	No	0
Unit of analysis							
Macro (Organ-isations)	No	Yes	Yes	Yes	Yes	No	14
Meso (Services)	Yes	Yes	Yes	Yes	Yes	Yes	13
Micro (Teams)	Yes	No	No	Yes	No	No	5
Number of comparison studies							
Regional comparisons within a single country	4	1	0	2	0	0	0
International comparisons at regional level	4	0	0	0	1	1	0
International comparisons at national level	0	3	0	0	0	0	2
Longitudinal comparisons	0	0	0	0	0	0	4
Glossary included	Yes	Yes	No	No	No	No	0
Data sources	Service providers	National level data from ministries, organ-isations etc; aggregated regional data where national data not available	Govt and other national level data sources	Local Implementation Teams	Govt and non govt reports, triangulated with local key co-ordinators	Service providers	X
Sectors ^a included	H,S,E,Ed,Ho,O	H,S,E,Ed,Ho,O	H,S	H,S	H,S,Ho	H,S,E,Ho	X
Mental health specific or generic	Generic health	MH specific	MH specific	Generic health	MH specific	MH specific	X
Accessibility	Open Access but requires training	Open Access	Instrument itself unable to be accessed online	Unable to access online	Accessible online but specific to PRIME study	Study specific-Unable to access instrument online	X
Study design	Survey/interviews	Survey/interviews	Survey/interviews	Survey	Survey	Survey/interviews	X

^aH-Health; S-Social; E-Employment; Ed-Education; Ho-Housing; O-Other

“crisis homes”, “safe homes”, “social rehabilitation centres”, “group homes”, “short and long term residential units”, “community based psychiatric inpatient units, respite, and community residential facilities” and those for non-residential care including “day hospitals” “psychiatric clinics”, “outpatient clinics”, “day centres”, “mental health dispensaries”, “mental health departments in social diseases prevention centres”, “day treatment facilities”, “fixed clinics”, “outpatient department”, “community mental health centres”, “sheltered workshops”, “day activity services”; “crisis resolution teams”, “assertive outreach teams”, “early intervention in psychosis team”, “home care nursing services”, and “mobile crisis teams”.

Data was obtained from sources at different levels of the health system. Studies using the ESMS and DESDE and the PROMO instrument take a bottom up approach, gathering data from providers at individual service level. WHO-AIMS takes a top-down approach, the papers using this instrument collecting national data at a high level from sources such as heads of departments, universities, and professional boards. Where the instrument was used at a regional level, data was collected from similar sources at that level. In these studies however, the data is still interpreted through a national prism. Papers using the MHCP instrument and that of the PRIME study used both national and local sources, both methods combining national level data with qualitative data from the local level gathered from sources including professionals, clients, families and other stakeholders. The PRIME study is undertaken at district level, but uses a top-down approach, with data from administrative databases, key officials and service heads. Data for the ASME was gathered at a national level from Local Implementation Teams, although one paper [54] first identified relevant Trusts providing rehabilitation services using the ASME, and then went to the individual units to obtain data. In the 15 papers using other, non-framework based methods, existing administrative databases or literature were sourced, with four also using surveys sent to senior health or government officials [36, 38, 39, 57].

Seven studies included the health sector only [30, 32, 38, 39, 46, 62, 63]. Eighteen studies included the health and social sectors [19, 20, 22, 23, 26, 29, 31, 33, 45, 49, 50, 52, 54–56, 59, 61, 64]. This included papers using MHCP and ASME. At least one other sector, such as employment, education, justice, or housing was included in almost half of included studies (21 papers) [21, 24, 25, 27, 28, 34–37, 40–44, 47, 48, 51, 53, 57, 58, 60]. This included papers using ESMS/DESDE, WHO-AIMS, and those from the PRIME and PROMO study. The instrument of the PROMO study included several sectors, but for a limited target population (marginalised populations).

Of the 36 studies undertaken within a single country, seven [28, 51, 53–55, 59, 61] included comparison at regional or local level, and four included a comparison over time [19, 30, 32,

[38](#)]. All of the ten cross country studies included comparison of service availability: seven at regional or local level [[29](#), [35](#), [47](#), [48](#), [52](#), [58](#), [60](#)], and three at national level [[31](#), [62](#), [63](#)].

Forty-one papers (89%) identified themselves, or were assessed by us, as being situational and/or gap analyses. The remaining five papers comprised the following: efficiency analyses [[58](#), [64](#)] territorial planning [[59](#)], ecological analysis [[57](#)] and standard description for comparison [[60](#)]. Thirty-two studies (70%) included recommendations for policy makers related to service provision based on the findings. Visual tools were used in 12 papers (25%), four of which incorporated graphics issued by Geographical Information Systems. In three of these the visual tool presented data on service availability.

The methodological characteristics of included papers are summarised in Table [3](#).

In those papers using instruments to provide data on service availability, this was WHO-AIMS in 11 papers (24%) [[21](#), [22](#), [24](#), [25](#), [27](#), [31](#), [33](#), [50](#), [51](#), [62](#), [63](#)], ESMS/DESDE in 12 papers (26%) [[20](#), [28](#), [34](#), [48](#), [52](#), [53](#), [56](#), [58–61](#), [64](#)], MHCP in three papers [[43–45](#)] (7%), ASME in three papers (7%) [[23](#), [54](#), [55](#)] and the PRIME [[29](#)] and PROMO [[47](#)] project instruments in one paper each (2%).

Discussion

To our knowledge this is the first scoping review on methods for context analysis of system provision and healthcare ecosystems research in mental health. Scoping reviews are appropriate in new areas of research, where they can “identify gaps in the research knowledge base, clarify key concepts, and report on the types of evidence that inform practice in the field” [[13](#)]. They “examine the extent, range and nature of research activity” [[10](#)]. Research questions are thus “less likely to address very specific research questions” but become more focused in an iterative approach, due to the requirement that they identify all relevant literature regardless of design [[11](#)]. They are broad in nature to provide breadth of coverage: comprehensiveness and breadth are important in this search [[12](#)]. Thus, scoping studies may often produce very high numbers of initial results [[10](#), [66](#), [67](#)]. The lack of a clearly defined terminology, reflected in the wide range of search terms which needed to be included, reinforces the need for an approach taking a broad view of the literature. For these reasons, a scoping review was considered to be a more appropriate review method than a systematic review, which would require a focused question with clearly defined outcomes.

Implications for research

The WHO has called for description of systems of mental healthcare delivery and the gap analysis [6], but few standardised and validated methods are available to do so. Despite the complexity of mental health systems, many studies lack key methodological components such as a standardised framework, explanation of terminology, or explanation for choice of units of analysis: of the 46 papers included, 21 had serious methodological limitations, limiting their validity in international comparisons. The final number of included studies relative to the high number of initial results in the literature search indicates both a limited amount of research, and a lack of targeted and standardised research terminology in the area. The limited number of studies providing an explanation of the concepts or terms used presents difficulties when comparing systems, particularly across regions or countries, where the variation between systems may be greatest. The exclusion of full text papers due to limited interpretation of the concept of availability, or a conflation of availability with utilisation, demonstrates the lack of conceptual clarity in research in this area.

Comparisons between systems of care enable the sharing of knowledge, assist in problem solving and inform best practice. However, the replicability and comparability of several studies was undermined by a lack of clarity around terminology and scope, by the absence of structural organisation such as a taxonomy, and by inaccessibility or poor accessibility of some core instruments. A standardised framework was used in only half of those studies providing comparisons, and target populations were often either not specified (21 papers) or were very broad. The dearth of studies providing an explanation of the concepts or terms used was particularly relevant in comparisons across regions or countries, where the variation between systems may be greatest. Variation in terminology also creates a commensurability risk if units of analysis are not clearly defined and located within the overall system. The need for internationally agreed glossaries of terms has been underscored recently [68]. While the use of international frameworks enables international comparison, where the frameworks for data analysis are specific to a specific country or region, this is not the case. Lack of an analytical framework, or of a justification of the choice of units of analysis, limits the relevance of findings.

A systems thinking approach in health services research has been widely advocated [69]. Methods such as those of the ASME or MHCP which included only health or one other sector, may fail to identify information from other parts of the system key to an accurate analysis. Whole system analyses such as the Atlases of health described in two papers, taking into account the wider ecosystem in which healthcare operates, will be increasingly relevant to the emerging discipline of health ecosystems research.

Socio-demographic indicators varied, and were frequently not linked to evidence supporting their use in relation to need for mental health services. The level of availability of socio-demographic data was consistent with the level of availability of service delivery data presented in each article: i.e. national level socio-demographic characteristics where service delivery at a national level was reported. However, difficulty in obtaining relevant socio-demographic data was described in several papers, particularly those reporting studies carried out in LIC/ LMICs, or at lower than national level. This, and the identification of only one standardised instrument to collect such data suggests the need for a more systematic approach to the provision of socio-demographic context for assessment of service availability to be made within the context of local need.

Data aggregated at national level is not necessarily representative of the pattern of care across smaller areas, and may result in ecological fallacy. Additionally, administrative databases may be unreliable data sources, particularly in less resourced countries [70]. A bottom-up approach, gathering data at the local or regional level, can provide a more accurate and detailed picture of healthcare availability in small areas. However, local data can also be unreliable, difficult to obtain, and may not be collected routinely at local level. One paper identified in the search [71] related to the Emerging Mental Health Systems in LMICs' (EMERALD) project. While it did not include data on availability, and was thus excluded from the study, it focused on capacity building for mental health research in these countries, and is thus critical in this area, particularly in the context of the relatively low number of studies identified from LIC/ LMIC. Of the identified instruments using local sources of evidence, only two (ESMS/DESDE and MHCP) were standardised and psychometrically validated, and only one of these (ESMS/DESDE) gathered data on availability at this level, enabling its use in comparative studies.

Implications for policy

Policy makers require evidence from the local context as well as global evidence at all stages of the policy making process to inform policy options [5]. Data on service availability and capacity using a whole system approach can help identify gaps or duplications in care delivery, enable comparison of best practice with other areas, and assist in the prediction and monitoring of the effect of interventions. However, the research to policy gap is well documented. Guidance for health systems which is “transparent, systematic and adapted to the local contexts...(and) ...use (s) validated approaches.., in user-friendly formats” can bridge this gap [72]. Studies which use validated instruments and a bottom up approach, collaborating with local services and policy makers to identify local need, collect data and

validate information gathered, are most likely to satisfy these criteria [34]. Interpretive aids such as visual tools and glossaries, which increase accessibility to complex data could also improve dissemination and policy uptake.

Limitations of the study

1/ LSC participated in the development of one of the tools which introduced potential bias. However, this was limited by the selection process being undertaken by MF and CGE, who were not involved with the development of the system, and at this time had no experience in the use of it.

2/ Grey literature was not included in this review. However, as stated, a very high number of results were returned by the search due to factors such as imprecise terminology in the area. Had grey literature also been included, the number of results could have threatened the feasibility of the review. In some cases, copyright restrictions or lack of availability of the core instrument meant we could not access the core instrument.

Recommendation for future studies

The development of validated guidelines for the analysis of context of local service delivery is needed to increase the reliability of context studies and their relevance to policymakers through a more standardised approach. These should use a whole systems approach and provide standards for the description and grouping of target populations for international comparisons. They should also include interpretive aids such as glossaries to standardise terminology and key conceptual terms, as well as visual representations of complex data.

Further research is needed in LIC/LMIC to redress the current balance favouring Upper Income Countries in research. Developing capacity in LIC/LMIC through projects such as the EMERALD project, as well as standardised frameworks to enable comparison, is needed to enable this.

Future studies should ensure their core instrument is accessible for replicability. They should also systematically assess socio-economic context and formally define target population. There is a need for more analytical studies as opposed to purely descriptive papers.

Conclusion

This scoping review has identified that context studies in mental health services is an area of limited research. Instruments with which to assess service availability are scarce, with some of those identified not easily accessible or unable to be generalised. Fifteen papers, or around one third of included studies did not use any kind of formal framework, and five of those made no description of method. Most studies presented a limited view of the system under study, even when using data collected by instruments designed to take a wider systems view. Four of the six instruments identified (ESMS/DESDE, WHO-AIMS, and the instruments of the PRIME and PROMO studies) took a whole system approach, but two of these (WHO-AIMS, PRIME) were from a top down perspective, and thus constrained by the limitations to local relevance of aggregated data. One instrument (ESMS/DESDE) is readily accessible and validated, and takes both a local approach and a whole systems perspective, and was used in 12 papers. In general, the challenges of commensurability, of terminological variability, and of data availability and validity which face this area of research are poorly addressed, with few standardised frameworks available and only three of these (ESMS/DESDE, WHO-AIMS, MHCP) having undergone psychometric testing. This presents a barrier to valid system comparison, particularly across regions or countries, where regional and historical variations in service provision increase terminological variability. On the other hand, we have identified the relevance to this area of research of use of a standardised instrument, formal geographic boundaries, a glossary of terms, formal target populations and a whole systems approach.

Abbreviations

AOD: Alcohol and Other Drugs; ASME: Adult Service Mapping Exercise; CALD: Culturally and Linguistically Diverse; CINAHL: Cumulative Index to Nursing and Allied Health Literature; DESDE: Description and Evaluation of Services and Directories for Long Term Care; EMERALD: Emerging Mental Health Systems in Low and Middle Income Countries; ESDS: European Social Demographic Schedule; ESMS: European Service Mapping Schedule;

ID: Intellectual Disability; LMICs: Low and Middle Income Countries; MHCP: Mental Health Country Profile; mhGAP: WHO Mental Health Gap Action Program; mTT: Modified Tansella and Thornicroft matrix;

PRIME: Programme for Improving Mental Healthcare; PROMO: Best Practice In Promoting Mental Health In Socially Marginalized People In Europe; TT- Matrix: Tansella and Thornicroft's matrix model of mental healthcare;

WHO: World Health Organisation; WHO-AIMS: World Health Organisation Assessment Instrument for Mental Health Systems; WoS: Web of Science

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Authors' contributions

MF and CG performed the literature search, selection and charting of the results. LSC contributed to identification of characteristics of reviewed papers and development of data extraction tool. CR reviewed the paper and made substantial contributions to the final manuscript. All authors have reviewed the final manuscript. All authors read and approved the final manuscript.

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Foreword to Chapter 4

My scoping review in Chapter 3 identified only one psychometrically validated instrument, the Description and Evaluation of Services and DirectoriEs in Long Term Care (DESDE-LTC) as providing a whole systems perspective of the mental health system at the local level: “bottom-up” from the perspective of sources of evidence within the system itself; accessible for use without payment or registration, and using a standardised approach to address methodological biases inherent in mental health systems research. DESDE-LTC is a core component of Integrated Atlases of Mental Healthcare. In chapter 4, in this next review: “The standardised description of health and social care: A systematic review of the use of ESMS/DESDE-LTC” the ESMS/DESDE-LTC instrument was identified as the method of analysis in a number of papers internationally, as well as in a descriptive study in Western Sydney, Australia. I contributed to, but was not lead author of, this paper.

Standardised description of health and social care: A systematic review of use of the ESMS/DESDE (European Service Mapping Schedule/ Description and Evaluation of Services and DirectoriEs)

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Introduction

There is growing interest in moving from evidence-based planning to evidence-informed policy, which takes into account information on the local context and other factors influencing decision-making [1–3]. Context refers to the totality of circumstances that comprise the milieu of a given phenomenon [4] and therefore encompasses information on the physical environment, the social and demographic determinants of health and the range of services available in the local system and their costs [5,6]. The eventual aim is to allow such information to be incorporated into real world decision support systems to guide planning and resource allocation [7] and facilitate interpretation of research results.

Context analysis, including service provision, is part of “healthcare ecosystem research” [8,9], an emerging discipline that analyses the complexity of care systems and interventions in a defined environment, using methods developed in environmental sciences for ecosystem services research [10].

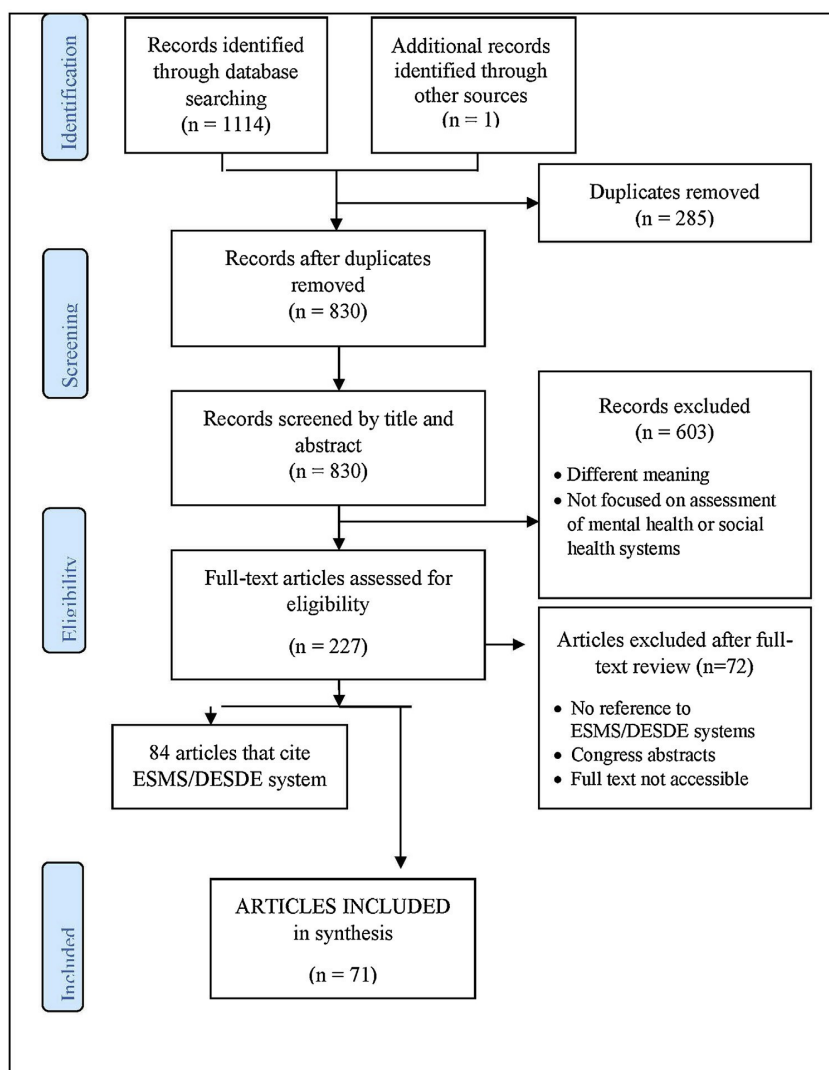


Figure 1 PRISMA flowchart of stu

There is wide variability in the terminology referring to services and programs delivered even in the same geographical area, and listings of services by their names alone should be analysed with caution, as the service names do not always reflect activity. Meaningful international comparisons need a common consensus-based terminology to improve health, strengthen health systems and provide essential healthcare for all [11,12]. A common coding system, using a standardised method of assessment, is important to overcome these challenges and enable better comparisons of data to inform policy and practice [6].

Comparative description of national and international health systems is important for identification of gaps in care, particularly in mental health. The World Health Organization has raised international awareness of the gap between healthcare needs and available resources following the launch of the mental health Gap Action Program in 2008 [13].

Recent guidelines on implementation research (StaRI -Standards for Reporting Implementation Studies) [14] call for transparent and accurate descriptions of the environment in which implementation studies took place [15]. The guidelines specify a detailed description of both the general context in which the intervention is implemented, and the service provision structure at personnel, health resources and sites level in which the implementation takes place.

The European Service Mapping Schedule (ESMS) was developed to facilitate the classification of mental health services and the standardised description of the care system for adults experiencing mental health problems by the EPCAT group (European Psychiatric Care Assessment Team) between 1994 and 1997, and it was published in 2000 [16,17]. This system evaluation toolkit also included the International Classification of Mental Healthcare (ICMHC) [18], which evaluated the different modalities of care available in a service, and the European Socio-demographic Schedule (ESDS) [19] for the standardised description of the sociodemographic characteristics of local catchment areas.

The ESMS was expanded and adapted for the assessment of other target groups such as children and adolescents, people with drug and alcohol problems or disabilities [20] and ageing populations [21]. This expanded version, called “Description and Evaluation of Services and DirectoriEs” (DESDE), was adapted for the evaluation of chronic or long-term care (DESDE-LTC) [22] and for the evaluation of social services (DESDE-AND) including an automated coding system [23].

Hence, the original ESMS instrument for adult mental healthcare, comprising 36 codes, has been expanded to an international classification of the care sector with 106 codes and over six instruments (see [Fig. 1](#)). This classification is here referred to as the “ESMS/DESDE” system for healthcare evaluation. Since the original work of the EPCAT group (1994–2000) several European Union funded research reference groups have continued the seminal work of EPCAT developing and implementing this system (Mental Health Economics Network-- MHEEN, Description and Evaluation of Services and DirectoriEs for Long Term Care--DESDE-LTC research Group and REsearch on FINancing systems' Effect on the quality of MENTAl healthcare--REFINEMENT).

The classification and its related instruments describe care provision in catchment areas, comparing the structure, distribution and typology of services across health districts. The ESMS and the instruments derived from it, use a tree diagram to describe health services over four main domains:

A Definition of catchments, target populations and units of analysis for services. Services are analysed as “Care Teams” or “Basic Stable Inputs of Care”. A BSIC is a combined and coordinated set of inputs (including structure, staff and organisation) that delivers care at a micro-organisation level, and has temporal and organisational stability. In summary, a BSIC is characterised by a stable group of professionals who on a routine basis provide coordinated care to the same group of patients or consumers. Catchments, target populations and services can be aggregated to provide higher-level analysis of health systems.

B Availability of care: activities performed by the Care Teams. Each team or program is coded according to the Main Types of Care (MTCs) it provides. The MTC codes describe the principal activities of the service according to the ESMS/DESDE hierarchical tree taxonomy. There are six main MTC mapping branches (Residential, Day, and Outpatient Care, Self-help support, Information and assessment, and Accessibility), as well as optional qualifiers that can be used to develop a more granular description of services as required.

C Resource use: The ESMS/DESDE system provides instructions for collection of standardised counts of service use. As with other sections, various levels of granularity can be obtained as required by the specific evaluation project.

D Service characteristics checklist: A more detailed, standardised analysis of local care organisations and functional teams, including information about governance, funding sources, characteristics of the services and staffing.

This system is intended to be widely used and is open access to favour its use by not-for-profit organisations. Its tree structure has facilitated the incorporation of new codes as new target groups or sectors were coded.

Even though the ESMS/DESDE has been extensively applied in healthcare assessment in many countries, there has not been a comprehensive review on its “diffusion” in a range of different sectors and target groups across the world. Diffusion refers to the spreading of the innovation tool more widely in a range of different contexts [24].

This study aims to identify, describe and analyse the use and the international diffusion of the ESMS/DESDE system for health service evaluation and systems research and its impact in health policy and decision-making.

Method

We conducted a systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [25]. The protocol of the systematic review was published in PROSPERO, a database of prospectively registered systematic reviews in health and social care (CRD42018104864).

Search strategy

The search was carried out until December 31, 2018. There was no limitation of the search strategy based on language or year of publication. We searched for scientific publications in the following electronic databases: Web of Science, Scopus, Proquest, (Agricultural & environmental science database, Health and medical collection, Nursing & allied health database, Psycarticles, Psychology database, PsycInfo), Pubmed, Google Scholar and OVID.

We used a similar search strategy for every database search. The key words included different nomenclature applied to the ESMS/ DESDE system and the instruments derived from it from its initial development to the present. For example in the case of Pubmed database, the search strategy was as follows: ("EUROPEAN SERVICE* MAPPING SCHEDULE"[All Fields] OR eDESDE[All Fields]) OR DESDE-LTC[All Fields]) OR REMAST[All Fields].

Eligibility criteria

The adapted PICO method included: Participant/Population (all type of services for people with mental disorders, disability or long-term care), Intervention (assessment of services using ESMS/ DESDE), and Outcome (application/diffusion of the ESMS/DESDE and policy impact).

Inclusion criteria were: Journal articles reporting studies about services or health systems evaluation that have used ESMS/DESDE, studies about services aimed at people with mental health, disability or long term care needs and introduction of the instruments of ESMS/DESDE system. No restrictions were set about country of use, year of publication or language.

Studies that did not incorporate a care service or systems evaluation or that only provide a reference to other ESMS/DESDE studies were excluded from the final selection list. The studies that only refer to ESMS/DESDE as part of a conceptual framework in evaluation of services have been counted separately but not included in the systematic review. Grey literature has not been included in this review.

Study selection

Two authors (CR and MR) carried out an independent screening and eligibility analysis. In the first phase, CR and MR checked the paper's title and abstract to assess whether it potentially met criteria for inclusion. In the eligibility phase, they reviewed full text articles. Where there was disagreement between the two reviewers, a third researcher (JAS) was

consulted to reach consensus on eligibility. A direct content analysis was made of papers published in English, Spanish, French, Portuguese and Italian. External support was required for context analysis of papers published in German, Polish, Farsi and Mandarin.

Titles and abstracts of all citations were obtained for phase 1 of the study selection. Citation indices and reference lists of retrieved articles were checked for additional studies not identified in the original database search. The full text of the screened records was searched.

[Fig. 1](#) provides a visual representation of the current review's methodological process, according to the PRISMA framework [25]. When necessary, the reviewers contacted the leading authors to get further clarification and information on the use of the ESMS/ DESDE in other countries.

Data abstraction

The data abstraction form included: 1) bibliographic information (first author, year of publication); 2) uses of ESMS/DESDE system; 3) specific tools derived from the ESMS; 4) psychometric properties of the tools; 5) language of the version used; 6) country of application; 7) target population; 8) number of evaluated areas. Whenever possible, the catchment areas described in the study were classified in accordance with the territorialisation levels described in the DESDE-LTC instrument (H1-national level, H2-regional level, H3-hospital catchment area and H4-mental health community center catchment areas) [26]. Twenty-two papers used other territorial jurisdictions such as municipalities, urban districts or research sites and the geographical level was not specified; four studies did not describe areas. In addition, we included a description of the following characteristics: 9) number of services evaluated in functional teams or BSICS; 10) research group; (11) impact on policy for plan and health decision use; (12) funding source.

Study characteristics

The study characteristics are shown in [Table 2](#). This description of the selected papers includes: the specific ESMS/DESDE tool used in the study, the specific tool and its metric properties (feasibility, reliability, validity), framework of service research included in the study, description of the reference areas and its social and demographic characteristics (context analysis) and demographic context (standard description or basic data), the evaluation of the service provision in the system, the agents using and/or providing care in the system (patient, family, professional), resource utilisation, the main aim of the study (e.g. scale development, costs, description of the service delivery, supply and demand, health interventions or decision support system model), the use of visualisation tools (geographic information system, spatial analysis and atlas), type of analysis (data analytic or decision support system), and use for decision making.

This study has followed the PRISMA quality criteria for systematic reviews [\[25\]](#). The quality was assessed using a checklist based on the EPCAT model for services evaluation [\[27\]](#) and the domains suggested by Votruba and colleagues for health system and policy research [\[28\]](#). The quality checklist included the following ten domains listed above. Studies were rated as high quality when they fulfilled at least six criteria in this checklist.

Results

Literature search

The search performed in our review retrieved 1.114 references. One additional paper was included after checking the list with the experts of the group. [Fig. 1](#) shows the flowchart of

the selection process. After removing duplicates, 830 abstracts were reviewed by two independent researchers. A total of 603 records were excluded because they were not focused on assessment of health systems and services. The full text of the remaining 227 articles was text assessed for eligibility. Of these, 72 papers were excluded, of which 61 did not include a reference to the ESMS/DESDE system, six were conference abstracts and five were not available for the full text. Another 84 texts referred to the ESMS/DESDE system in the introduction or discussion but did not actually use the ESMS/ DESDE classification or its related instruments.⁷

General characteristics

Since 1997, 155 papers have mentioned the ESMS/DESDE system. Out of them, 71 articles have actually used the ESMS/ DESDE for service research. It should be noted that three papers authored by members of the core EPCAT team were published before the ESMS was officially released in 2000 [29–31].

The data abstraction form is included in Annex 1 with information about key features of the papers reviewed. The main characteristics of the reviewed articles are shown in [Table 2](#).

Eleven tools for health services and system research have derived from the original ESMS [16] ([Fig. 2](#)). Six are versions of the ESMS and DESDE instruments aimed at different target groups or levels of research [32,33,20–23]. In addition three instruments have been derived from the ESMS by independent groups for a) cost analysis in schizophrenia (Service Utilization Sheet –SUS-, [34], b) analysis of community mental health services in South Africa (framework for CMHS, [35], and c) for evaluating transition services from child to adult mental healthcare in Finland (European CAMHS Mapping-ECM-Q Questionnaire) [36]. The REFINEMENT Decision Support Toolkit includes two tools derived from DESDE: the Mental Health Service Inventory–MHSI- [6] that summarises information from DESDE-LTC; and the REFINEMENT Glossary of terms for mental health system research [37] that extended the vocabulary developed in the ESMS/DESDE system [26]. Other instruments such as World Health Organization Assessment Instrument for Mental Health Systems (WHO-AIMS) [38] have included terms from ESMS. We have only included instruments directly derived from ESMS in [Fig. 2](#).

The ESMS/DESDE system has been translated from English into eight languages: Italian, Finnish, German, Norwegian, Polish, Russian, Slovenian and Spanish. Contact with the

authors allowed the identification of two unpublished versions of ESMS in France and Brazil, that have not been included in this review. Six papers provide a description of versions of the ESMS/DESDE system in different countries: [[16,6,37,29,39,40](#)].

From the selected papers, 21.1% fulfilled at least six criteria (high quality) of the 10 quality criteria included in this systematic review. Fifteen papers fulfilled three or fewer criteria and were considered low quality. For further details, see [Table 2](#).

More than 64% of the papers provided a detailed description of the specific instrument used. The inclusion of a context analysis (social and demographics and other characteristics of the area) in the study is an important quality indicator of 29 articles analysed, 18 of them using standard methodology.

Psychometric properties of ESMS/DESDE system

The psychometric properties of the different ESMS/DESDE tools have been described in 11 papers ([Table 2](#)). The feasibility of ESMS/ DESDE was considered adequate in all of them, although the coding system requires intensive training. The instruments ESMS, DESDE and DESDE-LTC have shown optimal levels of consistency, descriptive validity and inter-rater reliability in studies conducted by the core group [[17,41,20](#)], [[22](#)]. The ontological properties, content analysis and hierarchical structure of the DESDE-LTC classification has also been published [[22,42](#)].

In addition, four psychometric studies have been carried out by other independent research groups [[43–46](#)]. Becker and colleagues indicated a low usability of ESMS, but this evaluation did not follow the training recommended by the EPCAT core group. Two articles using ESMS/DESDE data for decision support system (DSS) include metric properties of the derived decision support tools such as agreement, predictive validity, feasibility and technology readiness level (TRL) [[47,9](#)].

Pilot and demonstration studies have been carried out in Spain [[41,20](#)], Italy [[17](#)] and Australia [[48](#)].

Use of ESMS/DESDE in service research

International diffusion of ESMS/DESDE system

ESMS/DESDE system has been used in 34 countries comprising four WHO world regions. The distribution of the countries is shown in [Table 1](#). There are five European countries with 10 or more publications related to the application of ESMS/DESDE system.

Out of the 71 papers selected for this review, 40 have used a version of ESMS. Two have used the ESMS-b, four the ESMS-R (actually the expanded version of DESDE-LTC). Sixteen papers have used a version of DESDE ([Table 2](#)). The remaining four papers have used another tool derived from the ESMS/DESDE system ([Fig. 2](#)). The utilisation of the ESMS/DESDE system fell into six domains categories: Methodology aspects of the system (11 papers), description of Health Interventions and Services (13 papers), Context analysis (29 papers), articles describing the relationship between Supply and Demand (8 papers), use in Health Economics (6 papers) and use in Decision Support Systems (4 papers) (Annex 1).

Use by different research reference networks (Annex 1)

Eleven national and international research reference networks have used ESMS/DESDE system in their studies. The ESMS/DESDE system core group (EPCAT, PSICOST, DESDE-LTC and REFINEMENT) has been involved in 31 papers related to the development and use of ESMS/DESDE system. Other research networks that have applied the ESMS/DESDE in their studies include (full names available in annex 1): the EDEN study, the EUNOMIA project, EPSILON Study, LIDO Study, EuroSC project, and MILESTONE project, in Europe. In Latin America, the ESMS/DESDE has been used by the Maristan Network.

Use in different care sectors and target groups

Of the articles that applied ESMS/DESDE system, 48.4% carried out a cross-sectoral evaluation, in some cases focused on specific target groups. The health sector was the focus of 18.7% of the papers; 26.7% related to specific healthcare: one paper described primary care services for patients with depression [\[51\]](#), three papers evaluated mental health

and substance abuse services [33,88,90], one paper evaluated transition services from child and adolescent to adult mental healthcare [36] and others assessed other specific mental health services. One article focused on the evaluation of vocational services for people with schizophrenia [70] and nine papers described services used for specific target population like people with schizophrenia [30,52,53,57,61,62,70,34] and intellectual disabilities [78].

Use in healthcare ecosystem research (context analysis)

Twenty-six of the selected papers highlighted the relevance of a standard model and method for service research for evaluating health systems. Specific references to ecosystem research were mentioned in two papers [9,91].

In spite of its wide use for describing catchment areas, only 29 studies (40.8%) provided a full description of the areas following an ecological approach. Most of these studies (18) used the European Socio-Demographic Schedule [19], another instrument of the EPCAT Toolkit, or derived instruments from ESDS including more contextual indicators. The remaining documents did not describe socio-demographic characteristics of evaluated areas or presented a poor description (Table 1). These 29 studies provide a standard description of 585 catchment areas. These geographical areas include a wide array of urban and rural districts and different jurisdictions at meso and macro levels that have been described using the health area classification provided in the DESDE-LTC manual (H codes) [26]. One study described a whole country (Level H1) [36]. Fourteen studies have provided descriptions at regional/ state level or in health districts (H2). The H3 level (hospital catchment area) has been used in 10 studies, another 16 studies describe catchment areas of community mental health centers (mesolevel-H4), and three studies provide descriptions of a combination of both H3 and H4 areas. These ecological studies should be differentiated from other studies describing purpose areas (e.g. research sites in 18 studies). Finally, three studies describe jurisdiction boundaries that do not facilitate international comparability such as municipalities or urban districts (Table 1). These studies have allowed standard description of over 6.279 different services (Basic Stable Inputs of Care--BSICS) following the ESMS/DESDE system methodology. In some cases, the paper did not specify the number of BSICs evaluated in the study (see Annex1).

Thirty-two papers provided comparative analysis of the context of care in nine different countries at national level: seventeen studies in Spain, five in Finland, four in Germany, three in Poland, two in Australia, Chile, Italy and Slovenia; and one in South Africa and Canada.

We also found 24 papers comparing mental health areas or health systems at international level. Six studies compared regions or districts across two countries: Russia and Norway [64,88], and Spain versus a) Bulgaria [42], b) Italy [59], c) Chile [69] and d) Finland [91]. Other international papers described service provision across three to nine countries including the EDEN study, LIDO Study, EPSILON Study, EuroSC project, eDESDE-LTC project and REFINEMENT project. The EUNOMIA study included comparisons across 12 countries in Europe: Germany, Bulgaria, Czech Republic, Greece, Israel, Italy, Lithuania, Poland, Slovak Republic, Spain, Sweden and UK [56,58,73,80].

A significant percentage (66.2%) of the articles described the provision of services of a specific area. Twenty-eight papers used ESMS/DESDE either to provide context to local outcomes or to analyse the relationship between the service delivery system and outcomes such as family burden (e.g. [61]), needs (e.g [84].) and costs (e.g [31].).

Eleven papers used visualisation tools for representing data including basic geographical information (4), spatial analysis (1) or advanced geographical information system incorporated to atlases of care (4) (even though the maps did not appear in the paper) [49,81,82,86]. One paper used ESMS/DESDE to inform machine learning using Self-Organising Maps (SOMNET) for health planning [9].

Use in longitudinal studies of the evolution of care systems

ESMS/DESDE has been used to monitor the evolution of the mental healthcare provision in several countries and regions. The mental health improvement and its relationship to the regional plan was analysed in Catalonia (Spain) in 2002, 2006 and 2010 [81]. Two health districts in Central Chile were evaluated in 2004/05 [69], 2008/09 [95] and 2012 [94]. Three hospital districts in Finland were assessed in 2004 [71], 2011/12 [33] and 2012/14 [84]. The area of Verona (Italy) has been analysed in 2002 and 2010 [89]; and the areas in Northwest Russia and Northern Norway in 2004/05 and 2011/12 [64,88].

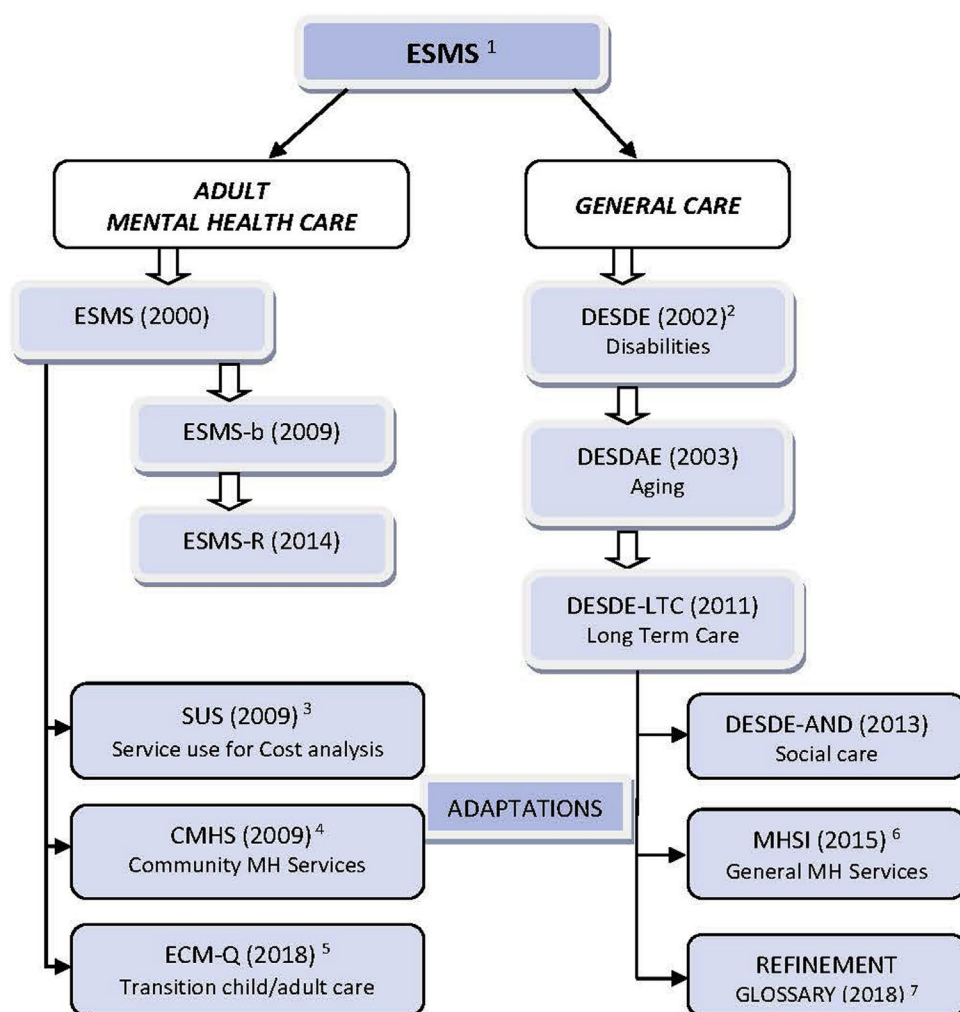


Figure 2 Tools for service and health systems research derived from the European Service Mapping Schedule and related to the ESMS system for the international classification of care provision.

1ESMS (European Service Mapping Schedule) [16], the brief version (ESMS-b) [32] and the extended Revised version (ESMS-R) [33] for the assessment of adult mental health care.

2DESDE (Description and Evaluation of Services and DirectoriEs). Apart from mental health it has been used for the classification of services for Disabilities (DESDE) [20], ageing (DESDAE) [21], Long Term care (DESDE-LTC)[22], automated evaluation of social services in Andalusia (Spain) (DESDE-AND) [23]. It has also been used for mapping Drug and Alcohol Services, Child and Adolescent Mental Health, Chronic care and care for homeless.

3SUS (Service Utilization Sheet) [34].

4CMHS (Community Mental Health Services provision) [35].

5ECM-Q (European Child and Adolescent Mental Health Mapping Questionnaire) [36].

6MHSI (Mental Health Service Inventory) [6].

7Glossary of terms REFINEMENT EU project [37].

Use in health economics and health financing analysis

Seven papers have used the ESMS/DESDE system for health economics including the analysis of the context of health expenditure [51], the development of units of cost analysis and service utilisation [68,34], cost of illness [31,53] and efficiency analysis [83,87].

Impact of the use of ESMS/DESDE system on decision making

A substantial number of the selected papers have been funded by public agencies or international bodies such as the European Union. Twenty-two articles (31%) received funding from national, regional or local governmental agencies. Two papers mentioned the use of the ESMS/DESDE terminology and coding structure in the development of other major international classification and service assessment tools such as the International System of Health Accounts (SHA 2.0) [96,42]; and the WHO Assessment Instrument for Mental Health Systems (WHO-AIMS) [38,94].

The ESMS/DESDE system has been adopted for health and social policy planning by public agencies in several countries. ESMS and ESMS-R have been extensively used for health planning in Finland [84]. The DESDE coding has been adopted for the classification system for disability services in three Autonomous Communities in Spain (Navarra, Castilla la Mancha and Andalucia) [20]. Data from the Dernovšek & Šprah study was used to inform the National Mental Health Plan in Slovenia [65].

Four papers focused on models to improve decision support in healthcare systems using ESMS/DESDE system [72,83,87,9].

Table 1
International Diffusion of the ESMS/DESDE system.

WHO WORLD REGION	COUNTRY	NUMBER OF PUBLICATIONS
AFRICA (1)	SOUTH AFRICA	1
AMERICAS (5)	BRAZIL	1
	CANADA	1
	CHILE	2
	USA	1
EUROPE (80)	ALBANIA	1
	AUSTRIA	3
	BELGIUM	1
	BULGARIA	6
	CROATIA	2
	CZECH REPUBLIC	6
	DENMARK	4
	FINLAND	8
	FRANCE	6
	GERMANY	17
	GREECE	4
	IRELAND	1
	ISRAEL	4
	ITALY	16
	LITHUANIA	4
	MACEDONIA	1
	NETHERLANDS	6
	NORWAY	5
	POLAND	10
	ROMANIA	4
	RUSSIA	2
	SERBIA	1
	SLOVAK REPUBLIC	5
SLOVENIA	3	
SPAIN	35	
SWEDEN	6	
SWITZERLAND	1	
UK	18	
WESTERN PACIFIC (2)	AUSTRALIA	2

Discussion

To fill the existing gap between the burden of diseases and the resources available to treat them, it is imperative to obtain basic information about care provision at local, regional and national levels [97]. The WPA-Lancet Psychiatry Commission on the Future of Psychiatry [98] has also underscored the need to reform the “traditional structure of services”. However, the evaluation of a system's reform requires a detailed knowledge of the existing structure of services and how these services change over time. The ESMS/DESDE set of instruments provides key information for monitoring health systems. It incorporates a common terminology, an international taxonomy and coding of health services, a standard procedure for data collection and meaningful comparisons across and within countries.

ESMS/DESDE addresses three key problems in health service evaluation:

commensurability, terminological variability and the lack of contextualisation. First, the incommensurability bias is due to the existence of different units of analysis in healthcare. “Service” and “interventions” are vague terms that could refer to very dissimilar units of

analysis impeding comparisons like-with-like. The ESMS/DESDE has introduced an operational unit called “Basic Stable Inputs of Care” (BSIC) that allows comparison across jurisdictions [6].

Second, the terminological variability is a major source of ambiguity in healthcare research. The name of the service does not always reflect the activity it performs and this causes major problems when services classified by their names such as “nursing homes” or “day hospitals” are aggregated for care gap analysis, financing or planning. To overcome this problem ESMS/DESDE has developed a fully operational taxonomy for coding BSICS based on their Main Type of Care (MTCs). Its metric properties have been extensively analysed by several independent groups and the usability of the system has been demonstrated around the world, including a number of key international studies on mental health service research. Papers have been appearing more frequently recently, with 29.5% published in the last five years due to growing interest in health agencies supporting this type of study.

Third, services should be understood in the context of the local system that they belong. Context analysis is now considered a key component of healthcare ecosystem research [9,99]. This approach was advanced 20 years ago by the EPCAT group when the assessment of services provided by ESMS was accompanied by the standard analysis of the social and demographic context using ESDS [19], and by the description of the main modalities of care using ICMHC [18]. Whilst WHO-AIMS [38] and the Mental Health Country Profile (MHCP) [100] have been used for describing national mental health systems worldwide, ESMS/DESDE is the only system that provides local, bottom-up information that can be used across different sectors (health, social, education, employment, housing and justice) [99] and for coding services for different target groups such as mental disorders [89,51] intellectual disabilities [78], substance abuse [33,88,90], general disabilities [20], aging and long term care [21,22]. The usability of ESMS/ DESDE for the analysis of local change and improvement has been tested in Catalonia (Spain) where the evolution of the mental healthcare system was analysed before and after the implementation of the 2006 regional mental health plan (2002–2010) [81]. A 15 years on analysis is currently under way in this region.

This coding system has provided the basic information for producing local atlases of mental healthcare in America, Australia and Europe. These atlases are one of the visual tools that are being used to analyse mental health systems and support better decision making [100]. This has contributed to the development of regional and national action plans in mental health [81], intellectual disability [78] and social care [23]. In addition, the use of the ESMS/ DESDE system provides relevant information for the assessment of equity to universally

accessible services, an essential component of the Sustainable Development Goals and the new global health agenda on Universal Healthcare [101]. Furthermore, the realisation of integrated people-centred health services depends on health system inputs, which require reliable and standardised information on service provision [102].

The use of ESMS/DESDE system in health economics and health financing identified in this review is particularly relevant for health policy and its incorporation into real world decision support systems routinely used by public agencies to inform their planning strategies [82,103].

Limitations

However, the use of this system has several limitations. ESMS/ DESDE requires extensive training and the interpretation of the results by decision makers should involve additional support from experts. To overcome these difficulties the core group developed open source online training material, made the system fully accessible to not-for-profit organisations and produced a brief and user-friendly version (ESMS b). However, these initial problems persist in the current versions as the problem may not rely on the difficulty of the instrument but on the inherent complexity of care services. In addition, its easy access has led to certain nomenclature confusion in the use of the different versions of the tools, and to the development of instruments not supervised by the original authors. The participation of two members of the original core group in this study (SJ and LSC) may have skewed the review towards positive results. However, these two authors have not participated in the selection process nor the individual analysis of the documents and negative results have been reported. This review does not include grey literature or technical reports by public agencies even though these sources of information are key for its use in policy and practice. A complementary review of the grey literature of the ESMS/DESDE system is currently under way.

Table 2

Study characteristics of the papers included in the systematic review.

REFERENCE	TOOL	TOOL DESCRIPTION	FRAME WORK	REFERENCE AREA (area DESDE code H')	DEMOGRAPHIC CONTEXT	SERVICEPROVISION EVALUATION	DESCRIPTION OF SYSTEM AGENTS	RESOURCES USE	MAIN AIM OF THE STUDY	USE OF VISUALIZATION TOOLS	TYPE OF ANALYSIS	USE FOR DECISION MAKING
Salvador-Carulla et al, 1997 [129]	ESMS	Yes	Yes						Scale development			
Haro et al, 1998 [131]	ESMS			2 MH areas (H4) +1 Hospital area (H3)	Standard description	Cross-sectoral	Patient	Yes	Cost of illness		Data Analytic	
Salvador-Camila et al, 1999 [130]	ESMS			1 MH area (H4) +1 Hospital area (H3)	Standard description	Cross-sectoral		Yes	Cost of illness		Data Analytic	
Johnson et al, 2000 [16]	ESMS	Yes	Yes	5 MH areas (H4)					Scale development			
Munizza et al, 2000 [117]	ESMS	Yes (including metrics properties)		3 MH areas (H4)	Standard description	Cross-sectoral		Yes	Description of service delivery	Geographic Information System		
Salvador-Camila et al, 2000 [41]	ESMS	Yes (including metrics properties)	Yes	4 MH areas (H4)+1 Hospital area (H3)	Standard description	Cross-sectoral		Yes	Scale development		Data Analytic	
Beperet et al, 2000 [49]	ESMS	Yes	Yes	1 MH area (H4)	Standard description	Cross-sectoral		Yes	Description of service delivery			
Mccrone et al, 2000 [ISO]	ESMS			5 Sites		Focus on the Health sector•			Supply and demand: assessment of needs		Data Analytic	
Bocker et al, 2001 [44 I]	ESMS	Yes (including metrics properties)		1 Region (H2)	Basic data	Cross-sectoral	Professional	Yes	Description of service delivery	Geographic Information System		
Chisholm et al, 2001 [151]	ESMS		Yes•	6 Sites	Standard description	Focus on specific health services (primary care)*	Patient	Yes	Description of service delivery			
Mccrone et al, 2001 [52]	ESMS			5 Sites		Focus on the Health sector•	Patient		Supply and demand: assessment of needs		Data Analytic	
Adamowski & Trypka, 2002 [140]	ESMS	Yes	Yes						Scale development			
Bakova et al, 2002 [139]	ESMS	Yes							Scale development			
Becker et al, 2002 [43]	ESMS	Yes (including metrics properties)	Yes	5 Sites	Basic data	Cross-sectoral		Yes	Description of service delivery			
Knapp et al, 2002 [53]	ESMS			5 Sites	Basic data	Focus on the Health sector •	Patient	Yes	Costs		Data Analytic	
Trypka et al, 2002 [54 I]	ESMS		Yes						Description of service delivery			
Brieger et al, 2003 [155]	ESMS	Yes		1 Region (H2)		Focus on the Health sector						

Mastrogianni et al, 2004 [56]	ESMS			12 Sites	Standard description	Focus on specific health services (psychiatric inpatient units)			Description of service delivery			
Bebbington et al, 2005 [57]	ESMS	Yes		9 MH areas		Cross-sectoral	Patient		Health interventions: Coercive psychiatric treatment			
Kallert et al, 2005 [58]	ESMS			13 Sites	Standard description	Focus on specific health services (psychiatric hospitals)			Health interventions: methods of care			
Salvador-Carolla et al, 2005 [59]	ESMS	Yes (including metrics properties)	Yes	13 MH areas (H4)	Standard description	Cross-sectoral		Yes	Description of service delivery			Data Analytic
Tibaldi et al, 2005 [60]	ESMS	Yes	Yes	18 MH areas (H4)	Standard description	Focus on the Health sector		Yes	Description of service delivery	Geographic Information System		Data Analytic
Roick et al, 2006 [61]	ESMS	Yes		Municipality + 1 District		Focus on the Health sector	Patient, Family	Yes	Supply and demand: family burden			Data Analytic
Salvador-Carulla et al, 2006 [20]	DESDE	Yes (including metrics properties)	Yes	20 MH areas (H4)		Cross-sectoral			Scale development			Data Analytic Yes
Marwaha et al, 2007 [62]	ESMS			8 Sites		Focus on specific target: schizophrenia	Patient		Health interventions: employment			Data Analytic
Moreno, 2007 [63]	ESMS			1 Region (H2)		Focus on the Health sector			Units of costs			Data Analytic
Rezvyy et al, 2007 [64]	ESMS	Yes	Yes	2 Counties (H2)	Basic data	Focus on the Health sector		Yes	Description of service delivery			Data Analytic
Salvador-carulla et al, 2007 [47]	ESMS	Yes (including metrics properties)		12 MH areas (H4)	Standard description	Cross-sectoral		Yes	Decision Support System Model			Analytic Decision Support System
Dernovsek & Sprah, 2008 [45]	ESMS	Yes (including metrics properties)	Yes	12 Statistical regions (H2)		Cross-sectoral	Professional	Yes	Description of service delivery			Yes
Dernovsek & Sprah, 2008b [65]	ESMS	Yes		12 Statistical regions (H2)		Cross-sectoral		Yes	Description of service delivery			
Eichler et al, 2008 [66]	ESMS			5 Sites		Focus on specific health services (day hospital)	Patient	Yes	Health interventions: Follow up			Data Analytic
Moreno et al, 2008 [67]	ESMS	Yes		1 MH area (H4)		Focus on the Health sector	Patient	Yes	Supply and demand: schizophrenia prevalence	Spatial Analysis		
Moreno et al, 2008b [68]	ESMS			1 Statistical region (H2)		Focus on specific health services (residential care)		Yes	Units of costs			Data Analytic
Salvador-Carolla et al, 2008 [69]	ESMS	Yes (including metrics properties)	Yes	5 MH areas (H4)	Basic data	Cross-sectoral		Yes	Description of service delivery			
Skiba et al, 2008 [46]	ESMS-b	Yes		5 Sites	Basic data	Focus on specific health	Professional	Yes	Description of			

Table 2 (Continued)

REFERENCE	TOOL	TOOL DESCRIPTION	FRAME WORK	REFERENCE AREA (area DESDE code H')	DEMOGRAPHIC CONTEXT	SERVICE PROVISION EVALUATION	DESCRIPTION OF SYSTEM AGENTS	RESOURCES USE	MAIN AIM OF THE STUDY	USE OF VISUALIZATION TOOLS	TYPE OF ANALYSIS	USE FOR DECISION MAKING
Lund & Flisher, 2009 [35]	A framework for CMHS	Yes (including metrics properties)	Yes•	9 Provinces (H2)		Focus on specific health services (Inpatient hospital settings)	Professional		Supply and demand: Human resources needs			
Marwaha et al, 2009 [70]	ESMS			7 Sites		Focus on specific services (vocational services)	Patient		Health interventions: employment		Data Analytic	
Pirkola et al, 2009 [71]	ESMS	Yes		428 Municipalities	Standard description	Cross-sectorial		Yes	Supply and demand: Suicide rate	Geographic Information System	Data Analytic	
Prot-Klinger et al. 2009 [32]	ESMS breve			1 Site		Focus on specific health services (Community Mobile Team)'	Patient, Family	Yes•	Health interventions: community care			
Salize et al, 2009 [34]	SUS			6 Hospital areas (H3)			Patient	Yes	Cost of illness		Data Analytic	
Gibert et al, 2010 [72]	ESMS			12 MH areas (H4)		Cross-sectorial		Yes	Decision Support System Model		Decision Support System	
Raboch et al. 2010 [73]	ESMS			12 Sites		Focus on specific health services: (psychiatric inpatient units)	Patient	Yes	Health interventions: coercive measures		Data Analytic	
Jordanova et al, 2011 [74]	ESMS			5 Sites		Focus on specific health services (psychiatric hospitals)	Patient	Yes	Health interventions: psychotropic prescribing			
Prot et al. 2011 [75]	ESMS			5 Sites		Focus on specific health services (community care)	Patient, Family	Yes	Health interventions: community care			
Salvador-Carulla et al, 2011 [42]	DESDE-LTC	Yes (including metrics properties•)	Yes	2 Municipalities		Cross-sectorial			Scale development			
Kallert et al, 2013 [76]	ESMS	Yes		5 MH areas		Focus on specific health services (day hospitals)	Patient	Yes	Health interventions: psychiatric day care		Data Analytic	
Petersen et al, 2013 [77]	ESMS			1 MH area		Focus on specific health services (psychiatric hospitals)	Patient	Yes	Health interventions: Tertiary Psychiatric Residential Care		Data Analytic	
Salvador-Carulla et al. 2013 [22]	DESDE-LTC	Yes (including metrics properties)	Yes	6 MH areas (H3)		Cross-sectorial			Scale development		Data Analytic	
Salvador-Carulla et al. 2013b [78]	DESDELTC	Yes		16 Regions (H2)		Focus on specific target (intellectual disability)		Yes	Description of service delivery		Data Analytic	
Ungewitter et al, 2013 [79]	ESMS	Yes		1 Region (H2)		Cross-sectorial	Professional	Yes	Description of service delivery			
Ala-Nikkola et al, 2014 [33]	ESMS-R	Yes (including		3 Hospital areas (H3)	Basic data	Focus on specific health services (mental health and			Supply and demand: needs		Data Analytic	

Kalisova et al, 2014 [BO]	ESMS			10 Sites		Focus on specific health services (psychiatric hospitals)	Patient	Yes	Health interventions: coercive measures		Data Analytic
Fernandez et al, 2015 [81]	DESDE-LTC	Yes	Yes	1 Region (H2)	Standard description	Cross-sectoral		Yes	Description of service delivery	Atlas	Yes
Iruin-Sanz et al, 2015 [82]	DESDELTC	Yes	Yes	2 Provinces (H2)		Cross-sectoral			Description of service delivery	Atlas	Yes
Salvador-Carulla et al, 2015 [6]	MHSI (REMAST toolkit)	Yes (including metrics properties)	Yes	8 Hospital areas (H3)		Focus on the Health sector			Scale development		
Torres-Jimenez et al, 2015 [83]	DESDE-LTC			12 MH areas (H4)		Cross-sectoral		Yes	Decision Support System Model		Decision Support System
Ala-Nikkola et al, 2016 [84]	ESMS-R	Yes		4 Hospital areas (H3)	Standard description	Cross-sectoral	Patient, Professional	Yes	Health interventions: community care		Data Analytic
Ala-Nikkola et al, 2016b [85]	ESMS-R	Yes		13 Hospital areas (H3)	Basic data	Cross-sectoral			Supply and demand: catchment area sizes		Data Analytic
Rodero-Cosano et al, 2016 [86]	DESDE-LTC			60 MH areas (H4)	Basic data	Cross-sectoral		Yes	Description of service delivery	Atlas	Data Analytic
Almeda et al, 2017 [87]	DESDE-LTC			19 MH areas (H4)		Cross-sectoral		Yes	Description of service delivery		Decision Support System
Dahl et al, 2017 [88]	ESMS	Yes		3 Sites	Basic data	Focus on specific health services (outpatient services for substance abuse disorders)	Professional	Yes	Description of service delivery		
Fernandez et al, 2017 [48]	DESDE-LTC	Yes	Yes	1 Region (H2)		Cross-sectoral			Description of service delivery	Atlas	
Gutierrez-Colosia et al, 2017 [89]	DESDELTC	Yes	Yes	8 Hospital areas (H3)	Standard description	Focus on the Health sector			Description of service delivery		
Ala-Nikkola et al, 2018 [90]	ESMS-R	Yes (including metrics properties)		4 Hospital areas (H3)		Focus on specific health services (mental health and substance abuse)	Professional		Description of service delivery		Data Analytic
Chung et al, 2018 [9]	DESDELTC	Yes (including metrics properties)	Yes	106 MH areas (H4)		Cross-sectoral		Yes	Decision Support System Model		Decision Support System
Montagni et al, 2018 [37]	DESDE-LTC	Yes	Yes						Scale development		
Sadeniemi et al, 2018 [91]	DESDE-LTC	Yes		2 Hospital areas (H3)	Basic data	Focus on the Health sector	Professional	Yes	Description of service delivery		
Tuomainen et al, 2018 [36]	ECM-Q	Yes		Country (H1)		Focus on specific services (transition)			Description of service delivery		
Cetrano et al, 2018 [92]	DESDE-LTC	Yes	Yes	8 Hospital areas (H3)	Standard description	Focus on the Health sector	Professional		Description of service delivery		Data Analytic
Furst et al, 2018 [93]	DESDE-LTC	Yes		1 Region (H2)	Standard description	Cross-sectoral			Description of service delivery	Atlas	
Salinas-Perez et al, 2018 [94]	DESDE-LTC	Yes	Yes	19 MH areas (H3)	Standard description	Cross-sectoral	Professional		Description of service delivery	Atlas	

1Territorialisation levels for mental health planning and policy [25]. H: Health areas as defined in DESDE-LTC. H2 macro level (regional), H3 meso-level (e.g health district, catchment area), H4: micro level MH: Mental Health. •Implicit information. Type of analysis: Data analytic (statistical analysis of the data to draw conclusions); Decision support systems (tools supporting decision making processes).

Conclusion

The ESMS/DESDE system provides a common terminology, an ontology based classification of care services, a set of instruments covering different aims in healthcare research, a standard method for data collection of service provision in health and social care, and facilitates comparisons across and within countries. This system has been extensively used to provide context information at every level of the health system (local, regional, national), for care gap analysis, health economics, and for modelling healthcare ecosystems. It has been used across different care sectors and has been effectively incorporated into decision support systems to guide evidence-informed planning.

Availability of data and materials

Supplementary materials (Annex 1) are available in the [http:// psicost.org/](http://psicost.org/) website, and upon request.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.eurpsy.2019.07.003>.

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Foreword to Chapter 5

In the two previous chapters, through a scoping review of methods of context analysis using a healthcare ecosystems approach, and a systematic review examining the use of DESDE-LTC in services research and planning, I identified DESDE-LTC as an internationally standardised service classification instrument using a health ecosystems approach, usable in all sectors of care, and using a “bottom-up” perspective of the system. I then examined its uses in services research around the world. DESDE-LTC is a core component of Integrated Atlases of Mental Healthcare. Data from Integrated Atlases have formed the basis of several studies identified in the literature reviews. However, previous studies comparing regions and using this approach were in Europe, or they were using an earlier and less developed version of DESDE-LTC, or did not compare urban areas. Although this novel approach has been used fairly extensively globally to analyse mental health systems of care and support decision making in services planning, no research was identified which compared the pattern of mental health service provision at local level in in Australia and with other benchmark areas in Australia, and internationally, or assessed its usefulness to planners and decision makers in the Australian mental healthcare system. In Chapter 5 I provide the first chapter of my research to fill this gap, in an analysis of the patterns of mental healthcare in a reference urban area in Australia, the Australian Capital Territory, and comparison with data from benchmark areas described using the same approach in Australia and in other world regions, obtained from the metadata repository at The Australian National University.

Patterns of mental healthcare provision in urban areas: A comparative analysis for informing local policy

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Abstract

Background: Urbanisation presents specific challenges for the mental wellbeing of the population. A better understanding of availability of existing service provision in urban areas is necessary to plan for the needs of people with mental illness, identify gaps in care provision, and inform service planning. This study aims to provide an analysis of the patterns of mental healthcare in urban areas in Australia, and compare it with benchmark areas in other world regions.

Method: We used the Description and Evaluation of Services and DirectoriEs (DESDE-LTC) to analyse and compare care provision in the Australian Capital Territory (ACT), three other regions in Australia (Western Sydney, Perth North and South East Sydney), and three benchmark areas in Chile, Finland and Spain. Patterns of availability, bed capacity and diversity of service provision from all sectors relevant to mental health were analysed using heuristics and an homogeneity test. The applicability to local policy was assessed using the Adoption Impact Ladder (AIL) in all regions.

Results: In comparison to other Australian areas, ACT provided more community care and less hospital care, and was second overall only to Finland in availability of the former. However, when compared to international areas, similar gaps emerged in the four Australian urban regions, with very low availability of day care, especially work and health related day care. The Atlas was applicable to regional and local mental health planning.

Conclusion: We have identified significant differences in the pattern of urban care provision between regions that should have implications for planning, especially in equity of access to appropriate care and prioritisation of resource allocation. Our results highlight the usefulness of an ecosystems approach to service planning in mental healthcare at the local level. Separate analysis of urban and rural care should be conducted for regional mental health planning.

Background.

Urbanisation presents a specific set of challenges to the planning and provision of mental health services. It is associated with a higher prevalence of psychiatric disorders [1], including anxiety and depression [2] and psychotic disorders [3–6].

Psychosocial stressors in urban environments such as infringement of personal space, exposure to crime, increased social competition, social fragmentation [7] and the effect of high density and/or high rise living, negatively affect mental wellbeing [8,9]; and this has been related to the incidence of depression [10] and to suicide rates in urban areas [8]. On the other hand, walkability and urban green space [11] have an impact on social

cohesiveness [12] and other enablers of mental wellbeing such as participation in physical activity [13], and workforce satisfaction levels [14]. Global strategies on urban mental healthcare have been included in the international declarations on urban mental health-ICircle [15], and Cities Rise [16].

People living in urban areas comprise most of the population in many countries (eg 90% of the population in Australia, 80.3% in Spain, 85.4% in Finland and 87.6 % in Chile [17,18]). There is a need for a better assessment of the availability of mental healthcare to these populations within the context of the particular challenges posed by urbanisation. Additionally, standardised comparison of urban service provision between and within countries can assist in monitoring the impact of policy actions and reforms, identify inequities in availability, and facilitate the sharing of knowledge and best practice. This analysis should be made separately for the different contexts of urban and rural environments [19]. The importance of international comparisons of care availability, capacity and access has been underscored by the World Health Organisation (WHO), which has developed a repository of international resources and national/regional level policies, strategies, laws and service standards (WHO Mindbank), as well as a series of tools for analysis at national and regional level: the Service Availability and Readiness Assessment (SARA) [20] and the WHO Assessment Instrument for Mental Health Systems (WHO-AIMS) [21].

However, these WHO approaches are susceptible to two major biases that could impact on the translation of healthcare findings into regional and local planning and resource allocation: the ecological fallacy and the terminological unclarity bias. The “ecological fallacy” derives from assuming that population means and national averages apply directly to individuals or to local area services [22,23]. In order to overcome this problem, a detailed account of local socio-demographic characteristics should be provided, together with a standard description of service provision and, when available, service utilisation and outcomes. Local Atlases of Care allow data aggregation without incurring the ecological fallacy, and provide key information for evidence informed policy [24]. “Terminological unclarity” refers to ambiguity and vagueness in the naming and definition of the services [25] and interventions [26]. In order to avoid pitfalls in the analysis of service provision in local systems, it is necessary to use a common reference framework [27], a validated glossary of terms [28], and a standard classification system [29] for coding and mapping local services. These standardised empirical data are necessary to identify service provision in an area, provide the tools for efficient system navigation, and facilitate comparison and knowledge sharing between providers [27,30].

Mental Health Ecosystems Research (MHESR) is a new approach to the study of complex health systems. Using a whole systems approach, MHESR provides an analytical framework for the diversity and variation in the levels and types of care in and between mental health systems and countries [31], and the local social, economic, demographic and political contexts in which they operate [32]. From this, the structure of the whole service system in a particular area can be envisioned, showing patterns of care delivery and the relationship of the pattern of service provision with social determinants of health, and providing the basis for comparison with other systems to identify gaps and duplications in service availability [33].

This study provides an analysis of the availability, bed capacity and diversity of mental healthcare in selected urban areas in Australia, and benchmark areas in Europe and South America, that have been coded and mapped following the same method, and with the same standardised tool [33].

We ask the following questions:

- Can we identify and compare global patterns of mental health provision across urban areas? and
- Could these findings have application for local policy and planning?

Method

This study follows a healthcare ecosystem approach for the standard evaluation of the patterns of care provision across different health districts [34].

Catchment area

The regions in this study have all been classified as urban according to OECD typology [35]. This typology takes into account the percentage of the population living in small areas and municipalities defined as predominantly urban or rural within the region [36].

The population in the four selected urban Australian areas is between 400,000 and 1.5 million. These regions span the continent, with Perth North (PN) on the western seaboard, and South East Sydney (SES) and Western Sydney (WS) on the east coast. Australian Capital Territory (ACT) is home to the national capital, Canberra. ACT, Western Sydney and Perth North are part of the network of 31 Primary Health Networks (PHNs) in Australia which coordinate healthcare at the regional level. South East Sydney is a Local Health District: in densely populated urban areas these have smaller geographic boundaries and are responsible for managing public hospitals and specialised mental health services. Mental

healthcare in all Australian health regions is provided by a combination of state funded public organisations and Non-Government Organisations (NGOs).

The population in the three international comparator regions is between 290,000 and 1.65 million. Talcahuano is one of 28 autonomous Health Districts in Chile. These districts are organised by defined mental health catchment areas where publicly funded care provision is coordinated by a single reference community mental health centre [37]. Gipuzkoa is a province in the Basque Autonomous Community in Spain with 13 mental health catchment areas [38]. In Spain, healthcare is also publicly funded, and is devolved to its 17 autonomous communities. Primary care provides the gateway to more specialised mental healthcare when needed. The Helsinki-Uusimaa region (herein “Helsinki”) in Finland comprises 26 municipalities and includes the capital, Helsinki. Municipalities in Finland are responsible for health and social care services, which are also tax funded and may join to form hospital districts for more specialised mental healthcare.

Socio-economic and socio-demographic data from the Australian regions were collected from Australian Bureau of Statistics (ABS) and Public Health Information Development Unit (PHIDU), and mapped with services distribution at different levels of aggregation [39]. Data from the European regions and Chile were obtained from previous studies using population statistics collected from their national institutes [37,40–42].

Measures

Service availability

The measure used for data collection in all studies was the DEscription and Evaluation of Services and DirectoriEs for Long Term Care(DESDE-LTC), an internationally validated instrument for the standard description and coding of services [43]. Its taxonomic structure and use of operational definitions of units of care addresses the two main methodological problems in services research: terminological unclarity (different terms may be used for the same type of service and vice versa) and a commensurability bias (different units of analysis may be used which do not provide true like for like comparison) [44]. DESDE-LTC is a multiaxial system that classifies and codes the target population and type of care provided by services in all relevant sectors, using a classification tree which bifurcates from six initial branches (Residential, Outpatient, Day Care, Self- help and Voluntary Care, and Information and Assessment, and Accessibility to services) to provide 25 clusters grouping similar typologies of care according to characteristics such as acuity, mobility, and intensity of service provision. Its units of analysis are professional teams with organisational and temporal stability (described as Basic Stable Inputs of Care or BSICs), and the Main Type of

Care they provide (MTCs). The use of these lowest units of production of care as a common unit of analysis enables cross country and cross regional comparison of service provision at the local level.

Inclusion criteria for services were as follows:

- 1 The service targets people with a lived experience of mental illness; including any diagnosis of mental disorders (ICD-10, section F)
- 2 The service is universally accessible: without significant out-of-pocket expenses or under a fully private insurance scheme)
- 3 The service is within the boundaries of the study region
- 4 The service provides direct care or support to consumers.

Applicability to local policy

The applicability to local policy of the Atlas information was measured using the Adoption Impact Ladder (AIL), a standardised tool for measuring adoption of health service research by policy and planning agencies, and its translation into action programs. This tool assigns a rating of impact according to a seven stage ladder:

0. No adoption: The project has no impact on the target organisation (the target organisation knows nothing about the project)
1. Awareness: The target organisation and specific decision-makers within the organisation are aware of the topic, have taken steps to improve their knowledge of the topic, and have received and provided feedback on the information provided
2. Assimilation: There is evidence that the target organisation and specific decision makers within the organisation have incorporated the information into their own existing knowledge base and organisational strategy
3. Conversion (or translation): The target organisation has transferred the new knowledge to legislation, plans, programs, regulations or official indicators
4. Allocation: The translation of new knowledge has had an impact on budget, funding, or resource allocation in the target environment
5. Provision: Care services, including services, interventions or technologies directly related to the new knowledge, have been made available and are used by the target population in the target setting
6. Routinisation(or monitoring): The target organisation has incorporated the new knowledge into its own evaluation, surveillance and monitoring systems

AIL has been previously used for the analysis of the impact of DESDE-LTC in mental health planning in Spain [45]; the use of an automated version of DESDE for the collection and coding of services (DESDE-AND) in Andalucia (Spain) [46]; the translation of the disability scheme in multi-sectorial strategies in Andalucia (Spain) [47]; and in the analysis of an implementation strategy to enhance liaison between schools and the mental healthcare system in Queensland (Australia) [48].

Data collection

In all cases, data collection was made in collaboration with the local and regional public agencies. Services were identified through information provided in consultation with officers from these agencies and relevant peak bodies, and through web searches. In the case of ACT, all service organisations located in ACT providing support to people with mental illness were contacted after receiving ethics approval. The managers of participating organisations were interviewed, either face to face or by telephone. Data was manually collected in 2016 and verified on a broad set of characteristics of multisectoral care provision for the target population group [49]. Service data was coded using the DESDE-LTC tool, and presented visually through the use of maps and other visual analytics tools. From this, an Integrated Atlas of Mental Health was developed, which included evidence from the local context such as socio-demographic and socio-economic indicators. Data was analysed and revised following review of the data by expert local planners.

Data comparison and analysis

The standard description of these areas is part of a larger project that aims to compare patterns of mental healthcare in Australia and in Europe. ACT, South East Sydney (SES), Western Sydney (WS) and Perth North are urban regions included in this study [50]. Integrated Atlases of Mental Health including key socio-demographic indicators, and all services available for the target population in the selected areas have been released for these PHNs/LHDs, and are available at The Australian National /University Integrated Healthcare Atlases Repository site [51]. The Australian National University (ANU), together with Psicost Research Association and Andalucia Loyola University (Spain) have developed this data repository on local service provision collected using the ESMS (European Service Mapping Schedule (an earlier version of DESDE)) /DESDE classification system and standard methods of data collection [52]. This repository allows the analysis of patterns of service provision in a given area, in comparison to other areas previously mapped with the same method and instrument, and checked by the same core group. In this case, we

compare the ACT reference urban area with information available in the repository from the other six areas: Western Sydney [53], South Eastern Sydney [54], Perth North [55], Helsinki (Helsinki-Uusimaa), Finland [40,42], Gipuzkoa, Spain [41] and Talcahuano, Chile [37,56].

We followed an heuristics approach in the analysis of the availability and diversity of adult mental health services in the selected areas to identify patterns of care and gaps in service provision. Mental healthcare systems are complex and operate under conditions of high uncertainty, with multiple sources and types of evidence, and where data may be “flawed, proximate and sparse” [57]. Under these conditions an heuristic approach using “simple and transparent statistical approaches to allow maximum opportunity for debate and consideration” can be more accurate than more complex analytical tools [58].

Additionally, we analysed the homogeneity of the patterns of care between the study areas through chi-squared tests. The population groups were the study areas, and the categories were five large “care groupings”(hospital, non-hospital, day, acute outpatient and non-acute outpatient care). These aggregate clusters were used in order to avoid categories with too low a number of cases, which could compromise validity of the analysis. The analyses were carried out for: 1) all the study areas; and 2) ACT paired with another comparator area.

The availability, placement capacity and diversity of service provision was analysed according to the Main Types of Care (MTCs) provided by professional teams (Basic Stable Units of Care-BSICs). “Availability” is here defined as a service being operable upon demand to perform its designated or required function; “Placement capacity” is defined as the maximum number of beds in residential care; and “Diversity” as the number of different types of individual Main Type of Care identified. The service availability rate was calculated per 100,000 adults of the target population. Data was coded according to the DESDE-LTC coding system, although here we have not included Information and Assessment services or Self-help and Volunteer services. Additionally, the European and Chilean studies did not include Accessibility services, as this function is included in the role of other teams in these countries and not designed as separate services.

The analysis of the applicability of the Atlas information to local mental health planning was made in the ACT region following previous analyses of applicability of the Atlas in Spain [59]. First, the adoption of the Atlas was measured using the Adoption Impact Ladder (AIL) in the ACT and compared to the adoption in the other Australian and international areas. The AIL rating was reported by the members of the evaluation team that conducted the study in every area, based on available evidence of the different levels of adoption in every district, and not on narratives. The AIL level of awareness took into account invited presentations of

the results organised by public agencies in ACT and the other regions. The translation level was based on the use of the DESDE-LTC data in regional planning documents, and the resource allocation took into account the funding of consecutive atlases by local agencies, as well as the direct participation of officers from public agencies in the analysis and use of the results.

Results

Socio-demographic indicators

Socio-economic and socio-demographic indicators are shown in full in Table 1 and summarised below.

ACT has an area of 2,351 km² with a population of 403,468, most of whom live in Canberra, its only city. Within Australia, ACT and South East Sydney were relatively socio-economically advantaged, while Western Sydney had highest levels of socio-economic disadvantage. Despite this, rates of psychological distress and of suicide in ACT were the second highest nationally, and while WS had the highest rate of psychological distress, it had the lowest suicide rate. The international centres experienced higher suicide rates than all Australian regions except PN, as well as higher unemployment, particularly in the case of Gipuzkoa. Helsinki, with the highest suicide rates in the study, also had the most people living alone, and single parent families.

Table 1 Socio-demographic indicators of the study regions

Areas	Australian Capital Territory PHN	Western Sydney PHN	Perth North PHN	South Eastern Sydney LHD	San Sebastian (Gipuzkoa)	Talcahuano	Helsinki- Uusimaa
Population	403,468	947,672	1,055,697	921,658	716,834	290,889	1,638,293
Population density ^a	171.1	1,223.5	354.9	1,820.3	375.8	1,147.9	180.1
Dependency index ^b	45.1	47.9	47.3	43.1	55.6	45.7	50.5
Ageing index ^c	64.5	53.4	70.1	91.6	142.8	63.5	99.7
Indigenous status (%) ^d	1.6	1.5	1.4	0.9	0.0	8.8	0.01
Born overseas (%) ^e	26.5	44.3	36.4	37.1	8.8	0.6	11.2
Single-parent families (%) ^f	6.8	6.7	6.8	5.3	4.3 ¹	14.7	14.3
Living alone (%) ^g	8.9	5.1	8.3	9.0	10.2 ¹	4.5	19.8
Not married or in a de facto relationship (%) ^h	51.9	46.9	51.2	55.1	62.3 ¹	NA	78.9

Needing assistance(%) ⁱ	4.5	5.0	3.9	4.5	NA	NA	NA
Early school leavers (%) ^j	74.4	65.3	62.6	71.3	78.9	72.3	72
Personal income <\$400 per week (%) ^k	23.9	34.7	30.2	27.9	NA	NA	NA
Unemployment rate (%) ^l	4.5	6.0	5.8	3.7	13.2	8.6	7.4
IRSD (Australia=1000) ^m	1076.27	994.33	1045.04	1034.92	NA	NA	NA
Psychological distress (K10) (%) ⁿ	10.8 ²	11.7 ²	9.5 ²	9.1 ²	NA	NA	NA
Suicide rate (x100,000) ^o	9.1 ³	7.4 ³	11.9 ³	8.2 ³	9.8	11.7	13.0 (Bio-Bio region) ⁴

Service availability

Overview (figure 1).

ACT provided more community residential care and less hospital care than the other Australian areas, and was second overall only to Finland in availability of the former. All Australian regions provided lower rates of day care than all the international regions, particularly Spain. In outpatient care, social outreach type care and centre based healthcare, such as community mental health centres, were the most available types of care in the Australian regions, particularly in ACT. Outpatient care of all types was less available in the international regions, and where available it was more commonly centre based rather than outreach. ACT provided higher rates of services coordinating or providing access to care than the other Australian regions, but this type of care was not included in the international comparison as in these other regions, it is typically included in other types of care rather than provided as a separate service. The statistical comparison of the homogeneity of the patterns of care showed significant differences between the seven study areas ($\chi^2 = 260.733$; p -value = 0.000). In the analyses in pairs, ACT pattern of care was statistically different to South East Sydney ($\chi^2 = 25.883$; p -value = 0.000), Perth North ($\chi^2 = 10.665$; p -value = 0.031), and Helsinki ($\chi^2 = 53.321$; p -value = 0.000), while it was similar to Western Sydney ($\chi^2 = 6.802$; p -value = 0.147). Gipuzkoa ($\chi^2 = 50.286$; p -value = 0.000) and Talcahuano ($\chi^2 = 23.466$; p -value = 0.000) were also significantly different to ACT, but the analyses were not reliable given the low number of observations in some care groupings .

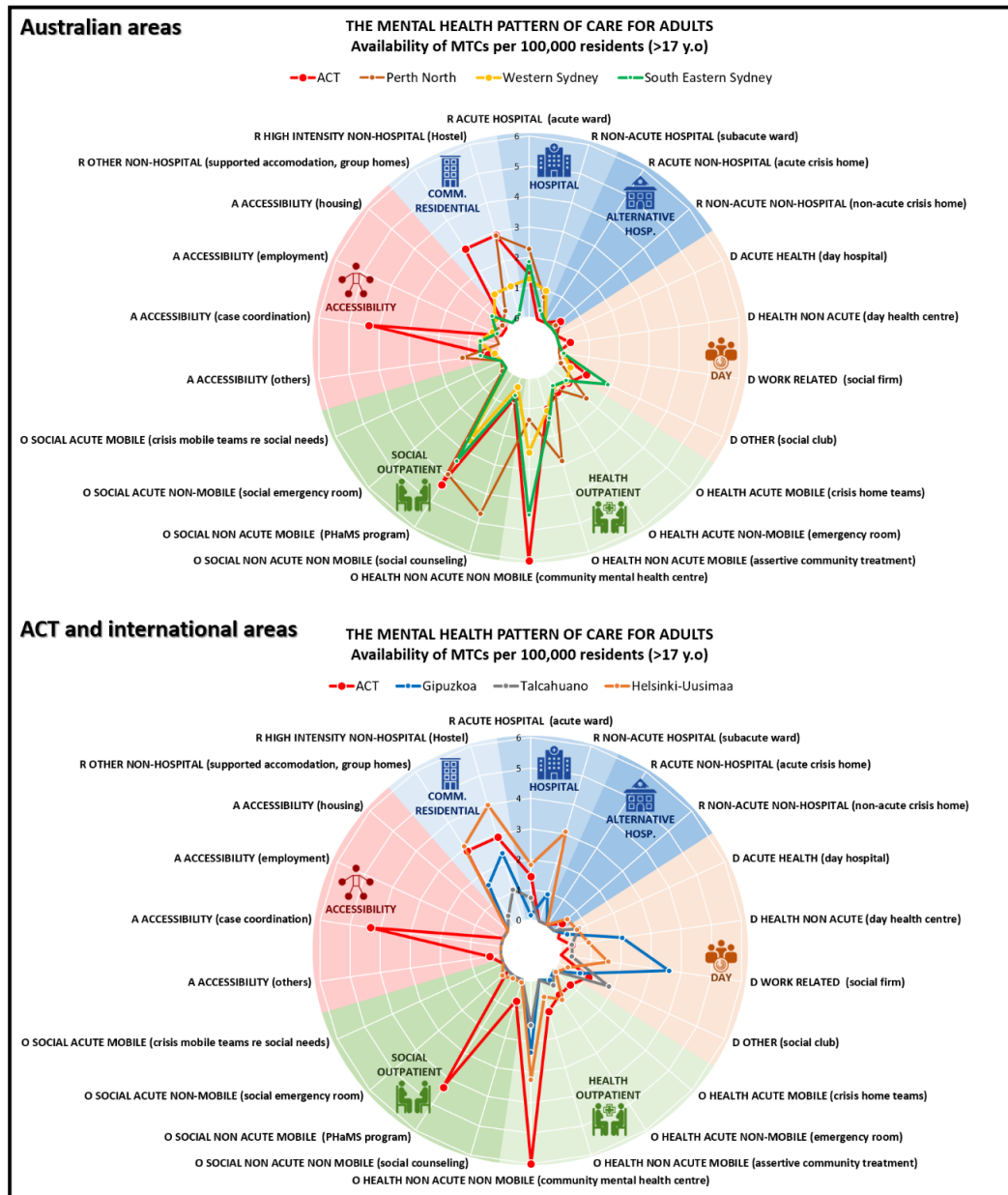


Figure 1: Main Types of Care per 100,000 adults: Australian and international comparison. Legend: Coloured sections of each radar graph represent the main branches of care, with each axis representing a main type of care within each of these branches. Coloured lines representing each region join the points on each axis showing the rates per 100,000 adults of that type of care for that region.

Residential Care: a comparison of the availability and bed capacity of residential Care per 100,000 adult residents between ACT, Perth North, Western Sydney, South East Sydney, Talcahuano, Gipuzkoa and Helsinki is shown in Figure 2.

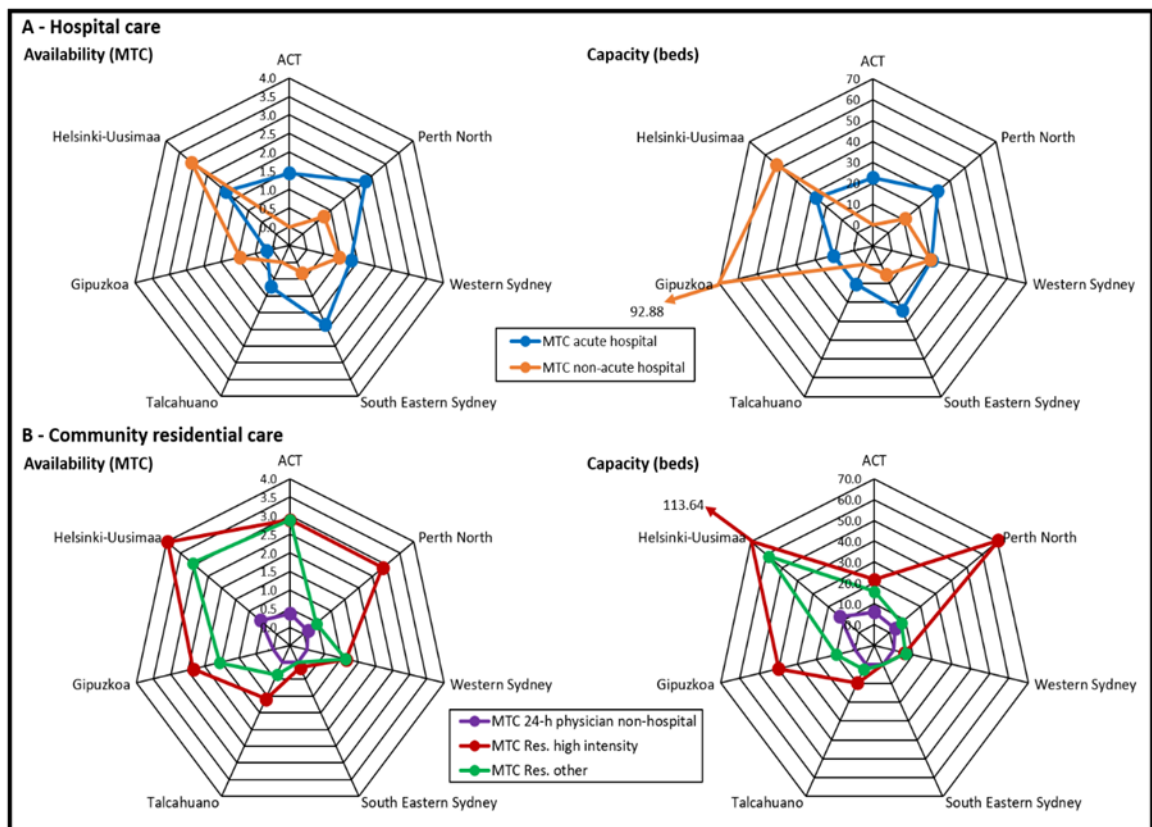


Figure 2: Residential Main Types of Care per 100,000 adults: Australian and international comparison. Legend: The axes of these graphs represent each of the study regions. Coloured lines representing the different types of residential care join the points on each axis indicating the rate of that type of care per 100,000 adults for that region.

Australian comparison. ACT provided the second lowest rate of acute hospital care of the Australian districts (1.44 Main Types of Care and 22.74 beds per 100,000 residents over 17 years old) after Western Sydney, with Perth North providing the highest (2.11 Main Types of Care and 26.28 beds per 100,000). Hospital care available in all Australian regions was significantly more acute than non-acute. ACT was the only Australian region not to provide non-acute hospital care. Perth North was the only district to provide alternatives to hospitalisation, although at a low level of intensity (e.g. crisis homes: 0.15 Main Types of Care per 100,000 adults). ACT provided significantly more residential community care in terms of services than the other districts (a total of 5.42 Main Types of Care and 30.68 beds per 100,000 adults), compared to South East Sydney (0.15 Main Types of Care per 100,000 adults) and Western Sydney (2.26 Main Types of Care and 11.98 beds per 100,000 adults). However, bed capacity was higher in Perth North (70.99 beds per 100,000 adults) than ACT. Community residential care in Perth North was provided largely by hostel type accommodation.

International comparison. The number of hospital based services was lower in the Spanish and Chilean regions than in all Australian districts, and it was highest in Finland. Spain and Finland provided more non-acute than acute hospital care, with Helsinki having the highest bed capacity, while the Chilean region provided acute hospital care only. Alternatives to hospitalisation were only available in Helsinki, again at a low rate. Community based residential care in ACT was higher than that in Chile, similar to Spain but lower than Finland, which also had the highest overall rate of residential care.

Day Care.

A comparison of the availability and placement capacity of day care per 100,000 adult residents between ACT, Perth North, Western Sydney, South East Sydney, Talcahuano, Gipuzkoa and Helsinki is shown in Figure 3.

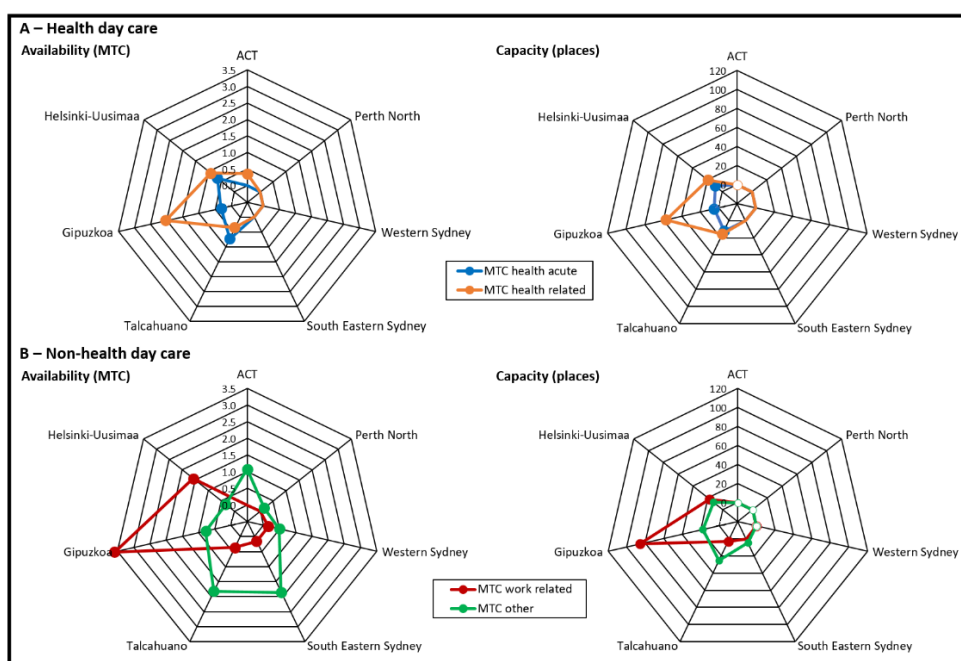


Figure 3: Availability of Day care per 100, adults: Australian and international comparison. Legend: The axes of these graphs represent each of the study regions. Coloured lines representing the different types of day care join the points on each axis indicating the rate of that type of care per 100,000 adults for that region.

Australian comparison. Acute health-related day care was not available in any of the Australian health districts, and ACT was the only Australian district to provide any health-related day care. ACT had the second highest provision of social type day care after South East Sydney, but along with Perth North, it had no work-related day care.

International comparison. Health and work-related day care was more available in all three international regions, especially Spain, than in ACT, where it was not available at all.

Outpatient Care

A comparison of the availability of outpatient care per 100,000 adult residents between ACT, Perth North, Western Sydney, South East Sydney, Talcahuano, Gipuzkoa and Helsinki is shown in Figure 4.

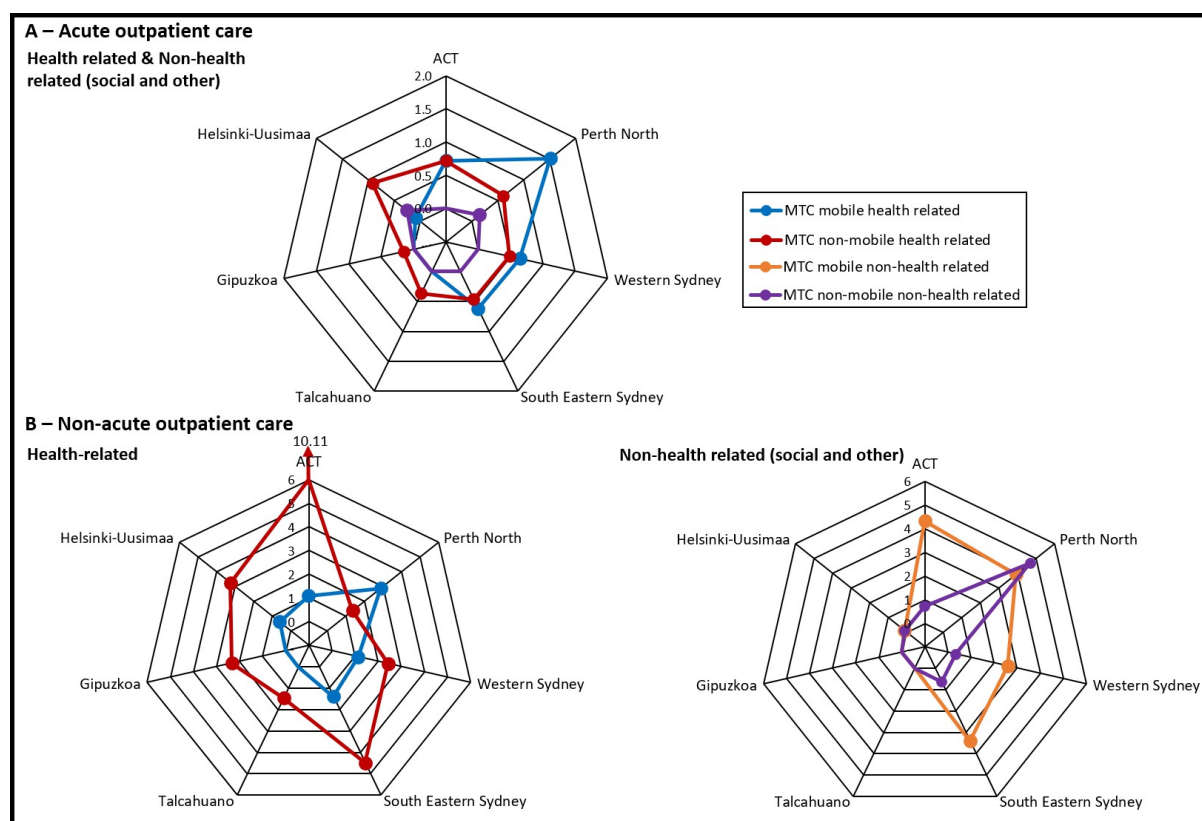


Figure 4: Availability of Outpatient care per 100, adults: Australian and international comparison. Legend: The axes of these graphs represent each of the study regions. Coloured lines representing the different types of outpatient care join the points on each axis indicating the rate of that type of care per 100,000 adults for that region

Australian comparison. Outpatient Care was more health than social related in ACT and all Australian regions except Perth North. Health-related outpatient Care in ACT, as in the other Australian districts, was predominantly non-acute, and ACT had a higher rate of centre based non-acute services such as psychological counselling. The rate of mobile or outreach social type care was similar in all Australian regions.

International comparison.

All Australian regions provided more health-related outpatient Care than all international regions. The only type of health-related outpatient care available in the Spanish and Chilean regions was centre based (non-mobile) care, which was also the most available type of

outpatient care in ACT. Outpatient care provided by sectors outside the health sector was not available at all in the Spanish and Chilean regions, and only available in the Finnish region at a much lower rate than in any of the Australian regions.

Accessibility. Accessibility care, or services providing access to other types of care rather than providing direct care themselves was not assessed in the international studies. However, in Australia, case coordination type accessibility care was significantly more available in ACT than in the other areas (Figure 1), while it provided less of the other types of accessibility care (e.g. to employment, housing).

Service Diversity-National (Australia)

In Australia, ACT provided the lowest number of types of care but the second highest diversity of service types, while Perth North provided the highest number and diversity of Main Types of Care Western Sydney provided a similar number of Main Types of Care to ACT but with lower diversity (Table 2).

Table 2: Diversity of Main Types of Care: comparison between Australian regions

	Organisations	BSICs	MTCs	Diversity
ACT	41	110	122	38
PN	71	224	231	45
WS	33	117.8	127.4	31
SES	40	150	169	40

Applicability of the DESDE-LTC results to mental health planning

The adoption of the results of the study in the reference area (ACT) reached a level of 5 in the AIL. Although this indicates a high impact, the system has not been adopted as a routine tool for planning. The adoption level was 5 in North Perth and Western Sydney, and 3 in Central Eastern Sydney. The level of Adoption was 6 in Gipuzkoa (Spain), 5 in Helsinki-Uusimaa (Finland) and 3 in Talcahuano (Chile).

Discussion

To the best of our knowledge this is the first international comparison of urban patterns of mental health service provision using a bottom-up approach and standardised methods and tools across different world regions. It follows the previous analysis of patterns of care in rural areas in Australia as part of the Glocal (Global-Local) Atlas project [24,60] which identified significant variations between states [61]. Previous bottom-up studies have been limited to Europe, using a previous version of the instrument (i.e. the ESMS) [62] or do not focus on urban mental healthcare [63]. Other previous studies, such as WHO-AIMS, used national or regional data as well as official service directories, and therefore these top-down studies are subject to ecological fallacy and terminological bias. The socio-economic and socio-demographic characteristics of the regions in the study suggest a complex relationship with service availability and the need for this information to be readily available for appraisal by local planners, as well as its usefulness in service system comparison: for example, the relevance of different models of community living in northern and southern Europe to the delivery of residential care; or the testing of equity of access by comparison of service availability in relation to population size or disadvantage.

Statistical analyses pointed out a lack of homogeneity in the pattern of care between areas for five large care groupings. The ACT pattern was statistically different only to Western Sydney. However these analyses were too general due to the methodological limitations of the statistical tests which required the aggregation of the MTC into only five groupings, the exclusion of accessibility care, and the small sample size.

However, the pattern of service availability gaps within Australia was broadly similar between the regions, with the reference area, the ACT, conforming to this pattern in most categories except residential community care. In this type of care, the pattern of availability in the ACT more closely resembled that of the international regions. The provision of residential care in all regions in Australia however, was skewed in favour of the provision of acute hospital inpatient care when compared to international benchmark areas in three OECD countries at different levels according to their GDP per capita in 2018 [64]: (Australia (number 10), Finland (number 14), Spain (number 24) and Chile (number 33)). Likewise, there was a similarity between all Australian regions in the range of different types of care available, despite differences in overall number of services, suggesting that the more specific needs of minority or marginal groups may not be being met, and highlighting the importance of understanding of the local context in service planning.

The pattern of care delivery we identified in Australia differed from that of the international regions, with day care, especially work and health related day care being a more significant component of the care systems in international regions: for example Talcahuano, with a much lower overall rate of services than ACT, nevertheless still provided a higher rate of day care. Conversely, outpatient services in the community providing psychosocial (as distinct from health related) care, a category of service largely absent in the international regions, were a significant component of the pattern of care in Australia. The main differences between the three international regions were the overall much lower rate of services in Talcahuano; the higher availability of residential care overall in Helsinki-Uusimaa; and the higher availability of health and work related day care in Gipuzkoa.

A characteristic of all systems in the study was a paucity or lack of alternatives to hospitalisation; and a lack of sub-acute residential care in all regions except Helsinki-Uusimaa. This suggests that acute inpatient care, despite being intended for the small number of people with severe illness [65], could be filling these gaps, both for people in crisis, and for those who are no longer acute but still require a level of sub-acute residential support, particularly in the Australian regions where it comprises a larger part of the overall system. Length of stay in fulltime hospitalisation has been shown to correlate negatively with the development of alternatives to fulltime hospitalisation in the local context [66]. The lack of day care services in the Australian regions may also increase the need for inpatient care, as availability of day care services may play a role in reducing hospitalisation, maintaining health and promoting community participation through (i) the provision of alternatives to hospitalisation in the case of acute health related day services; and (ii) through assistance with skills training and education in the case of work related and structured day services. [67,68]

The urban health districts in Europe and Chile have a lower number of outpatient care services than any Australian region, but significantly more health and social related day services. Services are provided in clusters grouped around community outpatient care centres in the three international benchmark areas, whereas in Australia individual practices constitute the main type of outpatient care in urban areas. Day support, which is more often provided on a group basis, providing skills development and social participation, also shows a similar clustering. The higher level of mobile outpatient social care (non-health related) in the Australian regions merits further investigation as to its efficiency. This type of care is commonly provided as individual support for people with moderate to severe illness: support

which may be being provided more efficiently as group type care in the other regions by day centres.

The higher rate of accessibility services in ACT compared to the other Australian regions could be an indicator of increased system complexity associated with a high rate of Non-Government Organisations leading to more complex pathways of care [49]. It is important to note that in many other countries, this type of service is more commonly incorporated into other types of care. A pattern of care like that in Australia which separates the accessibility function from other service provision hinders integration of care through the addition of an extra layer of services between those providing direct care provision.

Rural-urban comparison

Comparison of these results with a previous study on rural service availability in Australia shows the importance of a separate analysis of care provision in rural and urban care. There is a higher level of supported accommodation such as group homes in urban than in rural areas, a lower rate of acute residential care, and a higher rate of day care services [61]. It has been suggested that the high rate of acute residential care in rural areas could be due to delayed help seeking caused by factors such as distance, or work (farming) commitments. On the other hand, there could be a higher tendency to admit a patient where there is any doubt about the availability or accessibility, including distance accessibility, of ongoing community care in rural and remote areas.

Implications

This study has shown the importance of standardised comparisons, both within and between countries, in identifying gaps, commonalities and differences in care provision to inform planning. This system level understanding of the complexity of systems and of patterns of care is important to planning in urban areas, and required by groups such as iCircle which are engaged with ways of promoting the mental health of people in cities. Planners in local health jurisdictions, such as the PHNs in Australia, need to have an understanding of the gaps or duplications in service provision in their area in the context of local need if they are to plan efficient and appropriate service delivery. The significance of this type of data is evidenced by its citation in local strategic documents [69], and the co-operation in our ACT study of local health organisations responsible for planning and/or commissioning services including ACT Health, the Capital Health Network, and the Office of Mental Health and Wellbeing, with a representative of the Capital Health Network co-authoring this study. The Atlas project is the first work that provides this type of co-operation between policy makers and planners and researchers. The adoption of the results of the study was high in three of

the Australian areas (ACT, Western Sydney and North Perth), and very high or high in two of the international comparators (Gipuzkoa and Helsinki-Uusimaa). Although this indicates a high impact, the system has not been adopted as a routine tool for planning except for the Basque Country (Spain).

The heterogeneity of local systems at the meso or local area level, including the specific needs and patterns of care delivery of urban areas and differences between urban and rural patterns of care, should be taken into account in policy at the macro level. Knowledge of service availability at local or regional network level is important in planning or monitoring policy changes and reform. For example, policy strategies such as integrated care, or in Australia the stepped care policy [65], assume a comprehensive availability of services. Yet the current availability of this level of service provision, even in urban areas where there are multiple specific challenges to mental wellbeing, and where due to population concentration, service provision might be expected to be at its highest within countries, is not indicated by these results. These comparisons can also identify equity issues, and investigate commonly neglected types of care such as alternatives to hospitalisation across areas or unexpected differences between urban areas in the same country.

Health experts including planners and policy makers have identified the usefulness of visual tools and analytics but require that it should be simple and readily available [70]. Data visualisation of complex phenomena such as patterns of service provision enables pattern recognition and the rapid identification of similarities and differences between the regions and gaps in service provision. The use of a coding system to simplify complex data assists in the development of more readily accessible visual analytics.

Another key finding of the study is the usefulness of repositories such as that cited in this study, and of others such as the EU Compass [71] which collects data and other policy and stakeholder activity information in Europe for the collection, organisation, and comparison of relevant information for mental healthcare planning.

Limitations

Although the results are limited to seven urban areas in Australia, Spain, Finland and Chile, the comparisons have used the same taxonomy and method, and the evaluation has been extensive, including managers or contact points in every organisation identified in the local

area. Taking into account the variability in the definition of urban areas, we opted for using the population density cut-off point provided by OECD [36]. Some of the urban areas include natural parks and reserves, so their actual population density is higher. As full data are available from these regions other approaches to urbanicity can be used in the data analysis. Data collection was conducted at different points of time in a four year period (2012-2016). Within this time frame, the development of new local services has a low impact in the comparison across different jurisdictions even within the same system [72]. This study only includes services providing free to user or low out of pocket expenses. Additionally, we have included only services available to general adult service users. Accuracy of the data is dependent on the accuracy of the information provided by the services themselves.

The use of statistical analysis in healthcare ecosystem research is limited when the number of units of analysis are low. For instance, in the present piece of research, the study areas were too few to be considered as proper analysis units in any comparative statistical analysis. We chose to carry out an overall comparative analysis of the pattern of care by areas using MTC as analysis units, however they had to be aggregated in large clusters to avoid categories without units or very low frequencies. Heuristics and expert pattern recognition based on detailed and systematic description of the whole system of specialised care may be of greater use in this situation than using significance of differences and power calculations across local areas. Saunders et al [22] have discussed the limitations of samples below 100 in healthcare systems research; a problem also described in previous studies [73]. Analytically, there are three broad strategies that can be taken when approaching the analysis of data with low sample sizes: a) maximise power using techniques specifically equipped for low samples; b) maximise the utility of available data and inference through permutation, resampling, or bootstrap methods; or c) use fuzzy logics for sensitivity analysis or undertake advanced modelling combining the other approaches. In any case, the incorporation of expert knowledge is required to improve, interpret and refine the results and provide better estimates [74]. This involves a multistep process where the standard description of the context, the patterns of care provision and utilisation, and the patterns of interventions and connections constitute the key components of the prior knowledge base for designing scenarios and running the model [74]. We use a systems approach to heuristics in our analysis of service delivery to identify gaps, and to elicit meaningful expert knowledge for consecutive modelling and informed decision making, as shown in previous studies [74]. The usability of this approach to heuristics under conditions of high complexity and uncertainty has been reported previously by mental health planners in Spain and Australia [52,53]

Conclusion

The identification of common gaps and important differences in patterns of care between ACT and other jurisdictions highlights the relevance of an ecosystems approach to context analysis and service planning in mental healthcare at the local level, and the relevance of using a standardised instrument able to provide valid comparisons in urban areas. We identified patterns of care present only in the Australian system such as a move away from day care services to social outpatient programs; as well as gaps common to all regions in the study such as alternatives to hospitalisation, which suggest a lack of awareness at a global level of possible advantages of this type of care. Community based care was less developed in Australian than international regions.

These variations in service availability have implications for geographic and socio-economic equity of access to appropriate care, and for the implementation at the local level of interventions based on global evidence. Commonalities between urban regions and differences between rural and urban areas also indicate the need for models of care sensitive to mental healthcare ecosystem indicators.

Future Steps

This information should be complemented with data on service utilisation, financing and quality indicators to support organisational learning. The incorporation of new knowledge into complex systems such as mental healthcare is important in both managing and making change, and is particularly relevant within the context of significant changes originating outside the system, such as those in Australia resulting from the new Mental Health Plan, the change to PHNs and the introduction of the National Disability Insurance Scheme (NDIS).

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Foreword to Chapter 6

Once the DESDE-LTC has been used to classify all the services in a region, the identified professional teams provide a framework to describe the capacity, profile and distribution of the workforce; according to DESDE-LTC criteria, and to the professional background of the people working in the team, based on attributes such as health or non-health; core health or allied health. This data reflects the true capacity of the workforce at this level, and is more reliable than available data obtained at national level, and from a very limited range of professionals. Chapter 6 presents my study of the workforce capacity of the ACT, and comparison with two other regions in Australia and three regions in Europe, as in the previous chapter using data from the Integrated Atlas of Mental Healthcare of the ACT and data from the other regions obtained from the metadata repository at The Australian National University.

A new bottom-up method for the standard analysis and comparison of workforce capacity in mental healthcare planning: demonstration study in the Australian Capital Territory

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Abstract.

The aims of this study are to evaluate and describe mental health workforce and capacity, and to describe the relationship between workforce capacity and patterns of care in local areas.

We conducted a comparative demonstration study of the applicability of an internationally validated standardised service classification instrument--the Description and Evaluation of Services and Directories--DESDE-LTC) using the emerging mental health ecosystems research (MHESR) approach. Using DESDE-LTC as the framework, and drawing from international occupation classifications, the workforce was classified according to characteristics including the type of care provided and professional background. Our reference area was the Australian Capital Territory, which we compared with two other urban districts in Australia (Sydney and South East Sydney) and three benchmark international health districts (Helsinki-Uusima (Finland), Verona (Italy) and Gipuzkoa (Spain)). We also compared our data with national level data where available.

The Australian and Finnish regions had a larger and more highly skilled workforce than the southern European regions. The pattern of workforce availability and profile varied, even within the same country, at the local level. We found significant differences between regional rates of identified rates of psychiatrists and psychologists, and national averages.

Using a standardised classification instrument at the local level, and our occupational groupings, we were able to assess the available workforce and provide information relevant to planners about the actual capacity of the system. Data obtained at local level is critical to providing planners with reliable data to inform their decision making.

Ensuring that health systems have sufficient availability and distribution of appropriately skilled workers is critical if they are to function as intended, and to meet challenges as they arise. An understanding of current workforce capacity is key to being able to plan for future workforce requirements in the face of challenges such as the changing health needs of communities, the lengthy and costly training of health professionals, financial constraints, and patterns of professional migration [1]. Knowledge of the profile and capacity of the health workforce underpins planning and policy making; promotes accountability and capacity building at all levels of the health system [2]; and informs monitoring and evaluation of strategies to address issues of staffing adequacy; capacity and distribution; and to quantify projections of future workforce needs [2–4].

Access to current and accurate workforce data is even more critical in mental healthcare due to its complexity-- the number of different types of care and of professionals across different sectors of care--especially as it transitions from a hospital to a balanced model of service delivery; and the challenges of chronic underfunding, inequity of human resource distribution, and difficulties with recruitment and retention of staff [2,4–8]. In crisis situations such as the Covid-19 pandemic, data on current workforce availability and capacity provides planners with critical information to allow them to leverage the available mental health workforce to deliver large scale interventions [9,10]. The World Health Organization (WHO) has called for systematic assessment of current staffing in mental health as a prerequisite of evidence informed policy and planning in service delivery [10], and recommended that workforce evaluation be an integral part of Human Resources (HR) policy, planning and training. In Australia, the recent Productivity Commission report has called for a skilled mental health workforce that is responsive to local need. It identified a need for more psychiatrists and mental health nurses, especially in regional and rural areas, a strengthened peer workforce, and the importance of building on the capacity of the indigenous workforce. These improvements should include the availability of “standardised and comparable data at all levels” to compare workforce availability and capacity, and redress inequities in workforce distribution; an understanding of workforce characteristics; and integrating workforce strategy with service and infrastructure planning by aligning key system characteristics such as the availability and location of practitioners with consumer need [4].

However, the complexity of the mental health system and of its workforce--skilled in a range of disciplines and levels of qualification and employed across a range of sectors and types of services--and with a range of qualification levels--presents huge challenges to obtaining reliable, comprehensive and comparative data. Requirements for registration as a health professional vary internationally [11]. Additionally, conceptual ambiguity and terminological variability in mental healthcare limit the gathering of meaningful data. For example, the name “psychologist” may refer to a registered or a clinical psychologist; psychologists may be regulated as a health professional in the Australian Health Practitioner Regulation Agency (AHPRA) [12]; or classified as a “social professional” according to the International Standard Classification of Occupations (ISCO-08)[13]. AHPRA does not include “Psychotherapist” as a regulated category of health practitioner, but according to ISCO-08, a psychotherapist can refer to a psychologist, but is included within the ‘social and religious professionals’ category,

together with sociologists, philosophers and social workers, instead of 'health professionals'. In the US and Canada, a licensed psychotherapist requires a doctoral degree. A mental health nurse may or may not have specialist mental health qualifications, and this distinction is not necessarily documented even in professional registers, such as AHPRA. Umbrella terms such as "case manager" describe roles which may be occupied by any of several different types of professional, each bringing quite different skill sets [14,15]. It is unclear what types of professional, or of additional training, should be required in emergency departments and other acute general health settings which regularly deal with people with mental illness [16].

On the other hand, non-specialist health workers or lay workers comprise a significant part of the mental health workforce, particularly in Low and Middle Income Countries [17]. Outside the health sector, there is even more confusion, with an array of ill-defined occupations such as community mental health worker, support worker, case worker, key worker and case manager or navigator, positions which may be filled at different times and in different organisations by workers with anything from a six month vocational training certificate through to tertiary trained health or social professionals.

Moreover, available methods for providing data on the delivery of mental healthcare are scarce and subject to serious methodological limitations. This includes lack of standardisation, variable and/or ambiguous terminology, and the risk of ecological fallacy by the use of "top down" national indicators to inform decision making at the local level, where the actual allocation of staff and services takes place. Currently available methods also frequently fail to include information from other sectors providing care to people experiencing mental ill health, and so provide an unbalanced and incomplete picture of care availability [18]. Workforce data at the local level may also be more difficult to obtain due to problems in quality and variability of data. For example, the World Health Organisation(WHO) atlas [19] provides data at national level; and national agencies such as the Australian Institute of Health and Welfare (AIHW)[20] provide state or territory level data. While professional registers record currently qualified and registered health professionals and those in occupations with protected titles, there is no equivalent database of staff working in other roles. Additionally, where classification of occupations is based only on the nature of the work performed, as in ISCO [13] and the European skill/Competences, qualifications and Occupations (ESCO) [21], rather than on the characteristics or background of the person performing, then, as noted in the examples described above, the real capacity and skills of the workforce may not be identified.

A standardised terminology and framework that can be used across different sectors is urgently needed. The WHO “One Health” [22] model, calls for programs, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes. This “whole systems” approach should encompass all sectors and workers providing care to a defined population group, to provide a comprehensive picture of the profile and capacity of the health workforce in a region, and to be able to compare it with other regions.

In this study, we present a new method to evaluate and describe the mental health workforce profile and capacity in local areas, using a health ecosystems approach [23] together with the Description and Evaluation of Services and DirectoriEs (DESDE) [24], a standardised and internationally validated assessment system. We describe the relationship of the workforce capacity to patterns of regional care provision, and conduct a comparative demonstration study of its applicability in the Australian Capital Territory (ACT), two other urban health districts in Australia (Sydney and South East Sydney) and three benchmark international urban health districts in Europe (Helsinki-Uusimaa (or “Helsinki”) (Finland), Gipuzkoa (Spain) and Verona (Italy)).

Method

This is a demonstration study of the use of DESDE-LTC to describe the workforce capacity in local areas following a healthcare ecosystem approach and a whole system perspective of mental healthcare.

Key models, terms and groupings

We have adapted, wherever possible, the ISCO-08 classification providing a series of modifications and additions to increase the clarity of the definitions for a standard assessment of workforce capacity. “Workforce” is defined as the people engaged in or available for work, either in a country or area or in a particular service. The term “capacity” follows the Talent Management Model [25] in human resource management as “the knowledge and skills, qualifications and entitlement of an individual to conduct a defined set of activities in practice that defines the maximum ability that exists at present in real world conditions”. It is characterised by the “power, ability or possibility of doing something or performing”) [26]. This concept is different to “capability”, which refers to the higher level of ability that could be demonstrated under the right or ideal conditions. Capacity is also different from current performance, as it takes into account the knowledge and skill set of the

individual. For example, a nurse working in a case management job would have a capacity different to a health worker, due to his/her professional background.

In order to assess workforce capacity, it is necessary to consider the differences between profession, occupation and job. Profession is mentioned, but not defined, in ISCO-08. A “job” is a set of tasks and duties performed, or meant to be performed, by one person, including for an employer or in self-employment [13]. The job is related to the specific conditions, activities and skills defined in a particular contract. An “occupation” is the set of jobs whose main tasks and duties are characterised by a high degree of similarity. It refers to the kind of work performed in a job that is analogous to the work in other settings and countries. Therefore, ISCO-08 classifies occupations, and not jobs. Finally, a “profession” is a disciplined group of individuals who adhere to ethical standards. This group positions itself as possessing special knowledge and skills in a widely recognised body of learning derived from research, education and training at a high level, and is recognised by the public as such. It is also prepared to apply this knowledge and exercise these skills in the interest of others [27]. Therefore, professionals are accountable to those served and to society [28]. Professions are recognised by standard education programs and their related qualifications and entitlements at national level [29]. Thus “jobs” have a significant variability across jurisdictions and are difficult to compare, “occupations: show a lower level of heterogeneity, and those occupations that are associated to “professions” have international standards, and are less difficult to compare internationally. In addition, professions are associated to a more homogeneous skill set.

Here we use an adaptation of the occupational groupings developed by the World Health Organisation (WHO) [19], and ISCO-08 which distinguish between health and non-health occupations. When describing the types of services employing staff, we also make a distinction between “core health” services which have an explicit health focus, and which are mainly staffed by clinical health professionals, with 3 years or more of training, and “other”, non-clinical services, focused on community participation and promotion of independence, such as skills development, or assistance with accommodation, housing and employment [30]. The latter are staffed predominantly with people with certificate or diploma level training, or without formal training, and to a lesser extent with tertiary professionals such as social workers and occupational therapists.

In our study, the “clinical health professionals” group included psychiatrists/registrars, other physicians, psychologists, and nurses; while “allied health professionals” refers to social workers and occupational therapists. Other non-tertiary qualified occupations encompass a range of roles and responsibilities, but lack standardised occupation titles, responsibilities or

prerequisites enabling accurate distinctions between them, and thus are here described collectively as “others”. These roles may include, but are not limited to, such titles as “support worker”, “mental health worker”, “case worker” and “recovery coach”. They may include qualifications at diploma level or other grade level with less than three years training, or they may require no specific training.

Description and Evaluation of Care Systems and DirectoriEs for Long Term Care (DESDE-LTC)

DESDE-LTC is an internationally standardised and validated instrument for the standard description and classification of services across different sectors [31], which was used to develop Atlases and Directories of Mental Healthcare of the included regions. Using the DESDE-LTC tool, the atlases provided a holistic view of the local context including socio-economic and socio-demographic data, service availability and both placement (i.e. bed and/or place) and workforce capacity. The DESDE-LTC identifies individual services providing care on a temporally and administratively stable basis, described as Basic Stable Inputs of Care (BSICs); and describes the Main Type of Care they provide (MTCs). MTCs are classified according to sub-categories of one of six main branches of care (Residential, Outpatient, and Day Care). This provides a standardised framework for an analysis of the type of care delivered, the type of worker delivering it, and how the workforce is distributed. Use of DESDE-LTC enables valid comparison across regions and countries despite the different levels of care, units of analysis, and terminology which characterise mental health systems. It is a multi-axial system, classifying services along several axes including their target population; type of care; the sector of care; and the professional providing the service.

Inclusion criteria

Inclusion criteria was that of the Integrated Atlases as follows:

- 1. All staff working in services and providing direct care to adults with a lived experience of mental illness in services in all sectors were included.** Staff not providing direct care, such as administrative staff, were not included. The workforce was that employed in services which met the following criteria:
- 2. The service targets adults with a lived experience of mental illness:** The primary reason for using the service is a mental health issue or a psychosocial disability including any diagnosis of mental disorders (ICD-10, section F)

- 3. The service is universally accessible:** The study focuses on services that are at least in part universally accessible, regardless of if they are publicly or privately funded. The inclusion of services requiring significant out of pocket payment and fully private insurance would give a misleading picture of the resources available to most people living with mental illness and obscures the data for evidence-informed planning of the public health system. These services should be mapped in a separate layer of information.
- 4. The service is within the boundaries of the study region:** The inclusion of services that are within the boundaries of the study region is essential to have a clear picture of the local availability of resources.
- 5. The service provides direct care or support to consumers.** This excludes services which may coordinate other services, but which do not have direct contact with consumers.

Services that do not have guaranteed funding for three years receive an extension code “v” to differentiate them from stable services and to facilitate the description of the robustness of the system.

Catchment areas

We have mapped the workforce profile and capacity of three urban regions under the jurisdiction of regional health bodies in Australia: Australian Capital Territory Primary Health Network (ACT PHN), Sydney Local Health District (SLHD) and South East Sydney Local Health District (SESLHD), as well as three urban health districts in Europe: Helsinki-Uusimaa (Finland), Gipuzkoa (Spain); and Verona (Italy).-The adult population of these regions ranged from 277,019 in the ACT to 1,206,446 in Helsinki-Uusimaa.

In Australia, healthcare, including mental healthcare, is coordinated at the regional level by a network of 31 Primary Health Networks, which are broadly similar geographically to Local Health Districts, and are responsible for management of public hospitals and community mental health centres. The Helsinki-Uusimaa study area is comprised of 26 municipalities and five geographic sub areas including the capital of Finland. Helsinki-Uusimaa has been regarded as a key area for demonstration studies of general healthcare [32] and mental healthcare [33,34]. It includes eight public psychiatric hospitals. Primary mental healthcare

is provided at health centres and secondary and tertiary care by the hospital district of Helsinki-Uusimaa. Verona is a province of the Veneto region in Italy. Mental healthcare in Italy is based on a community model organised into local health districts based on geographic area, each with its own Department of Mental Health providing a range of inpatient and outpatient services. The mental health provision and coding was conducted as part of the REFINEMENT study [33]. The mental health system in Spain also follows a community model organised in catchment areas with full devolution of funding and management to the regions [35]. San Sebastian is the capital of the Gipuzkoa province of the Basque country region in Spain. Gipuzkoa's mental health network includes 13 catchment areas, each with its own mental health centre [36]. All countries in the study are classified as high income countries [37], with Australia having the highest GDP per capita, followed by Finland [38].

Procedure

Data from the ACT reference area was collected by researchers at The Australian National University (ANU) and the University of Sydney with DESDE-LTC in 2016 as part of the Integrated Atlas of Mental Health of the Australian Capital Territory Primary Health Network region [39]. Ethics approval for the ACT data was granted by ACT Health Research Ethics and Governance Office (protocol ETHLR.16.094).

This data was compared to data registered in the metadata repository on service provision and workforce capacity of the GLOCAL Project (Global and Local Observation and mapping of CAre Levels) that synthesises information from all published studies using the ESMS/DESDE system in the world. (The European Service Mapping Schedule (ESMS) is an earlier version of DESDE). In this case, information from ACT was compared with data from other areas in Australia and the world where the data gathering and quality was supervised by members of our team (LSC and MGC). This included information available in the repository from the other two Australian areas: South Eastern Sydney Local Health District, and Sydney Local Health District [40]. Verona and Helsinki resource data came from the service mapping carried out in the REFINEMENT project (REsearch on FINancing systems' Effect on the quality of MENTAL healthcare) [41]: eight areas from eight countries were mapped in 2013 by using the DESDE-LTC coding system [30,33]. Finally, data from the Gipuzkoa area were collected from the Mental Health Atlas developed by the Psicost Research Association in 2013 [36] (updated to 2015), also using the DESDE-LTC tool.

Data showing the rate of psychiatrists and psychologists at national level was obtained from the WHO Global Health Observatory [42].

Data analysis

Workforce numbers were calculated as Full Time Equivalents (FTEs) per 100,000 adult population (aged 18 years and over) and analysed according to: (i) occupation; (ii) to their representation in the main branches of care in the DESDE-LTC instrument; and (iii) in relation to service availability (the number of workers in relation to the number of services of each type of care (MTC) per 100,000 population), which provides an average figure for the size of teams. It is important to use FTEs as the unit of measurement so that the data is not distorted by counting part-time and casual staff. Australian regions included data from all main branches of care: however, from the international regions, data in the smaller branches of Accessibility, Information or Self help main branches were not available. In addition, workforce profile was studied through percentages over the overall professionals in each type of care and in each health area.

Results

Table 1 shows detailed rates of professionals according to main type of care, and figures 1-3 show workforce composition.

Helsinki's overall workforce rate was the highest of all regions in the study, at 247.97 staff per 100,000 adults, and SESLHD the lowest, with 123.74 staff per 100,000 adults. ACT had the second highest workforce rate.

Professional groups availability and workforce composition

Psychiatrists: The rate of psychiatrists in ACT (10.83 per 100,000 adults) was within the range of the other Australian regions (7.99 and 15.97 per 100,000 adults in SES and SLHD respectively), although their distribution differed, with fewer employed in acute inpatient wards in ACT, and more psychiatrists working outside the hospital setting. In international comparison, ACT had the lowest rate of psychiatrists, with Verona (20.23 per 100,000 adults) and Helsinki (24.01 per 100,000 adults) providing close to double the rate of psychiatrists available in ACT and Gipuzkoa (11.57). Helsinki's rate of psychiatrists was the highest of all regions, particularly in sub-acute residential care. In outpatient care, the rate of psychiatrists in Helsinki (14.37 per 100,000 adults) was more than double all other regions.

The total rate of psychiatrists in SES (7.99 per 100,000), Verona (20.23) and Helsinki-Uusimaa (24.01) was significantly different to their respective national averages (13.53, 5.98 and 48.04). Psychiatrists comprised 13% of the total workforce in Verona, 10.3% in SLHD, 9.7% in Helsinki, 7.9% in Gipuzkoa, 6.5% in SESLHD and 6.1% in ACT. They comprised a smaller part of the acute residential care workforce in the ACT (6.4%), than in all other

regions in the study. In community residential care, clinical professionals overall (psychiatrists, nurses, psychologists) comprised a much higher proportion of the workforce in the ACT (41.2%) than in all other regions, in which the proportion of clinical professionals ranged from zero in the two Sydney regions to 18.6% in Verona.

Psychologists: ACT had the highest rate of psychologists of all regions (19.53 per 100,000 adults), with more than double the rate of all regions except Helsinki (11.69 per 100,000 adults). This was particularly the case in outpatient care, where ACT provided 15.88 psychologists per 100,000 adults, compared to SLHD, which had the lowest rate of psychologists of the Australian regions (2.86); and Verona, which had the lowest rate of all regions in the study, with 1.47 psychologists per 100,000 adults working in outpatient care. In residential care, ACT's rate of 3.1 psychologists per 100,000 adults was higher than the other Australian regions, but closer to those of the international regions: Gipuzkoa with 3.17, Verona with 4.64, and Helsinki 3.16 psychologists per 100,000 adults. In day care, the picture was slightly different: while ACT again provided more psychologists than the other Australian regions, its rate of psychologists (0.55 per 100,000 adults) was similar to that of Helsinki (0.58), lower than Verona (1.19), and only a third of the rate of psychologists in Gipuzkoa (1.44 psychologists per 100,000 adults).

The total rate of psychologists per 100,000 adult population in all regions (ACT: 19.53, SES: 6.92, SLHD: 4.42, Gipuzkoa :7.43, Verona: 7.3 and Helsinki: 11.69) was significantly different to their respective national averages (Australia:103; Italy:3.8; Norway:73.52). National data was not available for Spain.

Psychologists comprised 11% of the workforce in ACT compared to 6% in SESLHD, 5% in Helsinki and Verona, 4% in Gipuzkoa and 3% in SLHD. ACT had a higher proportion of psychologists than the other Australian regions in health related outpatient care, and this difference was even more pronounced when comparing ACT to the international regions: ACT (15.88 per 100,000 adults) being roughly double that of Helsinki with the next highest rate (7.78), and more than ten times the rate of Verona, which at 1.47 psychologists per 100,000 adults in health related outpatient care had the lowest rate in the study.

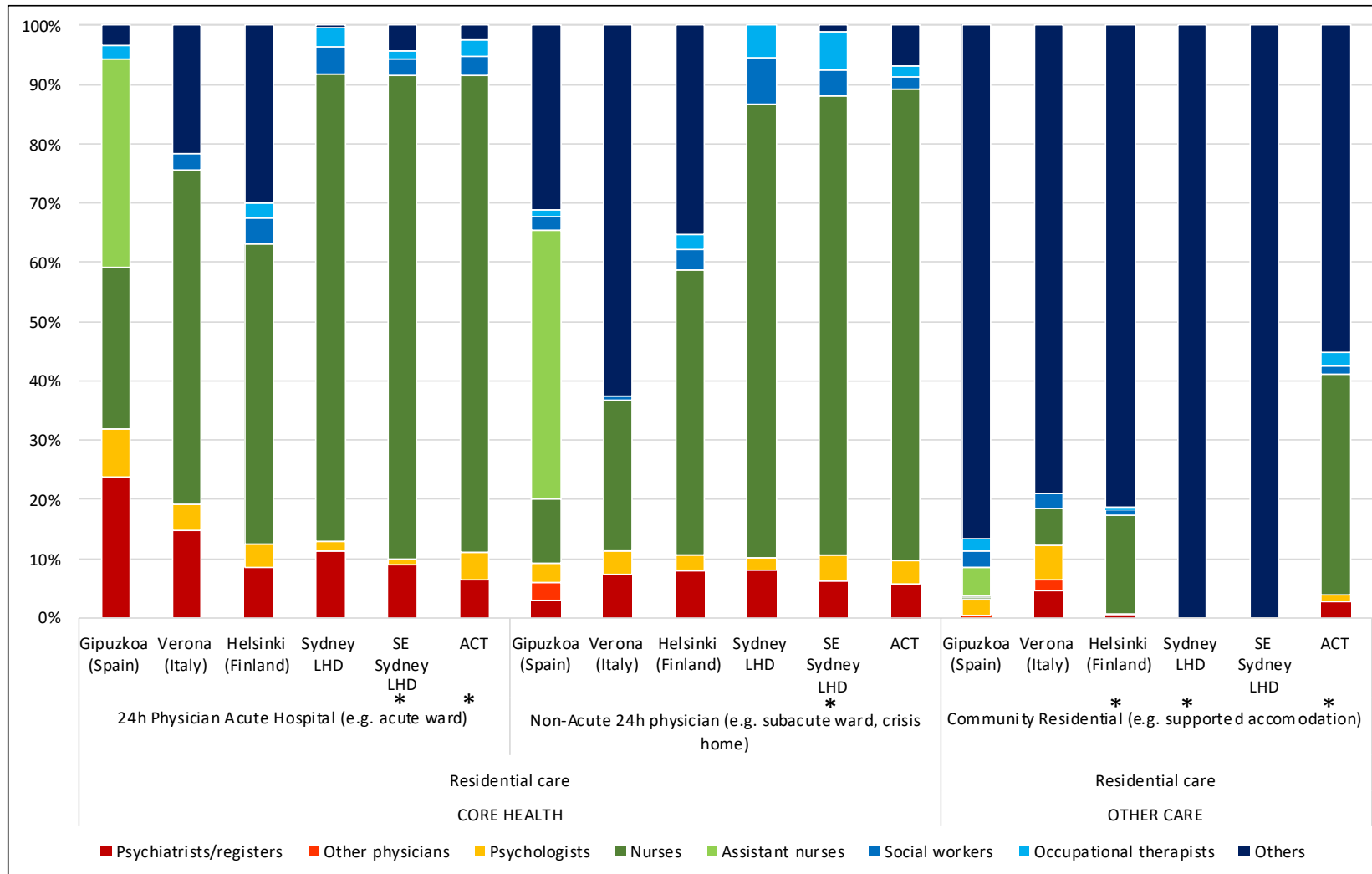
Nurses: ACT provided the highest rate of nurses of the Australian regions, and the second highest in international comparison, after Helsinki. The rate of nurses in all Australian regions (86.98, 83.42 and 53.85 and 83.42 per 100,000 adults in ACT, SLHD and SESLHD respectively) was similar to that of Helsinki (98.01) but significantly more than Gipuzkoa (12.91) and Verona (46.75). Nurses were employed predominantly in residential care in all regions, with Helsinki and ACT providing the highest rates of nurses in community residential and outpatient care. Gipuzkoa alone provided "assistant nurses" in residential and day care.

Nurses comprised the largest workforce group in ACT (49%), in the other Australian regions (53.9% in SLHD and 43.5% in SESLHD) and in Helsinki (40%). They were a proportionately higher group in both acute and non-acute hospital residential care in Australian regions than in the international regions, Nurses comprised only 8.8% of the workforce in Gipuzkoa, which was also the only region to provide “Assistant nurses” (17.3% of total workforce).

Allied Health (Social workers and occupational therapists): Here again, Helsinki and two of the Australian regions provided similar rates of staff (ranging from 12.59 per 100,000 adults in SLHD to 17.19 in Helsinki) which were significantly higher than those of SESLHD, Gipuzkoa and Verona, which ranged between 4.71 (Verona) and 8.64 (SESLHD). ACT had the second most allied health professionals overall after Helsinki, although in day care, all international regions provided more allied health professionals than all Australian regions.

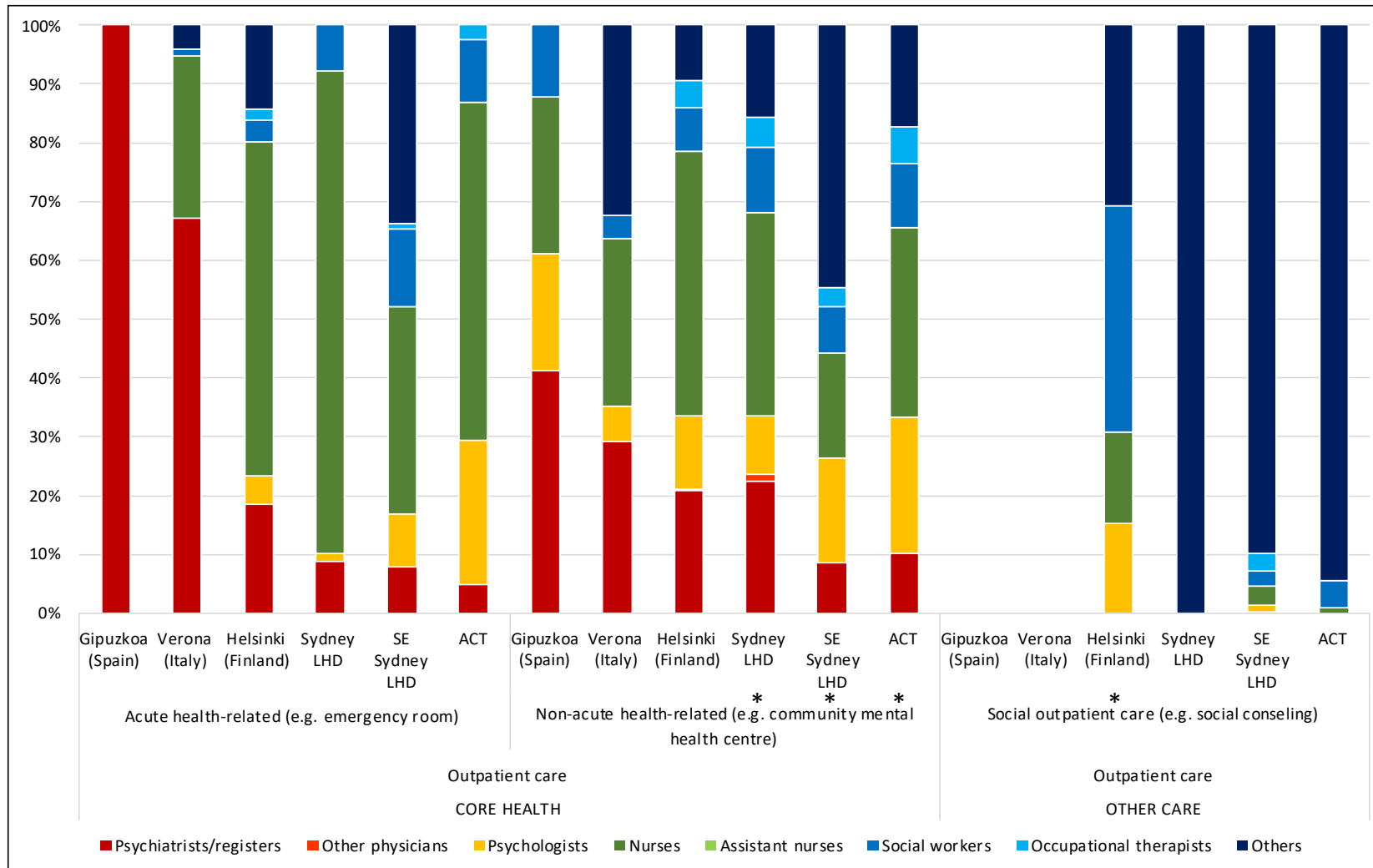
Allied health professionals comprised 9.26% of ACT’s workforce, 8.13% in SLHD and 6.98% in SESLHD, compared to 4.48% in Gipuzkoa, 6.93% in Helsinki and 3% in Verona.

Other (non “core health” workforce): ACT and the other Australian regions provided significantly lower rates overall of this type of worker than the international regions, with Helsinki providing the highest rate at 96.82 per 100,000 people, and SLHD the lowest at 38.07. In residential care, although ACT provided a higher rate of non-core health staff than the other Australian regions (2.54 and 3.55 in SLHD and SESLHD), its rate at 16.98 per 100,000 adults was less than a quarter of that of Helsinki (80.44) and less than half of Gipuzkoa (35.34), and Verona (55.91). However, in outpatient care, ACT provided the lowest rate of non-healthcare staff of the Australian regions (23.78 per 100,000 adults compared to 33.66 in SLHD and 38.1 in SESLHD); although significantly more than Gipuzkoa (0), Helsinki (7.46) or Verona (7.9). These “Other” or non-core health professionals were proportionately smaller in the Australian regions (ACT:24.49% of total workforce; SLHD:24.6%; SESLHD: 37.45%) than in the European regions (39.05% in Helsinki, 48.87% in Verona and 55.47% in Gipuzkoa).



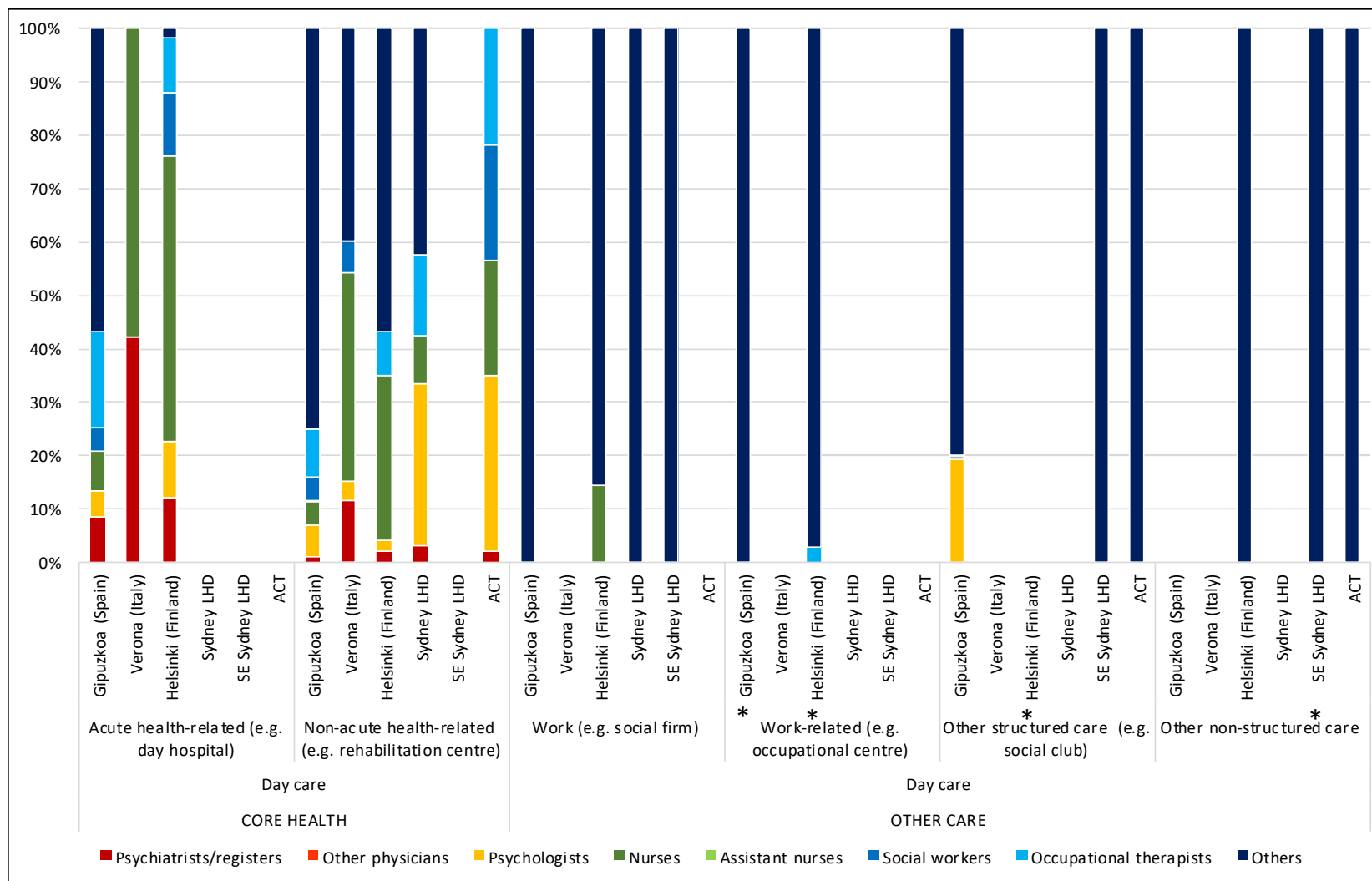
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Figure 1. Percentage distribution of workforce in adult mental health services for Residential care in the six study areas.



*Missing data

Figure 2. Percentage distribution of workforce in adult mental health services for Outpatient care in the six study areas.



*Missing data

Figure 3. Percentage distribution of workforce in adult mental health services for Day care in the six study areas.

Analysis of workforce in relation to service availability (size of care teams) (Figures 4-6)

Figures 4-6 show the size of the workforce overall in relation to the number of services available, according to the main types of care. In acute residential care, SLHD had the highest workforce rate in relation to rate of service availability of all the regions. While ACT and Helsinki had similar availability of acute residential services, the ACT had a larger workforce capacity. Although the ACT had a higher rate of community residential services than of acute inpatient care, its workforce capacity in community residential services was lower than that of inpatient care.

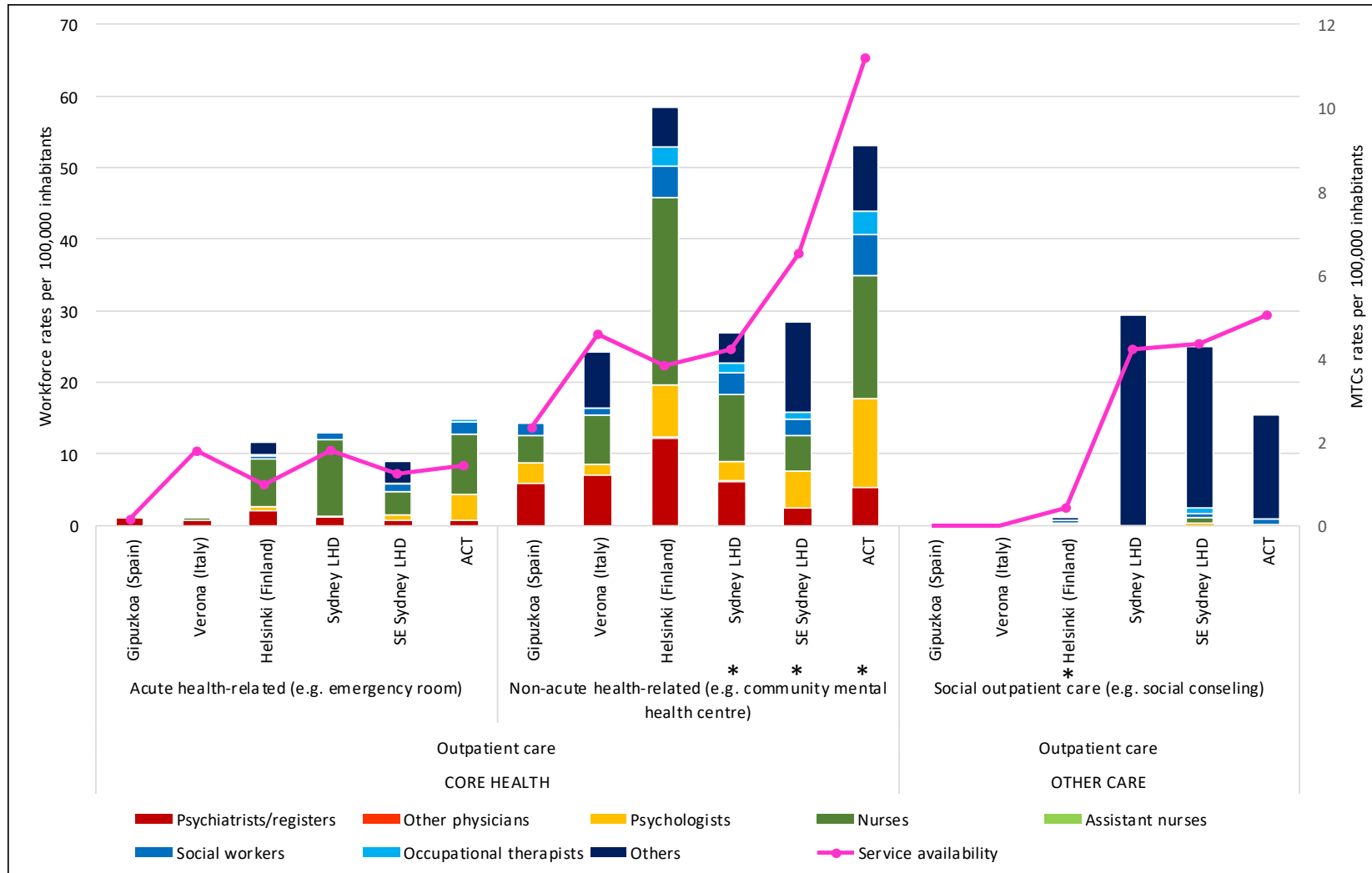
In outpatient care, workforce rates largely aligned consistently with service availability rates across study regions, with the exception of non-acute health related care in the community, where Helsinki's workforce was significantly greater in relation to its rate of services available than all other regions. ACT's workforce was similar to that of Helsinki, although distributed by a significantly higher rate of services.

Workforce rates similarly largely followed service availability in day care, again with a notable exception in work related daycare, where, although service availability rates in employment support in Gipuzkoa and SLHD were similar, workforce capacity in the Spanish region was far greater than that in Sydney. In acute health related daycare, Verona provided more services than Helsinki, but with a greater workforce capacity.



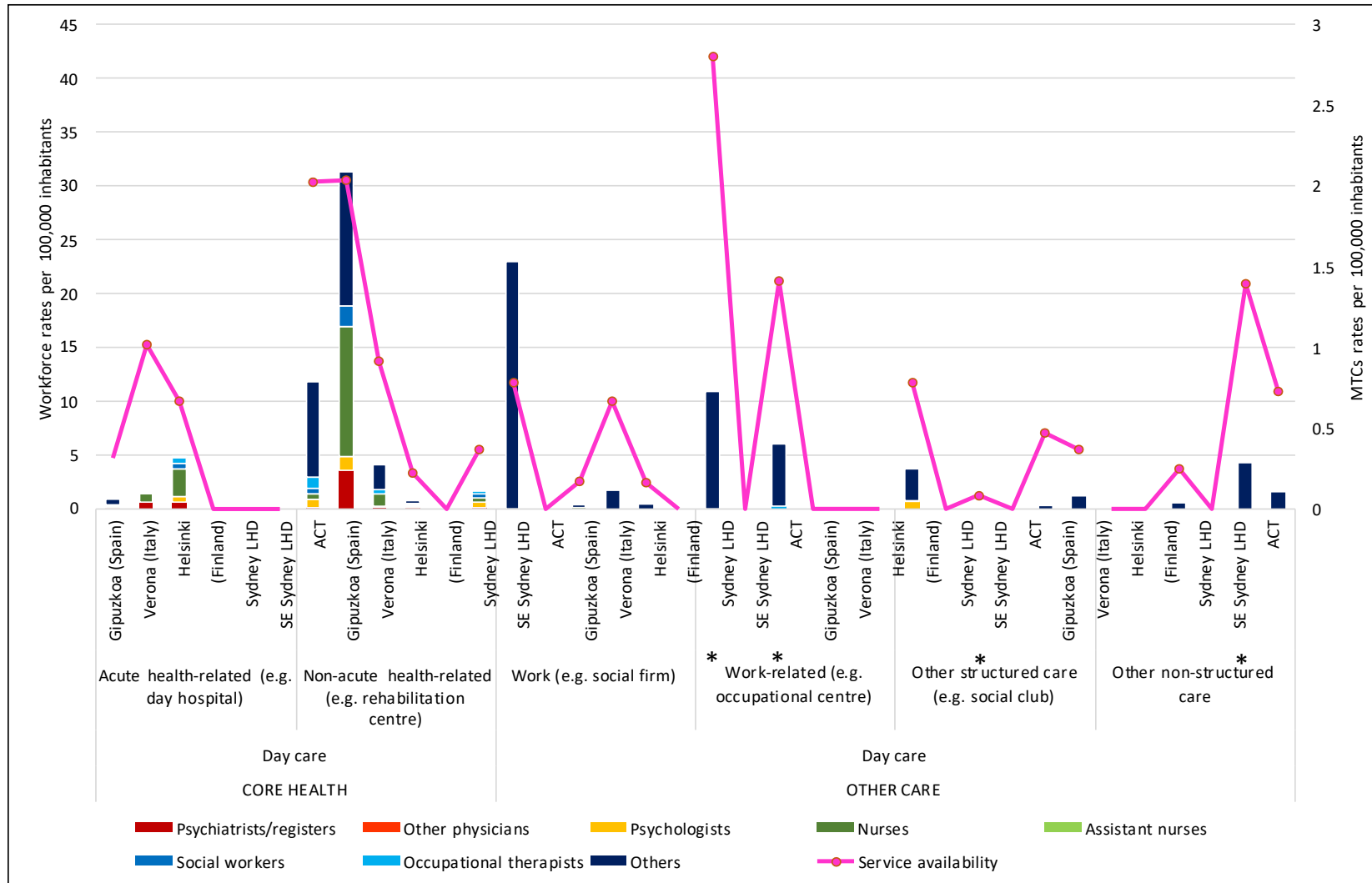
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Figure 4. Workforce rates and availability in adult mental health services for Residential care in the six study areas.



*Missing data

Figure 5. Workforce rates and availability in adult mental health services for Outpatient care in the six study areas.



*Missing data

Figure 6. Workforce rates and availability in adult mental health services for Day care in the six study areas.

Discussion

Traditionally, comparisons on workforce capacity have been carried out using national data gathered by the government, and compiled by international organisations such as OECD or WHO. This information has been used to produce league tables and benchmarking based on crude workforce capacity, and other macro-indicators such as bed availability. This has been considered as “evidence” and applied to health planning [43]. The use of similar global figures of bed availability for ranking and benchmarking Australia’s hospital psychiatric beds in comparison to other countries has caused a major international debate [44,45]. The final agreement was “ that finding robust and comparable national data remains very challenging [...] with quality of data often a big concern [45]. As is also the case with the total number of beds, the total number of psychiatrists, nurses or psychologists at the macro level cannot be considered “evidence”, and even less be used for resource allocation and planning at the local level. These figures are unreliable indicators for mental health planning, due to non-commensurability bias, terminological variability, ecological fallacy, risk of surrogation and objectification [46]. For example, our results showed significant differences in the data at local level from that provided the national level by WHO. Additionally, figures were only available for psychiatrists and psychologists, who in our study comprised less than 40% of the workforce in all types of care. In addition, these sources of information are not reliable. In a recent study by one of these groups, over 40% of the policy reports contained errors in accuracy [47]. In the analysis of bed availability previously mentioned, WHO was contacted by the authors after the publication of their study, and the WHO officers questioned the quality of their own published data [45]. Data provided as number of professionals per 100,000 population, and not as FTEs, does not provide the true capacity: the very large difference between national rates of overall number of psychologists identified in WHO data compared to our regional rate of psychologists which were counted according to FTE, suggests that a significant proportion of psychologists could be working more limited hours, and thus less available than the national data suggests.

Under these circumstances, a standard and precise method that allows comparability of data, and where national standards can be disaggregated to the local level, is of outmost importance for international comparison gap analysis; analysis of equality in health provision; for feeding reliable information into the models and decision support system; and finally to guide mental health policy, prioritisation and resource allocation at the local level.

The DESDE-LTC taxonomy provides a framework upon which the pattern of care provision in the mental healthcare system is revealed, using the professional characteristics of the

members of care teams working in the service or meso level of the care delivery system. This is the level at which service users engage directly with the system, according to the matrix system of care delivery, which organises the elements of care according to stages of the process and levels of care delivery [48]. Our unit of analysis, the individual service or BSIC, represents the smallest unit of analysis for care delivery. These have also been described as “clinical microsystems”: and act as “building blocks” of the healthcare system [49], with common clinical and business aims, linked processes, shared information environment and producing common performance outcomes [50]; as well as providing “the logical locus for linkage between vision and delivery and therefore the “agent for change” within a macrosystem ”[51]. Understanding the make-up of these services therefore--who is providing the care within them and what care they are providing--is crucial to understanding the capacity and organisation of the overall workforce.

The results of this study show that the mental health workforce in the ACT was, overall, larger and more highly skilled than all the comparator regions except Helsinki, with the exception of its psychiatrist workforce, the rate of which was higher in the international and one Australian regions, particularly in outpatient care. The high rates of psychologists, but relatively low rates of psychiatrists in the ACT aligns with an observed national trend in Australia [20,52] of expansion of the psychologist workforce, which is more likely to be individual practitioner based; and contraction of the psychiatrist and psychiatric nursing workforce, which are more likely to provide “more complex, team-based care”. This trend may not be providing better outcomes for patients [53] or a more integrated system of care. On the other hand, the ACT had a higher rate of nurses than the other Australian regions. Mental health nurses have been identified as an area of acute and growing shortage in Australia [3] and their skills may be under-utilised in the delivery of mental healthcare [54] (and possibly unrecognised). This may be particularly so in Spain, where the lower skilled category of “Assistant nurses” comprises a significant part of the “nursing” workforce. Hospital care, both acute and non-acute, was more likely to be delivered by nurses in Australia than internationally, where some of the care is delivered by lower skilled staff. In the community, however, the difference was less marked, with more nurses in Finland than the ACT in outpatient care, and in Italy in day care.

The community based workforce was larger in the ACT than in the other Australian regions, but they were more likely to be working in health-related than social care services, with few working in outpatient social care, and none at all engaged in work or work related services. When compared to the international regions however, the ACT workforce was less

community orientated, with the lowest rates of staff in community residential care and day care. In outpatient care, however, ACT had significantly higher rates of staff than the Spanish and Italian regions. This pattern of workforce distribution is consistent with the pattern of service availability in ACT and other Australian regions, and again reveals a pattern of care provision more focused on individual interactions with service providers, particularly health related providers such as psychologists, than is the case internationally. While this could be consistent with principles of person centred care [55], it also indicates a system more reliant on health based and sessional rather than social type care, which is usually more available in day services. Services which provide opportunities to develop and maintain natural supports, such as those accessed through social networks and community participation, play an important part in a recovery based approach [56,57]. The recently launched National Disability Insurance Scheme in Australia [58] which provides individualised funding packages for psychosocial services, is likely to increase the trend towards support on a one-to-one basis.

Our analysis of the workforce rate in relation to service availability provided important contextualisation of service availability data. For example, while ACT had a relatively high rate of service availability in outpatient care when compared to the other Australian regions, its low workforce rate in this area suggests that its capacity to provide this type of care could in fact be less than that of the other regions. The situation is similar in non-acute health-related outpatient services, where ACT had higher service availability than Helsinki, but a smaller workforce. This information is necessary for planners in assessing actual system capacity. Comparing workforce and service availability also provides information on team size and service distribution. The distribution of staff in a higher number of smaller teams could be less cost-efficient, but on the other hand, a higher concentration of staff in a lower number of services could also mean reduced accessibility through lower spatial distribution.

A standardised terminology is needed in the study of mental health systems to address semantic ambiguity. This ambiguity extends to how workforce roles are defined, as well as to how they are named. ISCO provides occupational definitions by role, regardless of the qualifications of the person holding the role. This is problematic in mental healthcare where the same role may be held by people with different professional backgrounds, offering different skill sets and levels of expertise [59]. Additionally, there is international variation in requirements of pathways to registration of health professionals, as well as differences in scope of practice, and in the use of regulations such as “protected title”: titles which by law only people registered as a particular health professional may use.

In non-health occupations, the picture is even more confusing, with some roles differing by name or role requirements on an organisation by organisation basis. Data relating to these workers, broadly classified by the World Health Organization as the “psychosocial workforce” [10] can also be less readily available, as employers are more likely to be non-public agencies such as Non-Government Organisations, who may or may not collect or release reliable workforce data. Using the DESDE-LTC, professionals are described by their qualification and skill set, so that for example, a psychologist working in a role described as a mental health worker is distinguished from a social worker in the same role, or from someone without tertiary qualifications. However, the complexity and ambiguity of roles in social care remain a barrier to understanding the capacity of the workforce.

Limitations

This study did not include data from services whose availability to the consumer requires a substantial out of pocket contribution. These services could be separately analysed as another layer of the healthcare system. Some data in the study was incomplete, and thus stated figures may be lower than actual figures: namely in SESLHD in health related residential care and, in Helsinki, in residential community care acute health related and social related outpatient care; in SLHD and ACT in residential community care; and in all Australian regions in acute health related outpatient care. However, all reasonable attempts were made to obtain full data. A lack of standardised workforce terminology, particularly in non-professional roles, as described above limited analysis of this important section of the workforce in all regions.

Implications

These results provide a baseline of workforce composition, organisation and capacity at the local level, from which analyses of current and future need can be monitored. Our study shows the critical need for workforce data obtained at this level. We identified significant differences between national and regional data in several types of care: modelling based on the national level data in these cases would provide highly misleading scenarios and lead to inappropriate and potentially inequitable allocation of resources. Critical shortages in certain occupations, particularly in mental health nursing, have been identified as imminent [4] and current data is a crucial first step in monitoring the effectiveness of strategies to address these. This study has shown the relevance of workforce data in conjunction with service availability data to provide a full picture of actual availability of care. Information on team

size and distribution can inform planning for accessibility and efficiency. Additionally, workforce planning in any type of service setting needs to consider the current availability and capacity of services to increase or decrease their staff levels. Aligning workforce availability and location with consumer need, and estimating future supply needs, as recommended in the Productivity Commission Report [4] requires a mapping and measure of current supply and location. A knowledge of the make-up of the workforce in terms of professional background and skill set, such as that provided in this study, is particularly relevant to an additional Report recommendation for data on workforce characteristics, particularly in relation to workforce capabilities, to inform broader mental health service reform.

There is an urgent need for more reliable and standardised data to measure the various roles in the non-registered professional workforce, particularly given its importance in expanding community care provision. The current situation does not provide adequate information about the roles, skill level and functions being performed by workers providing non-health related or psychosocial care, thus limiting the ability to identify gaps in psychosocial care.

A systematic analysis of workforce capacity is important in comparative effectiveness studies of mental health systems, providing a strategy for a detailed analysis for modeling using real data [60], such as the effect of changes to the workforce in one part of the system on the capacity of other parts of the system.

Future steps

In addition to current workforce provision, analysis of the workforce in training, including completion rates could inform planners of future capacity. A comparison of the workforce provision in rural areas is also needed to identify possible issues of inequity between rural and urban workforce availability.

Conclusion

This study has shown the usability of an ecosystem approach using a standardised classification instrument in a comparison of workforce profiles and capacity in mental healthcare. We have identified patterns in care provision that reflect the whole care system and that are internationally comparable. A comparison of workforce capacity and composition is critical to provide planners with information about other workforce models and

enable comparison towards specific targets. The use of meaningful information about the local area can help in understanding capacity, and contextualising better the size of care teams and professionals by service type. Role ambiguity, particularly in the non-professional and community workforce sector impedes accurate monitoring and onfounds attempts at needs based planning.

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Foreword to Chapter 7

Interviews with service managers for the Atlas, using the DESDE tool, include the opportunity for interviewees to provide general comment. I was undertaking my research during a period of major system reform, the roll out of the National Disability Insurance Scheme (NDIS). This scheme provides individual packages of support to eligible participants, as opposed to the previous block funding model, and represents significant change in the structure and funding of the mental health system, and to the provision of traditionally block funded services. It is arguably the most profound reform to the delivery of mental health care in Australia. Using a whole systems approach, one of the major issues in psychosocial care in Australia is related to the impact of the NDIS and is a core component of my analysis. As such, use of the DESDE tool as a means of monitoring its effects on a whole system at the local level provided data that was highly relevant but otherwise largely lacking at this time.

The following paper provides an example of the use of the DESDE tool in a system provided experiencing major changes. DESDE was not designed for use in systems while undergoing a process of reform. However, the "bottom up" nature of the instrument enabled insights into the "real world" experiences of managers at the meso or individual service level of care. This qualitative data provided important context to the service classification data, which showed a system experiencing considerable instability. It also provided a demonstration of the ability of the DESDE tool, as a living instrument, to incorporate novel characteristics of system behaviour.

Service managers expressed considerable concern around several common themes, which are the topic of Chapter 7, and the last paper in my thesis "Organisational impact of the National Disability Insurance Scheme transition on mental healthcare providers: the experience in the Australian Capital Territory. As a pilot area of this reform, the experiences of services in ACT provided information critical to the rollout of the scheme on a wider basis; and was urgently needed to add to the limited evidence available at the time. The identified funding instability in the system also led to the incorporation of an additional supplementary code in the DESDE to indicate this.

Organisational impact of the National Disability Insurance Scheme transition on mental healthcare providers: the experience in the Australian Capital Territory

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Abstract

Objectives: Concerns raised about the appropriateness of the National Disability Insurance Scheme (NDIS) in Australia for people with mental illness have not been given full weight due to a perceived lack of available evidence. In the Australian Capital Territory (ACT), one of the pilot sites of the Scheme, mental healthcare providers across all relevant sectors who were interviewed for a local Atlas of Mental Healthcare described the impact of the scheme on their service provision.

Methods: All mental healthcare providers from every sector in the ACT were contacted. The participation rate was 92%. We used the Description and Evaluation of Services and Directories for Long Term Care to assess all service provision at the local level.

Results: Around one-third of services interviewed lacked funding stability for longer than 12 months. Nine of the 12 services who commented on the impact of the NDIS expressed deep concern over problems in planning and other issues.

Conclusions: The transition to NDIS has had a major impact on ACT service providers. The ACT was a best-case scenario as it was one of the NDIS pilot sites.

The provision of support for people with psycho-social disability related to a mental health condition was a late addition to the National Disability Insurance Scheme (NDIS). Key NDIS concepts of access, choice and control [1] are relevant to people with mental illness whose ability to fully participate in life is impaired by the economic and social consequences of their illness. Access to appropriate and integrated care at all levels of need in a 'stepped care' approach are central to the Fifth National Mental Health and Suicide Prevention Plan [2]. However, core differences between mental illness and physical disabilities in the course of illness and type of supports required have raised doubts about the appropriateness of the NDIS for this population [3].

As a pilot site, and the first jurisdiction to accept all eligible residents across all age groups into the NDIS, the Australian Capital Territory (ACT) is well placed to provide valuable feedback and unique insight. The geographically small size and comparatively well educated and affluent population of this national capital should enable relative ease of implementation. However, interviews with mental health service providers for a service mapping study of the ACT revealed an incidental finding of distress and uncertainty associated with the transition from block to individualised funding, both on their own and on their clients' behalf.

Method

All service providers supporting people with mental illness across all relevant sectors in the ACT were contacted to contribute to the development of an Integrated Atlas of Mental Health in the ACT [4]. Service providers included publicly funded, state managed services and non-governmental organisations (NGOs) providing universally accessible support without a significant out-of-pocket cost. Interviews with managers were conducted by researchers from the Centre for Mental Health Research at The Australian National University. The methodology was the Description and Evaluation of Services and Inventories for Long Term Care (DESDE-LTC), an internationally validated service classification previously used to map mental healthcare in Europe [5] and Australia [6]. This method follows the European Psychiatric Care Assessment Team (EPCAT) model, which demonstrates the need for a proper contextual background for the assessment of care programs, including a standard description of the area and a mapping of all available services [7]. DESDE-LTC can be used to measure availability and capacity of services providing support to people with long term healthcare needs at the local level [8]. Its taxonomical structure and clearly defined units of analysis at individual care team level address issues of commensurability in mental health service research. Types of support provided by professional care teams are coded according to characteristics such as target population and temporal and organisational stability. Additional code extensions describe characteristics of the services relevant for health and social planning, such as the 'v' (variable) extension to indicate short term fluctuating capacity or services under transition due to changes in the overall health or financing system [4]. DESDE-LTC also provides interviewees with the opportunity to provide further general comment about their service provision.

Interviews were conducted face to face and by phone, and lasted approximately 30 to 60 minutes.

Table 1. Characteristics of mental health service providers, including those with “v” qualifiers; and number of providers commenting on NDIS

Number of service providers identified and contacted	Service Providers interviewed (% of total number identified and contacted)	Number of Main Types of Care provided by service providers	Sectors (% of total MTCs) in which Main Types of Care are provided			Number (% of MTCs) and type of Main Types of Care provided by participating service providers						MTCs coded with “v” qualifier indicating funding instability (% of MTCs)	Service providers commenting on the NDIS transition (% of total number of service providers interviewed)	Experience and/or expectations with NDIS (% of service providers commenting on transition)		
			Health	NGO	Justice	Residential	Day-care	Out-patient	Access-ibility	Inform-ation	Self-help/voluntary			Negative	Positive	Un-changed
36	33 (92%)	122	38 (31%)	79 (65%)	5 (4%)	25 (20%)	7 (6%)	64 (52%)	17 (14%)	7 (6%)	2 (2%)	39 (31%)	12 (33%)	9 (75%)	2 (17%)	1 (7%)

NGO: Non-Government Organisation; MTC: Main Type of Care

Results

Ninety-two per cent of all identified service providers participated ($n=33$), including all relevant public sector services ($n=6$) and 90% of identified NGOs ($n=27$) (Table 1). Two NGOs did not respond to the invitation, and a third believed they did not meet the inclusion criteria. Of those commenting on their experience of the transition to the NDIS, 75% ($n=9$) reported negative experiences or future expectations.

Key areas of concern included lack of understanding on the part of the scheme administrator (the National Disability Insurance Agency (NDIA)) of the needs of people with mental illness; problems with eligibility and access; the effect of the funding model on workforce competence and stability; declining service availability; uncertainty around the future direction of service provision; and the effect of a more competitive environment on service collaboration and integration of care. Funding not guaranteed beyond current contracts, or slow to eventuate, was causing difficulties with planning (Table 2). Downward pressure on pay rates was affecting skill level and stability of a direct support workforce attempting to fill emerging gaps in care while providing additional support to clients engaging with the NDIA. Concerns were held about continuing effective outreach for those with serious mental illness unable, unwilling or ineligible to participate in the application process. Experiences were not all negative, however: plans, when well developed, were noted to be improving support for participants.

Table 2. NGOs' experiences of transition to NDIS

<p>Compatibility of NDIS with needs of people with mental illness</p>	<ul style="list-style-type: none"> • Incompatibility of NDIS principles of permanence and disability with philosophy of recovery (4 responses); and with episodic nature of mental illness (1 provider). • Complexity of application process leading to poor engagement :reluctance to be labelled; difficulties navigating or persisting with application process (4 providers). • Lack of NDIA planners' knowledge of needs of people with mental illness, including fundamental concepts of recovery and of episodic nature of illness (2 providers). Some NDIS staff have been "creatively collaborative" to assist in meeting people's needs (1 provider), however there were reports of support staff initially not being allowed into the planning meeting (1 provider). • Eligibility issues for many and uncertainty about ongoing support for those found to be ineligible or hard to reach groups (5 providers). • However, plans when done well have enhanced life for those participants (1 provider).
<p>Challenges for mental health workforce</p>	<ul style="list-style-type: none"> • Need to spend additional time supporting service users with application process and educating planners in mental health: relationship with, and advocacy of, support staff thus potentially crucial to outcome of application process (2 providers), particularly in relation to the identified lack of NDIA planners' knowledge of needs of people with mental illness. • Need to perform other duties, for example providing direct support such as accompanying people to appointments when not necessarily trained in this: filling support gaps caused by changes in service availability. • Lower pay grades in NDIS and reduced capacity of providers to fund staff training.
<p>Changes to system of delivery and ability of service providers to plan</p>	<ul style="list-style-type: none"> • 33 % of total number of services or 50% of NGOs (n=38) did not have guaranteed ongoing funding beyond 12 months. • Concern about reduced service provision (7 providers) , with some services already closed ,including services providing assistance with accessing relevant supports, clinical case management, day programs, psychosocial disability friendly support groups, respite, and after school care. • Changes in type of care: supported accommodation becoming longer stay (1 provider). • Slow payments to services following withdrawal of block funding (1 provider). • Lack of clarity regarding ongoing support for those ineligible, family members, or hard to reach groups (5 providers). • Previous funding model allowed for a more integrated approach of property case management (1 provider). • Difficulties in training and retaining staff due to changes to pay grade and hourly rates (1 provider). • Lack of clarity around service provision funding for those not eligible for NDIS packages (1 provider). • Lack of anticipation of issues such as skill level of planners in mental health (1 provider). • Potential for increased accountability and better governance (1 provider), and for service expansion (1 provider). • "Ages and stages" rollout helped with addressing problems as they arose. • Some service providers not engaging adequately with NDIA in introductory stages (1 provider).
<p>Challenges to the system's ability to provide integrated care</p>	<ul style="list-style-type: none"> • Reduction in service funding: less opportunity to develop collaborative activities with other services (1 provider). • Increased competition between providers: potential for "cherry picking" or focusing on those services most lucrative financially (1 provider). • Risk of duplication of care or antagonistic care: increased personalisation of care and individual planning meaning service providers may be unaware of the other services already being provided to a service user (1 provider).

Discussion

To our knowledge this is the first survey reporting information on the transition to NDIS at the macro level, targeting the whole mental health system of the ACT, where all the service provider organisations have been contacted and interviewed. We have used the EPCAT model [7], which approaches services research with the same rigour as that applied to epidemiological studies: that is, taking the whole population as the sample under analysis. Results obtained are thus representative of the system as a whole, and not just a selected group.

The transition to the NDIS is concurrent with the establishment of local Primary Health Networks (PHNs) across Australia, whose priorities include mental health and the commissioning and coordinating of locally relevant health services [9]. Results of our survey indicate that this transition, coinciding with the newly established PHNs and recently released Fifth National Mental Health Plan, has produced a major reform in the mental healthcare system. Other larger jurisdictions, not subject to the close monitoring of a pilot site, could experience these impacts to an even greater extent than that experienced in the ACT.

Issues described by ACT providers are consistent with those identified by national stakeholders in a recent report [3], including gaps in eligibility and assessment processes, and concerns for ongoing service delivery for those with serious mental illness outside the scheme. The NDIA has responded to this report with a claim of insufficient supporting evidence. Problems with eligibility for people with psychosocial disability are not unprecedented: in Germany and Spain, the complexity of assessment of mental illness in comparison with other disabilities has hampered attempts to rely on a common evaluation system [10]. There is an urgent need for a fit for purpose assessment tool [11]. Of particular concern in the absence of a clear approach to hard to reach groups is the impending phasing out of Partners in Recovery, which provides outreach to people with severe mental illness [12]. The importance of the role of support staff to the outcomes of applications is also troubling, given the reported decline in skill level.

A stepped care approach to mental healthcare delivery relies on availability of a range of services at all levels. However the 'asset-stripping' of community mental health [13] seen in the ACT is of particular significance for the 'missing middle', or those too complex for primary care but not unwell enough for tertiary services. Individuals in this group are primary users of many of the services, such as day programs and support groups, which have closed [14].

The high number of services without temporal or organisation stability creates a fragile system, in which planning is highly problematic. It reflects a 'component-based' rather than a 'systems thinking'[15] approach. This leads to a reactive, rather than proactive, system and an inefficient use of resources, as investment is made in new services whilst core services are absent or not appropriately resourced [4].

Conclusion

This is the first report of the impact of NDIS implementation in a regional care provision system in Australia. The experience of service providers in trial sites of the transition to the NDIS is significant in identifying potential problems in the national rollout; in ACT particularly so, as it was the first to fully transition. The impact on service providers indicates that the NDIS transition has been one of the major reforms of the mental health system in Australia. However, gaps identified in the ACT in engagement and assessment processes, service availability and potential for service collaboration do not align with key priorities of the Fifth National Mental Health Plan, and suggest that the NDIS is failing to achieve its core aims for people with psychosocial disability. This report also indicates the relevance of standard mapping of service availability and capacity in monitoring change and reform of mental health systems.

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Conclusion

The aim of this thesis was to investigate the usability of Integrated Atlases of Mental Health in Australia for: (i) the comparison of systems of mental healthcare delivery; and (ii) as decision support aids for mental health policy and planning at the local level, using the Australian Capital Territory (ACT) as a reference area. The comparator regions of the study were health districts in Australia, Europe and South America.

Mental health systems are highly complex due to the multiple types and levels of their components, and the ways in which these interact--often unpredictably, and with unforeseen consequences, in other parts of the system. This complexity calls for an inclusive approach to collecting evidence to inform planning: one which takes into account the whole system of care. The traditional evidence-based approach is less suited to situations of complexity and uncertainty such as these. Its linear, more reductionist approach risks stumbling into the pitfalls of the ecological fallacy and non-commensurability biases caused by variability and ambiguity in types of service and of service names, and the different levels of units of analysis in mental health systems. However, current approaches to mental healthcare planning in Australia have not accounted for its complexity, and have taken a component-based rather than whole system based perspective. In the recent Inquiry [1] into the mental healthcare system in Australia, current mental healthcare planning was found to have “a narrow view of people seeking support”; “ a disproportionate focus on clinical services”; an underinvestment in key areas such as prevention and early intervention; and a failure to facilitate interaction between health and other sectors relevant to recovery. This was found to have resulted in a lack of clarity about levels of responsibility and accountability in government; “yawning gaps” , and “wasteful overlaps” in service provision; an ad hoc system of community supports; and failure to provide adequately for the “missing middle” of people too unwell for primary services but not unwell enough for acute care. My findings in the Atlas identified similar issues in the ACT, including gaps in key areas such as opportunities for employment and alternatives to acute hospitalisation, a skewing towards inpatient services, and a community sector that, although proportionately larger than in other Australian areas, lacked robustness and stability due to insecure ongoing funding and anxieties about the effects of system reforms [3].

One example of this relatively weaker community sector is demonstrated in the effect of the twelve month NGO service funding model services on the provision of day care services. Despite the scarcity of this type of community based service in the ACT, The Rainbow day service, which provided opportunities for living skills development and for social interaction was severely limited in its ability to forward plan or to provide stability to its service users

and staff due to its insecure funding, and in addition, stood to be impacted by the replacement of a block funding model with the individualised package model of the recently implemented NDIS. This can be contrasted with Gipuzkoa in Spain, where a greater number and variety of different types of day services was available

Integrated Atlases of Mental Health demonstrate a new approach to mental health systems research based on the nascent discipline of mental health ecosystems research (MHESR)[4]. MHESR uses a whole systems approach to the analysis of mental health systems which is very relevant to planning. Drawing conceptually from the biological sciences and study of ecosystems in nature, and informed by a range of disciplines including complexity science and systems dynamics, it provides a way of incorporating, while also disambiguating, the different elements and sectors that comprise the whole context of a care system. This enables a view of the system as a whole, and of the relationships of the different elements to each other, which avoids methodological biases while still incorporating systematic and transparent methods of data collection and analysis. MHESR aims to increase understanding of mental health systems and their behaviour, not through trying to provide definitive answers to specific questions, but through reducing the level of uncertainty about the system. Thus, while there are inherent limitations in primary sources such as incomplete or imprecise information from service managers, these should be seen within the context of overall improvement in the level of knowledge and in a reduction of uncertainty about service provision in the area under study. Increasing knowledge, and decreasing uncertainty, about the whole system supports decision makers to better understand intervention pathways in the system, and design more reliable modelling scenarios. This helps to provide a system of care delivery that is integrated rather than fragmented, and that can respond to local need and identified gaps or duplications in care rather than to prevailing trends at national level. As a part of implementation science, knowledge translation is also a key component of MHESR: providing data to planners in ways that are meaningful and accessible

An ecosystems approach

Integrated Atlases are one of a number of tools developed using the MHESR approach. They describe the whole system of care delivery “bottom-up” at the local level, using an internationally standardised service classification instrument (DESDE-LTC) [5] and visual technologies such as Geographic Information Systems (GIS). The DESDE-LTC instrument is a core component of Integrated Atlases. The units of analysis used to classify services in the DESDE-LTC are standardized, and represent the smallest unit of care production (professional teams). This means they can be applied to all types of mental healthcare delivery across sectors, and across regions, to describe and classify service provision. This enables valid assessment of and comparisons between systems, despite the complexity of mental healthcare and its workforce, and the range of different health systems in countries.

Bottom-up evidence collected from the services themselves provides a more accurate picture of actual availability and capacity than aggregated data obtained from administrative sources at a higher level of the system. A methodology has been developed which incorporates expert knowledge to research data in an iterative process, where the explicit and implicit knowledge held by domain experts is elicited to guide and interpret the analysis of data [6]. This collaborative process assists in knowledge transfer, provides external validation of the data, and is a key part of the development of an Integrated Atlas. In this case, this “Expert Based Co-operative analysis” ,incorporated the insights and knowledge of local system stakeholders, including representatives of the health planning authority (the Primary Health Network), and a steering committee comprising representatives of the PHN and local mental health peak bodies, to guide analysis of the data and interpret findings. This process included regular meetings with members of the health planning authority and steering committee from the time of project proposal and throughout the process, providing interim findings and analyses and drawing on their expertise in the domain to inform interpretation of the results, including unexpected findings. For example, unexpected patterns in the distribution of mental health related indicators that I identified in the region were made sense of through local expert knowledge in the history of planning policies. This process also enabled the identification of smaller and newer services that were not identified through a website or health service directory search. Additionally, Atlas data has been used in engagement with policy and planning leaders in development of a Proof of Concept for a collaborative project with the Bupa Foundation (under review): “Use of Simulation

Modelling to Guide Mental Health Planning – A pilot study in the ACT.

This project is testing a proof of concept model of a decision support tool that will be applied in a second phase to modelling the relative technical efficiency of mental health care in the Australian Capital Territory (ACT)".

Presentation of the data in an accessible format through the use of visualisation tools for a non-scientific audience is an important part of this process. GIS are used to map the services in relation to mental health relevant socio-demographic indicators of the region. Altogether, this provides a view of a system which has been populated and filled in at ground or service level, and then viewed at bird's eye or system level, allowing the identification of patterns and gaps in service provision, and enabling future research such as tracing of linkages and other activity such as utilisation and information flows.

This thesis has provided a comparative demonstration study of the use of this approach in the Integrated Atlas of Mental Healthcare of the ACT region, and comparison to eight national and international health districts. Data collected for the Integrated Atlas of Mental Healthcare of the ACTPHN Region was analysed and compared to data from the other study regions available at The Australian National University Integrated Care Atlases repository site [7]. DESDE-LTC was used to describe and classify the number and type of professional teams providing care according to its criteria, including the main type of care as classified in the DESDE-LTC taxonomy, and key characteristics of care provision including availability, acuity, mobility, and care sector. Workforce was assessed in Full time Equivalents, according to DESDE professional teams, using methods adapted from the WHO [8,9] and International Classification of Occupations (ISCO) [10] to classify and disambiguate profile and capacity. Visualisation tools were used to identify and present the patterns of care.

The nature and relative size of the database in our study, comparing a small number of health systems, and the relevance of the findings and importance of transfer of knowledge to different stakeholders in the system, meant that simple statistics with visualisation tools, and an heuristics approach, provided the most feasible method of analysis, and should be seen as the first step in a multistep process to inform decision making in the ACT. Highly relevant information to planners such as patterns of care provision, gaps in care availability, workforce profile and capacity was identified, and compared with that of other national and international systems.

Additional information about the impact of major reform to the system in the rollout of the NDIS was identified. The impact of this information on the planning activities of the local health agency was also assessed.

My research identified that despite its relevance to planning, research into the context of mental healthcare systems is scarce, and impeded by inherent methodological flaws [11]. The DESDE-LTC was the only validated instrument identified with the capacity to provide an assessment of a whole system, and avoid core methodological biases. Application of the DESDE-LTC to mental health systems in the study regions revealed previously unidentified patterns of similarities in service provision, but also significant differences between availability of care at the local level even within the same country (for example the similar patterns of social outpatient care in Australia but differences in residential care); gaps in availability (such as day care in Australia) when compared to other areas; and areas where service availability in the ACT was more similar to Finnish than Australian comparators (i.e. community residential care). On the other hand, we also identified that there are key types of care that were not found in any of the study regions (notably alternatives to acute hospitalisation) [12]. Differences identified in workforce capacity and profile across the regions included a higher capacity in Australia and the Finnish region, particularly in clinical professionals. In the profile of its workforce, however, a key finding was that the ACT differed significantly from all other areas in having a much higher rate of psychologists but lower rate of psychiatrists [13].

This information can inform resource allocation, and provide a baseline for monitoring or evaluating the effect of changes over time in the system. It has implications for the implementation at local level of policies developed at the national level, using nationally aggregated data, for the planning of service delivery appropriate to local need, and for equity of access to appropriate mental healthcare across the regions. Access to accurate information about system capacity that is local, current and validated by expert knowledge within the system is particularly relevant to monitor the effects of system reform such as the implementation of the National Disability Insurance Scheme (NDIS), and in times of acute need, such as the current Covid-19 crisis, where the management of health resources can be critical to outcomes.

Summary of publications in thesis

The first publication in this thesis [4] provided the conceptual framework and introduced the new discipline of mental health ecosystems research (MHESR). MHESR “takes a whole system approach to mental healthcare, facilitating analysis of the complex environment and context of mental health systems, and translation of this knowledge into policy and practice”. It draws conceptually from the Ecosystems Services research approach to natural ecosystems and the benefits they provide to human wellbeing. This provides a model of how to systematically bring together diverse and sometimes non-scientific sources of “real world” evidence (such as local expertise and experience) from within a defined ecosystem to understand its structure and behaviour, and to inform the development of models and scenarios to predict feasible outcomes of interventions.

The second paper, a scoping review of the available methods of analysis of the context of mental healthcare [11] identified the parameters of research into the availability and capacity of mental health care at the local level. This review used a MHESR approach and a modified version of the Tansella and Thornicroft matrix [14] as a conceptual framework. It identified a scarcity of research in the area. Most existing studies had limited scope; there was a lack of validated instruments; and methodological challenges created by the ecological fallacy and terminological unclarity biases were poorly addressed. It identified the ESMS/DESDE tools as having unique metric properties and suitability to assess mental health systems, due to their standardised classification system and terminology, and their whole system approach.

This scoping review was followed by the first systematic review of the use of ESMS/DESDE system in the world [15]. Seventy one peer review papers published before 2019 which used this system were identified. It found that the DESDE classification system (DESDE-LTC/ESMS) has been used across different sectors of care in 585 catchment areas in 34 countries to provide context information at every level of the health system (local, regional, national), for care gap analysis, health economics, for modelling healthcare ecosystems, and that it has been effectively incorporated into decision support systems to guide evidence-informed planning.

However, none of these published studies presented a comparative analysis similar to that provided in this thesis: previous analyses provided comparisons of local areas within Europe including both rural and urban areas; or on urban areas in Western Europe but using a preliminary version of the instrument that did not provide a detailed “whole system” evaluation or require training for completion of coding.

The fourth paper in the thesis provided the first study of the results of my research [12]. In this paper I analysed and compared the service availability and bed capacity of the ACT to three other Australian health districts (Western Sydney, Perth North and South East Sydney) and three international regions (Helsinki-Uusimaa (Finland), Talcahuano (Chile) and Gipuzkoa (Spain)). All comparator districts had been previously assessed using the DESDE instrument. I also compared the diversity of care types, or the number of different types of care, in the Australian regions. Obtaining data at the “meso” or service provider revealed the heterogeneity of service delivery at this level. Patterns of care provision in the ACT were identified that were characteristic of the other Australian regions, but not of the international regions. I also identified areas of service provision where the pattern of availability in the ACT more closely resembled that of the international comparators than it did other Australian regions. Additionally, a key type of care provision--residential alternatives to hospitalisation--was found to be lacking in every region in the study. The diversity of care types available in the Australian regions did not correlate with the number of services available, the ACT having the highest diversity of service types of the Australian regions, despite having the lowest number of services. Overall, service provision in the ACT provided a more complex pattern of care than in other Australian regions.

The fifth paper, and second based on the Atlas data, described and analysed mental health workforce capacity in the ACT, and compared this to two other urban health districts in Australia (Sydney and South East Sydney) and three benchmark international urban health districts in Europe (Helsinki (Finland), Gipuzkoa (Spain) and Verona (Italy))[13]. The multi-axial approach of the DESDE instrument meant that workforce capacity could be analysed according to the target population, the type of professional, and their distribution across the different types of care described.

This disambiguated the complex network of professional roles, types of care and role terminology of the mental health workforce, and provided a picture of the capacity of the whole workforce at a more granular and reliable level than that of nationally aggregated data. My findings included a relatively high rate of clinical professionals in the ACT, but a very different balance in the availability of psychologists and psychiatrists in the ACT to all other regions, particularly in outpatient care. The southern European regions of Verona and Gipuzkoa had a significantly smaller nursing workforce than the Australian and Finnish regions. On the other hand, non-health professionals comprised a smaller part of the total workforce in all Australian regions than internationally.

Interviews conducted as part of the availability and capacity data for integrated Atlases of Mental Healthcare provide interviewees with the opportunity to provide further general comment about their service provision. The final paper of this thesis included service managers' descriptions of their experience of the impact of the transition to the National Disability Insurance Scheme on their service provision [16]. At the time of data collection, ACT was the only pilot jurisdiction in which all ages were included in the scheme. Service managers expressed high levels of uncertainty or management distress related to the reform. Related to this was the number of services in the ACT who were assigned a specific additional code in the DESDE system for services under transition due to a health reform, a change in the whole financing system of health or social care, or the development of a new disability scheme. A third of services interviewed were assigned this code, indicating that they did not have long term funding stability, with implications for the robustness and stability of the system.

Contribution to knowledge

Knowledge relevant to planning agencies

The data in the Integrated Atlas of the ACT provides local planners with meaningful information about the real capacity of the system. Atlas data was presented to official planning agencies in the ACT at their invitation, and used in PHN planning documents, including needs analyses. The commissioning of a second Atlas by the PHN in 2021 demonstrates its perceived usefulness to planners. It complements currently available

directories of care, providing more accurate, detailed and standardised information about service availability. Gaps in the availability of key services; the high rate of outpatient social care; and relatively high provision of community residential care in the ACT, for example, have not been identified previously and yet are significant in relation to planning; to understanding the effectiveness and efficiency of the system; and to understanding differences between outcomes compared to other regions. Likewise the high rate of psychologists, but low rate of psychiatrists, in the ACT in comparison to other areas, is new knowledge with relevance to planners' understanding of the true capacity of the system. This information can be used by policy makers and planners to guide more accurate modelling based on actual current availability and capacity of the system. Our paper describing interviews with service managers about their experiences with the NDIS was the first study of the effect of the NDIS on services in the ACT, and it provided corroboration to an emerging body of evidence that contradicted official narratives at that time.

Research Knowledge

To the best of our knowledge this is the first study comparing patterns of mental health service provision in local urban areas in Australia, and their comparison with other benchmark areas in other world regions, using a novel approach to mental health systems research. Previous analyses have provided comparisons of local areas within Europe including both rural and urban areas [17]; or on five urban areas in Western Europe using a preliminary version of the instrument that did not provide a detailed "whole system" evaluation or the required training for completion of coding [18]. On the other hand, this study has demonstrated that Integrated Atlases and the DESDE-LTC tool, which have demonstrated their usability in Europe and other international regions, are also able to provide relevant information to planners in Australia. Additionally, although DESDE is not designed to be used in systems undergoing change, in the introduction of a new code to indicate the instability of some services experiencing the impact of major reform, it demonstrated capacity to respond and adapt to circumstances not previously included in the coding system. This is significant in the context of the ongoing major reform in the mental health system in Australia.

The approach challenges traditional concepts of evidence to address system complexity, and address the methodological challenges of previous research in this area [11]. The

validity of previous studies providing analyses or comparisons of mental health systems has been undermined by lack of a validated framework, limited scope and failure to avoid core methodological pitfalls.

Models of mental healthcare provision persistently fail to recognise the importance of evidence from the context of care delivery [19–21]. The approach used in this thesis positions “bottom-up” evidence from the local context, and knowledge of local domain experts (as distinct from expert opinion) not as inferior, but as the best available evidence in situations of inherent uncertainty, where the evidence is often flawed and incomplete; where traditional forms of evidence, such as those used in randomised controlled trials are simply not feasible [22]; and where “top down” evidence from data aggregated at national or large regional level can give rise to ecological fallacy. In situations such as this, where data limitations such as these are present, or where the amount of data may be limited, complex statistical analyses are also less feasible, and the use of simple statistical techniques, pattern recognition and heuristics provides results which are more reliable [23]. This process has been developed to help guide decision making in situations of complexity such as healthcare, where classical approaches do not necessarily provide good results, and where the implicit and expert knowledge of experts is highly useful to guide the scientific analysis, and assist in interpretation of the results [6]. This study has demonstrated that this new approach can be used to provide valid analysis of systems in national and international comparison. Atlas data from Integrated Atlases have now also been used in studies of specific populations [24], and this approach has also been demonstrated in studies of rural and remote areas [25,26].

Future steps

While this research only includes data on services that are universally accessible, additional “layers” of service provision could be added to complement this first data and provide a picture of the whole system, such as services providing primary care, which play an important role in the initial identification and assessment of mental health problems, monitoring and maintenance of support and coordinate access to more specialised care; and services in the private health system. A more detailed analysis of non mental health specialist providers and general practitioners providing physical and mental health care as well as mental health care provided to people presenting to primary care providers with a primary chronic care condition is required.

Integrated Atlases could also be used to provide analyses of services for specific target population groups, particularly underserved groups such as Aboriginal and Torres Strait Islander peoples [27]. Although ESMS (the earlier version of DESDE)/DESDE has been used in 34 countries to date, including Ghana, Albania, Russia, Switzerland, and Macedonia in Europe, South Africa, and Australia, use of the DESDE instrument could be extended further to include more Lower and Middle Income Countries to further assess its usefulness and validity in the different models of care provided by these countries. DESDE is designed to be used for all types of long-term care conditions: Integrated Atlases of other long term care conditions, such as multiple sclerosis, diabetes, or dementia, can also be developed.

Longitudinal studies using follow up Atlases, such as those now developed in ACT (to be published) and for psychosocial services in Western Sydney [7] could be used to monitor system evolution and response to need: this is particularly pertinent in light of the impact of the Covid-19 crisis, in relation both to people with mental ill health and to service providers; as well as in the previously described context of major system reform, such as the implementation of the National Disability Insurance Scheme (NDIS). This approach could be extended to monitor the evolution of modes of healthcare delivery, for example, the expansion of digital or online support and the effect on the availability of face-to-face care over time.

Information provided in the Atlas is suitable for comparative effectiveness analysis and organisational learning. While it is not a decision support aid in itself, Atlas data provides a basis for the collection of other information which can support decision making, such as utilisation and outcome data; and for studies such as efficiency and network analyses, analyses of models of care, level of service integration and pathways of care, and quality assurance studies. Rates of service utilisation and outcome data based on Atlas data could detect hot and cold spots of service use. Feasibility studies of the Atlas with decision makers from mental health planning agencies can further assess the relevance of the Atlas. The DESDE tool could also be combined with other tools to produce an integrated decision support toolkit for evidence-informed planning, including simulation and modelling of changes in the healthcare system delivery and interventions. Additional steps could include mapping of financial pathways, and analyses of the data taking into consideration other contextual factors such as the GINI index, and the trajectories of reform in different regions.

A comparison of the effects of the NDIS on psychosocial care systems with other Australian regions could be carried out to assess the impact of the NDIS in other health jurisdictions, where regional need and adaptation of health authorities to this new model of funding may differ.

An analysis of the impact of the Atlas is a further step. The challenge of translation of research knowledge into policy and of research waste is well known, and is a barrier to the implementation of interventions based on research evidence. A necessary component in the process of knowledge transfer in healthcare is an understanding of health systems and of the context of care delivery [28]. The usability of the methodology of the Integrated Atlas of Mental Health of the ACTPHN region in creating a bridge between researchers and policymakers is demonstrated in the collaboration of planners and managers in the health organisation throughout the process of development of an Atlas and in the authorship of the technical report and scientific papers; as well as in the incorporation of Atlas findings into PHN planning documents, and the commissioning of a second Atlas for 2020. The technical report; paper number 4 in this thesis on urban availability; and papers in progress based on Atlas data have been co-authored by a senior planning manager from the PHN. Atlas data was reviewed and checked where relevant by planners from the PHN, and additional analysis provided.”

The Adoption Impact Ladder (AIL) measures the adoption of health services research by policy and planning agencies. This is a seven stage ladder, which goes from 0) no adoption; to 1) awareness; 2) assimilation; 3) conversion (or translation); 4) allocation; 5) provision; and 6) routinisation (or monitoring) . The Integrated Atlas of Mental Healthcare of the ACT PHN region can be assessed as being at Level 5 (Allocation: The translation of new knowledge has had an impact on budget, funding, or resource allocation in the target environment) of this ladder. It has been used to inform needs analyses and other planning documents by the ACT PHN. A second Atlas has been commissioned by the PHN, for which this atlas will provide a baseline in monitoring the evolution of the system in the intervening years. Additionally, on its publication, the paper describing the impact of the NDIS generated media interest in the ACT and more widely in Australia: its findings were the subject of invited interviews for radio and newspaper at local level, and were reported by a division of the national broadcaster at national level. . Research carried out by the Centre for mental Health Research, which included this research, was awarded ACT Government Department of Health Mental Health Award for Research, Evaluation and Quality Improvement.

The Integrated Atlas is the first step in a multistep process in cases where the analysis involves small numbers using an heuristics approach. The first step focuses on heuristics: data are presented in rates and transformed into visual patterns that could be analysed and interpreted by experts. A second step involves modelling and selection of scenarios following an iterative approach based on the information gathered in step 1. This process enables the provision of meaningful knowledge for local and regional decision making [6,29]. Knowledge Discovery from Data (KDD) is a systematisation of the process of data analytics. It includes a series of steps and a broad spectrum of techniques from different sources to develop strategies alongside the data mining process to improve information transfer from domain experts (eg clinicians and policy decision makers) to the data analyst and vice-versa, using mixed qualitative–quantitative techniques. These steps include: a) developing and understanding the domain, capturing relevant prior knowledge and the goals of the end user; b) selection of target data from the large (health) database; c) data mining process (preprocessing, transformation, cleaned data set processing); and d) interpretation and evaluation of data mining results data to produce explicit knowledge from the original database (postprocessing). A series of procedures have been developed to enhance communication and information transfer, both for selecting target data and at the preprocessing stage (i.e. clustering based on rules and knowledge discovery in ill-structured domains)[30]. It combines Artificial Intelligence approaches with traditional statistics and expert knowledge. A demonstration of its application to guide decision making has been provided in the analysis of system indicators of mental healthcare in the Basque Country in Spain[31].

Integrated Atlases can inform policy. In the last decade, ‘evidence-based healthcare’ has evolved into ‘evidence-informed policy’ through the addition of local context information and routine big data and, and then into ‘knowledge-guided policy’ through the incorporation of domain experts to the data analysis process and to the development of Decision Support Systems [6]. Healthcare planning informed by the best available research evidence is critical in policy environments shaped by forces including diverse areas of need, evolving technologies of care, increasing demands for accountability, and budgetary constraints [32].

Evidence-informed, rather than evidence-based, health policy acknowledges that policy-making is an inherently political process in which research evidence is only one, albeit the most important, factor that influences decision-making. Scientific evidence often must compete with beliefs, personal interests, political considerations, traditions, past experience, and financial constraints. This approach to decision making is “characterised by the systematic and transparent access to, and appraisal of, evidence” [33]. It can support decisions about relevant issues such as effectiveness, equity, and access of healthcare provision.

The National Mental Health Service Planning Framework (NMHSPF) [34] has been developed and rolled out to all Primary Health Networks to guide mental health service planning at the regional level. The NMHSPF provides a “top down” assessment based on national level epidemiological evidence of regional service requirements according to population size. It suggests an ideal or aspirational level of regional service provision for service planners. The “bottom-up” real world data provided in the Integrated Atlas complements the NMHSPF by providing the necessary first step before this framework can be implemented. Semantic interoperability between the two systems has been tested in one Australian region [35]. Further testing with Atlases developed in other regions could establish its validity and reliability could be carried out to support gap analyses of system availability and capacity in Australia.

The information provided in this thesis can also be used as the first and necessary step that provides critical information to allow for the impact analysis of differences in service composition and availability on mental health outcomes; and of an evaluation of service quality and alignment with best practice and guidelines

Limitations of the research

There are several limitations that need to be acknowledged:

First, this research includes data only on services that are universally accessible--that is, use of these services does not require significant out of pocket expense. Private services requiring this cost were not included. Primary care was also not included. It is important however to avoid confusion, that these layers of care are clearly distinguished from each other and not mixed together, which could give a distorted picture of actual care availability for any population group.

Some available services may not have been identified or declined to participate in the Atlas. However, we use a systematic search strategy, identifying services by website, publicly available directories, and in consultation with planning agencies, and we are confident that we have identified the vast majority of services. Participation rate in the Atlas of identified services was 92%.

We were unable to obtain workforce data from a number of services, and so workforce capacity should be viewed with caution, and considered a first approximation of the data. Additionally, roles and job titles in mental healthcare are often ambiguous, and may vary over a short period of time due to staff leave, ability of a service to replace staff who have left the service, and uncertainties around ongoing funding. However, our analysis of the system includes all direct care staff, regardless of type of work, according to professional background. Collecting this data at the local level provides greater accuracy than typically available data aggregated at national level and inclusive of only a limited number of professional types. Our use of a multi-axial instrument also helps to disambiguate workforce data through the clustering and classification of professional groups along the axes of target population, type of care, type of service and sector, and location.

Information collected was subject to the reliability of service managers' knowledge. However, opportunities for interpretation and validation of data by experts in the system were provided as part of the process and interviewees were informed that the object of the Atlas was to aggregate service data to local system level and not to provide an analysis or assessment of the quality of the service provided by individual services. Information provided by service managers was assessed by interviewers with expertise in the DESDE system. As described in the introduction to the thesis and in the conclusion above, the complexity and dynamic nature of health systems, particularly mental health systems, means that the collection and use of precise data is not feasible. In these situations, increasing knowledge of the whole system of care provision overall is feasible not only through data collection and analysis in the form of a randomised controlled trial, but also through reducing the level of uncertainty in what is known. In doing so, we can improve the accuracy of information used to inform modelling and planning strategies. In complex systems, evidence should be as comprehensive as possible and there should be a combination of sources of knowledge [36]. Atlases are not decision support tools but can support decision making along with other sources of data such as those obtained by analyses mentioned above. A health ecosystem approach takes into account the different types and sources of knowledge within complex systems, for which service availability and workforce capacity comprise a foundational step.

Data collection across the different areas occurred over a five year period. In the ACT data collection occurred during a period of system reform as the NDIS was rolling out. However, the classification system was able to be modified to account for the effects on some services of this reform.

The number of units of analysis (the Main Types of Care in the DESDE-LTC taxonomy) in this study is too low for a proper statistical analysis. However in this case, as previously discussed, where the numbers are low and the situation is complex, the use of an heuristic approach using expert pattern recognition from detailed data gathered systematically may be of greater use. The collaborative process of data collection with domain experts refines and validates the data to develop estimates.

Conclusion

Despite these limitations, this research confirms the usefulness of the healthcare ecosystem approach and Integrated Atlas to drive a new and more effective way to plan and respond to mental illness as it affects the Australian community. The information provided in Integrated Atlases is more accurate at the local level than national data disaggregated to local level with the biases that entails, or data selected from a limited number of system components. Integrated Atlases provide information from all sectors, provided by people with expert knowledge within the system, collected using a validated instrument, and analysed through an iterative process combining this expert knowledge of the system with the obtained data. The use of a standardised instrument is critical in being able to assess all services and sectors, and to compare these across a range of countries, despite differences between regions in terminology and in types of service. Integrated Atlases are highly useful to planners in combination with other information, such as local priorities of need and policy goals, in allocating resources and in planning interventions. They can be used as the basis of future research to further increase planners' knowledge of the system, monitor change, compare and share knowledge with other regions, and for more reliable and appropriate planning for the needs of their region.

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Appendices

Appendix 1: Published papers in the thesis

Appendix 2: The Integrated Mental Health Atlas of the Australian Capital Territory Primary Health Network Region 2016

Appendix 3: Research related to but not part of the thesis, scholarships awarded during PhD candidature


Appendix 4: Characteristics of international benchmark areas

Appendix 5: DESDE code descriptions and examples; and glossary of terms used in relation to mental health service mapping in thesis

Appendix 1

Published papers in journal format

An ecosystems approach to mental health services research

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Mental health ecosystems research is an emerging discipline which takes a whole-systems approach to mental healthcare, facilitating analysis of the complex environment and context of mental health systems, and translation of this knowledge into policy and practice. Evidence from the local context is needed in the analysis of complex interventions and of geographic variations in the outcomes of care. Technical tools and support have been developed to gather and interpret evidence from the local context and translate it in a meaningful and relevant manner for planners and policy makers to guide their decision-making.

Health ecosystems refer to the totality of the circumstances that relate to a given health phenomenon in a defined environment. They comprise the elements which together provide capital to 'sustain and enhance human wellbeing', including natural capital such as green spaces, and social capital, which includes both built (infrastructure) and human (institutions and human governance) capital.^{1,2} A population health system includes four main domains: the places and communities in which we live; the wider determinants of health (for example, the social and demographic characteristics of the environment); our health behaviours and lifestyles; and integrated healthcare provision³ at the different levels of the ecosystem (nano (patient–professional level), micro (service level), meso (local area level) and macro (region/country level)). The mental health ecosystem is a subset of the general health system which focuses on domains relevant to mental health, such as the characteristics of the population at risk of or suffering mental illness, the workforce and organisations providing care and support to this target population, and their connections, for example, clinician–patient contacts, and the relationships between patients and organisations and among organisations.

Mental health ecosystems research is a part of implementation sciences, which facilitates analysis of environment and context, and knowledge translation to policy and practice. It incorporates an array of different disciplines, including systems dynamics, context analysis, health economics and knowledge discovery from data. It moves away from a reductionist approach focused on developing individual solutions to complex problems,

towards providing an analysis of the environment and context of mental health systems and the development of decision support tools to guide policy makers. This analysis of the context of mental health systems – i.e. of local conditions and system behaviour – can help policy makers and researchers to understand geographic variation in care delivery outcomes, where an intervention which has been implemented successfully in one location has produced a different outcome in another. As shown by international studies of assertive community treatment, the effect of an intervention depends on characteristics of the local context. This indicates that full fidelity to the original model in local implementation of a complex intervention may be questionable unless the local context is considered.⁴

Evidence from the local context of care can support decisions about relevant issues such as effectiveness, equity and access to healthcare provision. It requires an approach that goes beyond the traditional evidence-based model⁵ and should incorporate a broader concept of scientific knowledge in systems research, with methods and tools developed in other areas of systems research such as policy decision-making in environmental sciences. This broad approach to scientific knowledge, which incorporates experimental, observational and local evidence together with expert and experiential knowledge for health systems research, has been described in detail elsewhere.^{6,7}

Ecological science and the study of biological ecosystems and the services they provide to humans (ecosystem services (ESS)) have provided a conceptual framework on which mental health ecosystems can draw: the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).² Like mental health systems research, ESS research brings together knowledge of a broad and often highly complex social, economic and institutional context from researchers in a range of domains and disciplines, with different levels of expertise and experience, and from different research methods. It also includes relevant knowledge held by non-scientific experts on aspects of the local context, for example, indigenous or local culture (in the case of ESS) or implicit knowledge of the workforce (in the case of mental health services). The ESS framework includes the types of capital (natural, built and social) which together improve human well-being, to which we can add mental capital (the mental health service system). [Figure 1](#) shows adaptations of the IPBES approach to scenarios and modelling to policy decision-making in mental health.

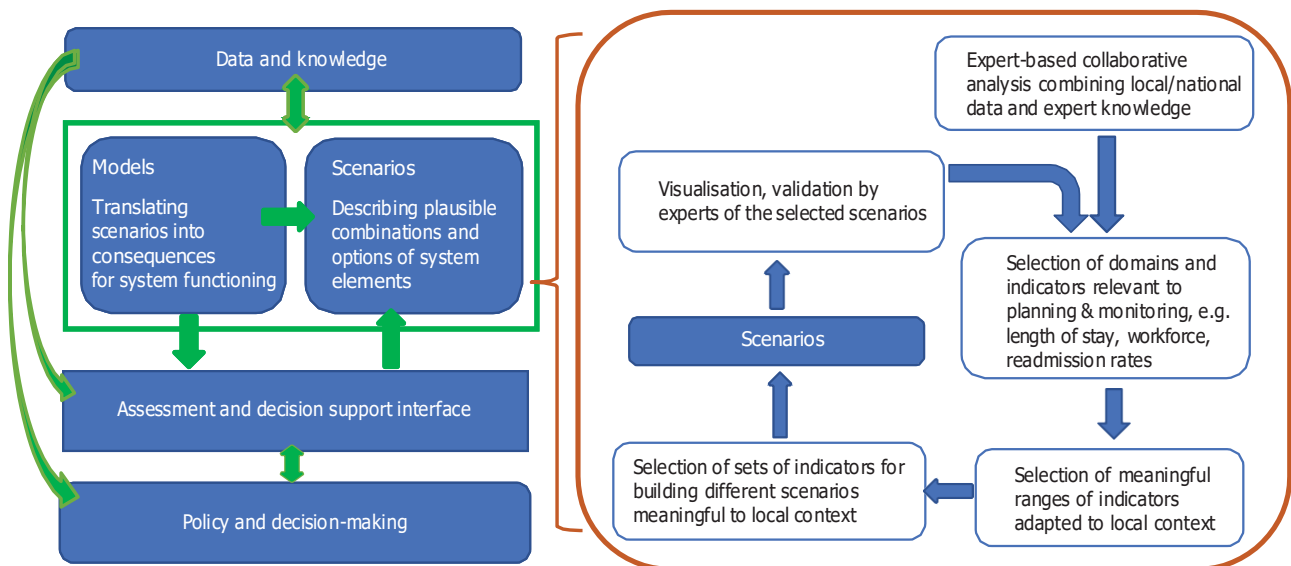


Fig. 1 Modified IPBES conceptual framework (summary for policymakers of the methodological assessment of scenarios and models of systems of mental health care delivery).

Practical tools for mental healthcare ecosystems research include: (a) logic models and conceptual maps of the system, and taxonomies of critical domains and characteristics, for example, classifications of mental health services, lifestyles, demographic characteristics or health system indicators; (b) visual tools including geographical information systems; (c) composite or synthetic indices; (d) integrated atlases and maps of the service delivery system, the financing flows or the spatial epidemiology of the target condition; (e) navigation tools for consumers and professionals; (f) decision support systems (DSS) that incorporate the former tools, and artificial intelligence, machine learning and other techniques for knowledge discovery from databases; and (g) impact analysis tools to monitor the adoption and performance of the DSS.

In addition, the modified mental health matrix framework⁸ allows us to identify all these components, domains and indicators and apply tools at different levels of the ecosystem (macro or country/regional level (level 1), meso or local area level (level 2), micro or service level (level 3), and nano or individual consumer level

(level 4)); and at different stages in the process of care (A = input, B = throughput, C = output) (Table 1). Examples of this approach to guiding policy have been developed for regional planning in Catalonia and the Basque country in Spain, and in Finland and Chile, using the ESMS/DESDE (European Service Mapping Schedule/Description and Evaluation of Services and Directories).⁹ For example, the agency for mental health planning in Catalonia has constructed a series of integrated atlases of mental healthcare that include health, social, education, employment, justice and housing services.¹⁰ These atlases have been used to monitor the evolution of the system from 2002 to 2017, identifying system changes before and after the implementation of the 2006 regional mental health plan, and the effects of the global financial crisis in this region from 2008 to 2015. This information has been used to carry out spatial analyses of the prevalence of mental disorders and related sociodemographic factors, both in the whole region and in metropolitan areas. It has been used with analysis of service utilisation, burden and costs of mental illness to feed models of comparative technical efficiency and self-organising mapping networks

Table 1 Modified mental health matrix⁸

	Input (A)	Throughput (B)	Output (C)
Macro Country/region (1)	1A	1B	1C
Meso Local area (2)	2A ^a	2B	2C
Micro Service (3)	3A	3B	3C
Nano Individual (4)	4A	4B	4C

a. This is the level of analysis of the ESME/DESDE approach: input to the system at service level.

within the region and in comparison with other regions in Spain.¹¹ This holistic approach facilitates the analysis of health improvement under conditions of uncertainty and broadening of the patterns of service provision as suggested by the meta-community model of mental healthcare.¹² The meta-community model describes a suite of aims including coordinated systems providing care for people with mental illness at a comparable level to that provided for people with physical illness, delivered flexibly and innovatively to people in a range of settings in addition to health-care settings, such as prisons, asylums, schools and refugee settings.

An ecosystem approach to health systems research is particularly relevant in the study of the characteristics and dynamics of complex mental healthcare systems. This approach recognises the limitations of traditional research methods when dealing with situations of complexity. It is informed by research in other areas, including ecological science. Progress has been made in the development of technical supports and instruments using an ecosystems approach and collaborating with local domain expertise to ensure relevance and meaning for decision makers and so for the development of evidence-informed policy.

Author contributions

All authors contributed equally to the conceptualisation of the paper and to the development of its concept. M.F. was the primary author; L.S.C. and N.B. provided oversight. L.S.C. provided some revision of the final two paragraphs. All authors approved the final article.

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Declaration of interest

None.

ICMJE forms are in the supplementary material, available online at <https://doi.org/10.1192/bji.2020.24>.

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RESEARCH ARTICLE

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Healthcare ecosystems research in mental health: a scoping review of methods to describe the context of local care delivery

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Abstract

Background: Evidence from the context of local health ecosystems is highly relevant for research and policymaking to understand geographical variations in outcomes of health care delivery. In mental health systems, the analysis of context presents particular challenges related to their complexity and to methodological difficulties. Method guidelines and standard recommendations for conducting context analysis of local mental health care are urgently needed. This scoping study reviews current methods of context analysis in mental health systems to establish the parameters of research activity examining availability and capacity of care at the local level, and to identify any gaps in the literature.

Methods: A scoping review based on a systematic search of key databases was conducted for the period 2005–2016. A systems dynamics/complexity approach was adopted, using a modified version of Tansella and Thornicroft's matrix model of mental health care as the conceptual framework for our analysis.

Results: The lack of a specific terminology in the area meant that from 10,911 titles identified at the initial search, only 46 papers met inclusion criteria. Of these, 21 had serious methodological limitations. Fifteen papers did not use any kind of formal framework, and five of those did not describe their method. Units of analysis varied widely and across different levels of the system. Six instruments to describe service availability and capacity were identified, of which three had been psychometrically validated. A limitation was the exclusion of grey literature from the review. However, the imprecise nature of the terminology, and high number of initial results, makes the inclusion of grey literature not feasible.

Conclusion: We identified that, in spite of its relevance, context studies in mental health services is a very limited research area. Few validated instruments are available. Methodological limitations in many papers mean that the particular challenges of mental health systems research such as system complexity, data availability and terminological variability are generally poorly addressed, presenting a barrier to valid system comparison. The modified Thornicroft and Tansella matrix and related ecological production of care model provide the main model for research within the area of health care ecosystems.

Keywords: Mental health care systems, Mental health care comparison, Mental health care delivery, Mental health systems research

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Background

The role of context is critical in health services research. Geographical variations in the fate of healthcare interventions have been documented widely. The significance of local context in such variations is recognised, with the more complex the intervention, the greater the relevance of local factors to its outcome [1]. In health care, “context” could be defined as all sources of evidence of the local system: geographic, social and demographic factors, other environmental factors, service availability and scope, capacity, use, costs and the historical development of the health care system. Evidence from the context of local health systems is thus highly relevant for research and policymakers. The analysis of context of care of “healthcare ecosystem research” is an emerging discipline that should play a critical role in implementation sciences [2] and in the analysis of complex interventions [1, 3]. However, a broader approach than the traditional unidimensional model of evidence is required [4]. “Contextual evidence” has recently been identified as a major source of knowledge in health systems research together with experimental, observational, expert and experiential knowledge [4]. In spite of its relevance, the need for context analysis in health services and delivery research has not been sufficiently recognised [1, 2, 4].

Evidence about local conditions is important at all stages in the policy process from assessing resource availability and setting policy priorities to examining the impact of policy decisions [5]. The World Health Organization (WHO) has urged exploration of the care context in mental health systems [6]. The WHO Mental Health Gap Action Program (mhGAP) has called for a comprehensive and systematic description of mental health services, including what those services are doing [6]. A knowledge of care delivery at the service delivery level is critical to evidence informed policy [7], and in the implementation of models of care such as integrated care [8] and the balanced care model [9]. However, this research faces challenges related to the complexity of mental health systems, and to methodological issues. Mental health care systems are particularly complex due to the number of sectors, levels, and types of service through which care is delivered, the variability of the service delivery over time and the high ambiguity, partly due to the lack of a stable terminology [1, 7]. Descriptions of local service delivery which do not take this complexity into account risk providing policymakers with an inaccurate or limited assessment of the local pattern of service availability, affecting their ability to plan appropriately.

A review of methods used to describe the context of local mental health care is urgently needed. This study sought to take a broad view of available methods of context analysis in systems of mental health care delivery at

the service delivery level, identifying and mapping their main components and characteristics. This would identify gaps, provide insight into conceptualisation of the context of mental health systems and inform future context analysis in mental health services research. This is consistent with the call by the WHO to specifically reference service location, availability and function [6].

Methods

Rationale for conducting a scoping review

Scoping reviews “examine the extent, range and nature of research activity in a particular field, without necessarily delving into the literature in depth or attempting to assess its quality” [10]. They are used to “identify parameters and gaps in a body of literature” rather than “generat (ing) a conclusion related to the focussed question”, with “inclusion/exclusion ... developed post-hoc”, and a broad research question rather than a “focussed research question with narrow parameters” [10]. A scoping review was considered appropriate for this study due to the broad scope of the research area, the diversity of study designs already known to the authors, and the absence of a definitive terminology.

General scoping review process

We have used the five stage model for scoping reviews developed by Arksey and O’Malley [11], and extended by Levac [12]. The five stages of this approach are: (i) identifying the research question; (ii) identifying relevant studies; (iii) selecting studies; (iv) charting the data; and (v) collating, summarising, and reporting the results. We have also used the guidance for scoping reviews developed by members of the Joanna Briggs Institute [13].

Identifying the research question

The main research question of this scoping review was:

1. “What are the main gaps in the available literature relevant for context analysis of mental health systems?”

Sub-questions are:

- (i) “What are the available methods for standard description of mental health service delivery which could be applicable for international context analysis of mental health systems?”
- (ii) “What are the key domains or components of methods for context analysis in mental health systems research?”

An additional objective of this scoping review was to identify a workable set of search terms that optimise the literature review in this new research area.

In order to answer these questions we have adopted a systems dynamics/complexity approach [14], and a modified version of Tansella and Thornicroft's matrix model of mental health care (TT-Matrix) [15] (Table 1) as the conceptual framework for our scoping analysis. Tansella and Thornicroft developed this framework to facilitate the "bridging of information between different levels of analysis" [15], and to address issues related to system complexity encountered in mental health systems research: for example, the conflating of proxies of inputs or processes such as the number of psychiatric beds used, with outcome; and a failure to take account of evidence obtainable at different levels of the system through a reliance on experimental evidence gained at the individual or micro level [15]. The matrix concept has continued to be developed in mental health services research to provide a basis for mental health performance measurement [16, 17]. The modified version of the TT-Matrix (mTT-Matrix) provides 12 quadrants of indicators of health care according to the Donabedian process of care (input, throughput and output [18]); and the levels of care: 1) macro (country or region); 2) meso (local-catchment areas); 3) micro (facilities, services, care teams); and 4) nano (individual agents such as consumers, carers and professionals). We are looking specifically at the care service delivery system at the meso level (quadrant 2A), and the aggregation of information from the micro level to the meso level (quadrant 3A), and from meso level to macro level (quadrant 1A).

Identifying relevant studies

A systematic search was carried out, using the above research questions: the period of reference was 2005–2016. Databases used were the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science (WoS) and Medline databases. LSC and MF selected the search terms. Broad terminology was required due to the low specificity of the applicable terminology. The search was carried out with the assistance of an academic librarian. The search terms used for the first search using CINAHL, WoS and Medline were ("mental health care" OR "mental health care delivery" OR

"mental health service*" OR "mental health system*" OR "psychiatric service" OR "psychiatric care") AND (classification OR description OR availability OR "meso-level analysis" OR "meso level analysis" OR "geographical mapping" OR mapping OR "healthcare instrument" OR "health care instrument" OR "healthcare tool" OR "health care tool" OR "local care").

Some key articles known to the authors were noted to be missing, so an additional search was carried out using key words from those articles; these were mental health AND ("cross-country comparison*" OR "cross country comparison*" OR "international comparison*" OR "cross-cultural comparison*" OR "cross cultural comparison" OR "health system* research"). A search of the British Library on Demand database was also made using all the above key words. Further titles, by an author with an interest in the area, known to one of the authors (LSC) were added.

Study selection

MF conducted the database search based on the search terms, and conducted a review of titles. Abstracts of potentially relevant papers were identified, and duplicates were deleted. Studies were initially included if they described or conceptualised the context of mental health care; mapping of mental health services; service availability, capacity or accessibility in geographic areas, or instruments assessing service availability, capacity or accessibility. Initial exclusion criteria were papers only reporting on service utilisation, interventions, financing and costs, and governance, due to their being not specifically related to availability. Also excluded as being too limited in scope were studies related to specific groups, such as child and adolescent mental health, mental health of culturally and linguistically diverse (CALD) populations, forensic mental health, or veterans' mental health. Conference abstracts and non-scientific literature were excluded as their inclusion would have created an unfeasibly large database. Eligible study designs were broad, and included qualitative analysis gathered by experts, studies using a mixed approach, modelling studies, secondary analysis from databases, surveys and comparative studies. At this point we decided to include studies where the comparison was within countries and not just international or cross country, in case these methods could potentially also be used in cross country comparison.

The identified abstracts were reviewed by MF and CG, who discussed differences, and, where they could not be resolved, a further discussion was held with LSC. Study selection was an iterative process. In meetings with MF, CG and LSC, and due to increasing familiarity with the scope of papers, the search was refined, with additional exclusion criteria applied: papers reporting only on

Table 1 Modified version of the Tansella-Thornicroft Matrix of Mental Health Care (mTT-Matrix)

	INPUT	THROUGHPUT	OUTPUT
Macro Country/Region	1A	1B	1C
Meso Local area	2A	2B	2C
Micro Service ^a	3A	3B	3C
Nano Individual	4A	4B	4C

^aThe micro level at the original TT-Matrix referred to individual patients or consumers. In this modified version "Micro" refers to the process of care at the service level and "Nano" at the level of individual agents (users, peers, carers and professionals)

workforce or placement or bed capacity, or those including data exclusive to only one domain of care (residential, outpatient care, or day services), (unless describing all services in that domain) were excluded, again due to being too limited in scope. Micro level studies were also excluded as not relevant to the level of the system under study. It was noted that papers could be separated into conceptual, analytical and descriptive categories. At this point, a preliminary framework for data extraction was identified and piloted with five papers, based on the emerging picture of study characteristics.

The remaining full texts were read by MF and CG. Papers were excluded at this stage again for limited or incompatible interpretations of the concept of service availability, including service utilisation, service capacity only; or for providing no data on availability. A further number of grey literature articles were excluded. Conceptual papers were also excluded at this point as being outside the scope of the question, which related specifically to methods used. References of included papers were hand searched for further articles by MF and CG and cross checked in the same manner.

MF and CG then met again with LSC, and discussed the different categories of data to be extracted from the included papers.

Charting the data

A data extraction tool was discussed, based on the characteristics of the included papers. It was piloted with five papers by LSC, MF and CG. MF and CG then each used the tool on all the included papers, following which they reviewed each others' decisions. Differences were discussed, and any that could not be resolved were discussed with LSC for a final decision.

The data extraction tool categorised papers into descriptive and analytic studies. It then focussed on the key characteristics of the studies, and finally on the methods used in the mental health system descriptions. Extracted study characteristics were those describing the type or scope of services and included target population (specific target population such as people with lived experience of mental illness, carers, specific diagnostic group such as depression, eating disorders, etc.) and whether this was formally defined; socio-economic context if described; the sectors described (health, social, education, employment, housing, other); service types (hospitals, clinics and so forth); care branches (domains of service delivery); workforce capacity (types of professionals); placement capacity (beds or places where described), and geographic accessibility (distance to services for service users). Variables relating to the methods used included the framework (if the study used a standardised framework); study geographical boundary and whether this was formally defined; level of analysis

(macro, meso, or micro as above); classification or taxonomy if included in framework; study design; and presence and type of comparison.

Collating, summarising and reporting the results

We first performed a numerical analysis of the characteristics of the papers to provide an overall picture of the geographic and demographic characteristics of the studies, and basic methodology (whether or not a standardised framework was utilised). As the methods used to describe mental health care delivery included several instruments, we then created a table of key analytical characteristics of each instrument. All in all, six instruments were used in the studies (see Table 3). While the scientific literature included many papers using data obtained through these instruments, in several papers only data from selected sections of the particular instrument were used, or in the case of WHO Assessment Instrument for Mental Health Systems (WHO-AIMS) and the Mental Health Country Profile (MHCP), only selected extracts from the whole country report were included in the study. Therefore, where possible, the full characteristics of these tools have been gathered from the original report documentation to enable a full description of the instrument or framework. In the case of the Adult Service Mapping Exercise (ASME), we were not able to locate the core instrument online. Following this, we analysed the key conceptual approaches taken by the identified methods of context analysis of mental health care delivery.

Results

Search results

10,911 titles were identified in the initial search. After removal of duplicates, 6149 papers remained. After review of titles, 444 abstracts remained, following review of which 271 were excluded. Ninety-five were not relevant to the topic; 57 were not mental health related; 94 papers were excluded due to interpretations of the concept that were either limited (one type or branch of care only), or incompatible with the study concept (for example studies of service or resource utilisation, system governance, interventions, or care needs); 10 previously unidentified articles of grey literature were excluded at this point, as were 14 papers relating to areas of care outside the inclusion criteria, such as child and adolescent mental health, or CALD mental health. A previously unidentified duplicate was removed. Members of the team introduced three more papers for consideration based on knowledge of the scope of the study. The remaining 176 full text articles were reviewed independently by CG and MF: 130 papers were excluded either because they were not relevant to the topic; had a too limited scope (i.e. they related only to service capacity or

to one type of service such as hospital acute care), or were commentaries and conceptual papers. All in all, 46 studies were eligible for inclusion in our scoping review (Fig. 1).

A shared meaning of key concepts in the assessment of mental health care delivery was lacking. For example, in full text papers reviewed, a number of papers were excluded where the concept of service availability had been variously interpreted as service utilisation, service workforce and service capacity. Thirty three papers related to service availability were excluded because they provided no data, 17 papers were excluded because they provided data only on workforce capacity, and seven papers were excluded because availability was conceptualized as either service utilisation or as availability of interventions.

Characteristics of included studies

Of the 46 eligible studies, 36 (78.3%) [19-54] were descriptive, and 10 (21.7%) were analytical [55-64]. Thirty six papers (80.4%) presented service availability data from a single country, of which 19 [20, 28, 32-34, 37, 40-42, 50, 51, 53-57, 59, 61, 64] took a regional or local approach, while 17 [19, 21-27, 30, 36, 38, 39, 43-46, 49] looked at availability from a national level. Ten papers

presented service data from more than one country, of which seven [29, 35, 47, 48, 52, 58, 60] took a regional or local approach, and three [31, 62, 63] were at the national level. Overall, excluding two papers which included over 40 Lower Income Countries and Lower-Middle Income Countries (LIC/LMIC), not all of which were identified, 22 papers (48%) used data from Europe, most notably Spain and Italy, nine papers (20%) were from Africa, seven (15%) from Asia, four (9%) from the Middle East, two (4%) from the Americas (one from USA and one from Chile), and one (2%) from Australasia. Of the LIC/LMIC countries studied, eight were from Africa, and three were from Asia. However, in 25 studies (54.3%) the precise boundaries of the study area were not formally defined.

Twenty eight studies (60%) provided socio-demographic context [21, 24, 25, 27, 29, 31, 34, 37-40, 42-45, 47-50, 52, 53, 55-57, 59-62]. Two papers [34, 53] which presented data from atlases of mental health care included comprehensive local area data. Of the 16 studies which linked one or more socio-demographic indicators with mental health, only four provided supporting evidence with validated indicators using a standardised instrument (e.g. European Social Demographic Schedule

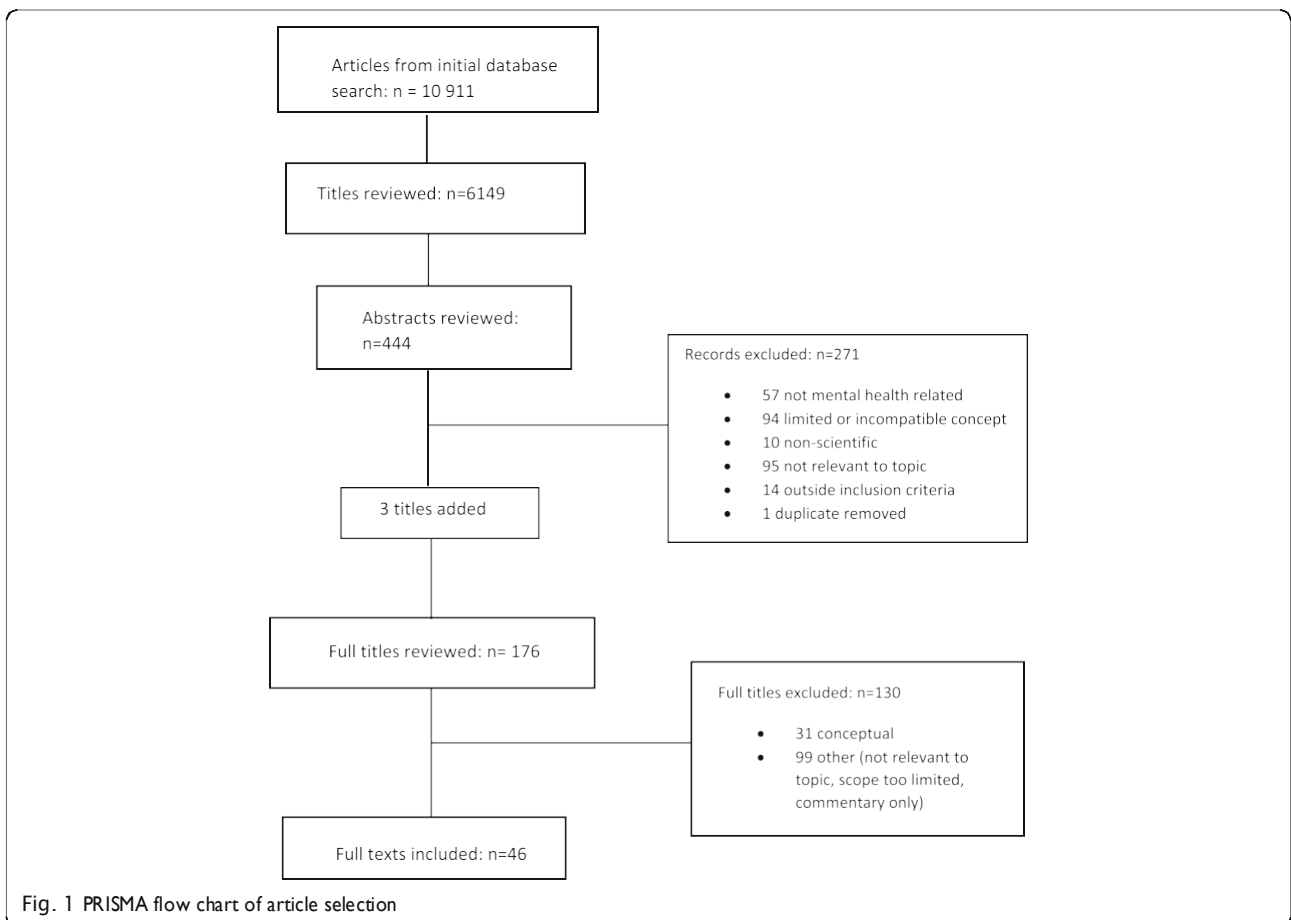


Fig. 1 PRISMA flow chart of article selection

-ESDS) [34, 48, 59, 60]. These four papers all used the European Service Mapping Schedule (ESMS) for service availability data. Papers based on WHO-AIMS and MHCP instruments also included legislative and policy context at a national level.

Where target populations were formally defined, 11 studies included children and/or adolescents [19, 21, 25, 30, 31, 36, 40, 50, 51, 53, 63]; three studies included people with alcohol and other drug dependence (AOD) [36, 61, 63]; two studies included people with intellectual disability (ID) [21, 36]; three were specific to serious mental illness or psychosis [57, 62, 63]; two included people over 65 years [21, 51]; and one study each included the following subpopulations: maternal/perinatal mental health [36]; people requiring long term rehabilitation [54]; survivors of suicide attempts [57]; and socially marginalized groups [47]. A further 21 studies did not specify a particular mental health population.

The main characteristics of included studies are detailed in Table 2.

We then analysed the methods used in included studies (Table 3). Six instruments providing data on service availability were identified in the included studies, and these were used in a total of 31 papers. Three of these were psychometrically validated instruments: ESMS/DESDE (Description and Evaluation of Services and Directories for Long Term Care—an evolution of the ESMS and thus described together) (used in 12 papers: [20, 28, 34, 48, 52, 53, 56, 58–61, 64]); WHO-AIMS: (used in 11 papers [21, 22, 24, 25, 27, 31, 33, 50, 51, 62, 63]); and MHCP (used in three papers [43–45]). ESMS/DESDE and WHO-AIMS are based on taxonomies of care (ESMS/DESDE on a hierarchical tree taxonomy), and DESDE has undergone formal ontological analysis [65]. The MHCP is structured into four domains relevant to policy, including context, resources, provision and outcomes. However, while the MHCP provided a taxonomy for mental health systems generally, it should be noted that the domains for health service delivery did not include any classification of service types. Two other instruments—those of the Best Practice In Promoting Mental Health In Socially Marginalized People In Europe study (PROMO) in 14 European capital cities [47] and the Programme for Improving Mental Health Care in five LMICs study (PRIME) [29] were designed specifically for those studies, and were included in one paper each. The ASME, used in three papers [23, 54, 55], was designed specifically for the English context. WHO-AIMS, MHCP, and the instruments from the PRIME and PROMO studies are instruments designed specifically for mental health services, while ESMS/DESDE and ASME have a broader health service application. ESMS/DESDE was developed for all long term care services. Fifteen studies did not use a structured

framework [19, 26, 30, 32, 35–42, 46, 49, 57], of which five did not provide any method [37, 40–42, 46]. Four of these [37, 40, 41, 42] formed part of a group of seven papers in a special supplement related to a conference on mental health care in capital cities: however three of this seven papers were excluded from this study as they did not include any data on service availability.

In the case of ESMS/DESDE papers, the unit of analysis was care teams provided by individual services, aggregated at local level (2A in the mTT matrix), while in WHO-AIMS, ASME and MHCP papers, services data was aggregated at national level (1A in the mTT matrix). Of the 23 papers not using taxonomy based instruments (i.e. all those papers not using ESMS/DESDE or WHO-AIMS), eight, including all three papers using the MHCP, counted services provided at a higher organisational level of care, such as psychiatric hospitals in a local area, along with individual services, such as day centres or mental health departments in larger organisations, thus conflating these different levels of care [30, 36, 37, 39, 40, 43–45]. In a further seven papers [23, 29, 35, 41, 42, 55, 57], including two of the three papers using the ASME, individual services were conflated in the same way with individual care teams (section 4A of the mTT matrix) such as crisis resolution teams, or assertive outreach teams.

Of the 15 papers which did not use a specific instrument to frame their analysis of service availability data, three [30, 36, 39] used internationally based frameworks, five [19, 26, 32, 49, 57] used a framework relevant specifically to the region in which the study took place, four [37, 40–42] categorised their data around service types but did not justify their categorisation or their choice of units of analysis, and three [35, 38, 46] did not specify any framework for their data on service availability. Of those studies using international frameworks, two [30, 36] were based on the Mental and Social Health Atlas of Saudi Arabia, which used the framework provided by the WHO Mental Health Atlas, while the third drew broadly on the WHO Mental Health Atlas, as well as recommendations from the 2001 WHO World Health Report to structure their findings [39]. Three studies described service availability according to the specific structure of the national system under study [19, 26, 49], while one described service availability based on a regionally prescribed framework of services required for the prevention of recurrent suicidal behaviour [57].

Terminology used to identify units of analysis varied widely, but only ESMS/DESDE and WHO-AIMS provide glossaries of terms used. MHCP studies included detailed qualitative data at the local level in order to ameliorate the effect of terminological variability on data interpretation. Terms used in papers for residential care included “psychiatric hospitals”, “supportive homes”,

Table 2 Characteristics of included studies

Framework	Number (%) of total studies	Type of study		Location of study						Socio-demographic context provided	Study population				
		Descriptive	Analytical	International	Single country	Regional approach	Study area boundary formally defined	Includes Comparison	LIC/LMIC*		Target population Formally defined	Adult MH only	Include at least one specific sub group**	Diagnosis specific	Mental health: population not specified
ESMS/DESDE	12(26.1%)	6	6	4	6	10	9	7	0	8	9	6	3	0	3
WHO-AIMS	11(23.9%)	9	2	3	9	9	7	4	7	6	2	0	4	3	4
MHCP	3(6.5%)	3	0	0	3	0	3	0	3	3	0	0	0	0	3
PRIME study	1(2.2%)	1	0	1	0	1	1	1	1	1	0	0	0	0	1
PROMO study	1(2.2%)	1	0	1	0	1	1	1	0	1	1	0	1	0	0
Adult Service Mapping Exercise	3(6.5%)	2	1	0	3	2	3	3	0	1	2	1	2	0	0
Method described	10(21.7%)	9	1	1	10	2	1	5	0	4	1	1	3	0	6
No method provided	5(10.9%)	5	0	0	5	4	0	0	0	3	0	0	1	0	4
	46 (100%)	36 (78%)	10 (21.7%)	10 (22%)	36 (78%)	22 (48%)	25 (54%)	21 (46%)	11 (24%)	27 (58.7%)	15 (32.6%)	8 (17%)	14 (30%)	3 (7%)	21 (46%)

*Low Income Countries/Low-Middle Income Countries, ** Eg child/adolescent; socially marginalised; older adults

Table 3 Characteristics of methods used by included studies

Framework	ESMS/DESDE	WHO-AIMS	MHCP	ASME	PRIME study instrument	PROMO study instrument	Other papers (number)
Ontology based	Yes	No	No	No	No	No	0
Taxonomy based	Yes	Yes	No	No	No	No	0
Psychometrically validated	Yes	Yes	Yes	No	No	No	0
Unit of analysis							
Macro (Organisations)	No	Yes	Yes	Yes	Yes	No	14
Meso (Services)	Yes	Yes	Yes	Yes	Yes	Yes	13
Micro (Teams)	Yes	No	No	Yes	No	No	5
Number of comparison studies							
Regional comparisons within a single country	4	1	0	2	0	0	0
International comparisons at regional level	4	0	0	0	1	1	0
International comparisons at national level	0	3	0	0	0	0	2
Longitudinal comparisons	0	0	0	0	0	0	4
Glossary included	Yes	Yes	No	No	No	No	0
Data sources	Service providers	National level data from ministries, organisations etc; aggregated regional data where national data not available	Govt and other national level data sources	Local Implementation Teams	Govt and non govt reports, triangulated with local key co-ordinators	Service providers	X
Sectors ^a included	H,S,E,Ed,Ho,O	H,S,E,Ed,Ho,O	H,S	H,S	H,S,Ho	H,S,E,Ho	X
Mental health specific or generic	Generic health	MH specific	MH specific	Generic health	MH specific	MH specific	X
Accessibility	Open Access but requires training	Open Access	Instrument itself unable to be accessed online	Unable to access online	Accessible online but specific to PRIME study	Study specific-Unable to access instrument online	X
Study design	Survey/interviews	Survey/interviews	Survey/interviews	Survey	Survey	Survey/interviews	X

^aH-Health; S-Social; E-Employment; Ed-Education; Ho-Housing; O-Other

“crisis homes”, “safe homes”, “social rehabilitation centres”, “group homes”, “short and long term residential units”, “community based psychiatric inpatient units, respite, and community residential facilities” and those for non-residential care including “day hospitals” “psychiatric clinics”, “outpatient clinics”, “day centres”, “mental health dispensaries”, “mental health departments in social diseases prevention centres”, “day treatment facilities”, “fixed clinics”, “outpatient department”, “community mental health centres”, “sheltered workshops”, “day activity services”; “crisis resolution teams”, “assertive outreach teams”, “early intervention in psychosis team”, “home care nursing services”, and “mobile crisis teams”.

Data was obtained from sources at different levels of the health system. Studies using the ESMS and DESDE and the PROMO instrument take a bottom up approach, gathering data from providers at individual service level. WHO-AIMS takes a top down approach, the papers using this instrument collecting national data at a high level from sources such as heads of departments, universities, and professional boards. Where the instrument was used at a regional level, data was collected from similar sources at that level. In these studies however, the data is still interpreted through a national prism. Papers using the MHCP instrument and that of the PRIME study used both national and local sources, both methods combining national level data with qualitative data from the local level gathered from sources including professionals, clients, families and other stakeholders. The PRIME study is undertaken at district level, but uses a top-down approach, with data from administrative databases, key officials and service heads. Data for the ASME was gathered at a national level from Local Implementation Teams, although one paper [54] first identified relevant Trusts providing rehabilitation services using the ASME, and then went to the individual units to obtain data. In the 15 papers using other, non-framework based methods, existing administrative databases or literature were sourced, with four also using surveys sent to senior health or government officials [36, 38, 39, 57].

Seven studies included the health sector only [30, 32, 38, 39, 46, 62, 63]. Eighteen studies included the health and social sectors [19, 20, 22, 23, 26, 29, 31, 33, 45, 49, 50, 52, 54–56, 59, 61, 64]. This included papers using MHCP and ASME. At least one other sector, such as employment, education, justice, or housing was included in almost half of included studies (21 papers) [21, 24, 25, 27, 28, 34–37, 40–44, 47, 48, 51, 53, 57, 58, 60]. This included papers using ESMS/DESDE, WHO-AIMS, and those from the PRIME and PROMO study. The instrument of the PROMO study included several sectors, but for a limited target population (marginalised populations).

Of the 36 studies undertaken within a single country, seven [28, 51, 53–55, 59, 61] included comparison at

regional or local level, and four included a comparison over time [19, 30, 32, 38]. All of the ten cross country studies included comparison of service availability: seven at regional or local level [29, 35, 47, 48, 52, 58, 60], and three at national level [31, 62, 63].

Forty-one papers (89%) identified themselves, or were assessed by us, as being situational and/or gap analyses. The remaining five papers comprised the following: efficiency analyses [58, 64] territorial planning [59], ecological analysis [57] and standard description for comparison [60]. Thirty-two studies (70%) included recommendations for policy makers related to service provision based on the findings. Visual tools were used in 12 papers (25%), four of which incorporated graphics issued by Geographical Information Systems. In three of these the visual tool presented data on service availability.

The methodological characteristics of included papers are summarised in Table 3.

In those papers using instruments to provide data on service availability, this was WHO-AIMS in 11 papers (24%) [21, 22, 24, 25, 27, 31, 33, 50, 51, 62, 63], ESMS/DESDE in 12 papers (26%) [20, 28, 34, 48, 52, 53, 56, 58–61, 64], MHCP in three papers [43–45] (7%), ASME in three papers (7%) [23, 54, 55] and the PRIME [29] and PROMO [47] project instruments in one paper each (2%).

Discussion

To our knowledge this is the first scoping review on methods for context analysis of system provision and health-care ecosystems research in mental health. Scoping reviews are appropriate in new areas of research, where they can “identify gaps in the research knowledge base, clarify key concepts, and report on the types of evidence that inform practice in the field” [13]. They “examine the extent, range and nature of research activity” [10]. Research questions are thus “less likely to address very specific research questions” but become more focussed in an iterative approach, due to the requirement that they identify all relevant literature regardless of design [11]. They are broad in nature to provide breadth of coverage: comprehensiveness and breadth are important in this search [12]. Thus, scoping studies may often produce very high numbers of initial results [10, 66, 67]. The lack of a clearly defined terminology, reflected in the wide range of search terms which needed to be included, reinforces the need for an approach taking a broad view of the literature. For these reasons, a scoping review was considered to be a more appropriate review method than a systematic review, which would require a focussed question with clearly defined outcomes.

Implications for research

The WHO has called for description of systems of mental health care delivery and the gap analysis [6], but few

standardised and validated methods are available to do so. Despite the complexity of mental health systems, many studies lack key methodological components such as a standardised framework, explanation of terminology, or explanation for choice of units of analysis: of the 46 papers included, 21 had serious methodological limitations, limiting their validity in international comparisons. The final number of included studies relative to the high number of initial results in the literature search indicates both a limited amount of research, and a lack of targeted and standardised research terminology in the area. The limited number of studies providing an explanation of the concepts or terms used presents difficulties when comparing systems, particularly across regions or countries, where the variation between systems may be greatest. The exclusion of full text papers due to limited interpretation of the concept of availability, or a conflation of availability with utilisation, demonstrates the lack of conceptual clarity in research in this area.

Comparisons between systems of care enable the sharing of knowledge, assist in problem solving and inform best practice. However, the replicability and comparability of several studies was undermined by a lack of clarity around terminology and scope, by the absence of structural organisation such as a taxonomy, and by inaccessibility or poor accessibility of some core instruments. A standardised framework was used in only half of those studies providing comparisons, and target populations were often either not specified (21 papers) or were very broad. The dearth of studies providing an explanation of the concepts or terms used was particularly relevant in comparisons across regions or countries, where the variation between systems may be greatest. Variation in terminology also creates a commensurability risk if units of analysis are not clearly defined and located within the overall system. The need for internationally agreed glossaries of terms has been underscored recently [68]. While the use of international frameworks enables international comparison, where the frameworks for data analysis are specific to a specific country or region, this is not the case. Lack of an analytical framework, or of a justification of the choice of units of analysis, limits the relevance of findings.

A systems thinking approach in health services research has been widely advocated [69]. Methods such as those of the ASME or MHCP which included only health or one other sector, may fail to identify information from other parts of the system key to an accurate analysis. Whole system analyses such as the Atlases of health described in two papers, taking into account the wider ecosystem in which healthcare operates, will be

increasingly relevant to the emerging discipline of health ecosystems research.

Socio-demographic indicators varied, and were frequently not linked to evidence supporting their use in relation to need for mental health services. The level of availability of socio-demographic data was consistent with the level of availability of service delivery data presented in each article: i.e. national level socio-demographic characteristics where service delivery at a national level was reported. However, difficulty in obtaining relevant socio-demographic data was described in several papers, particularly those reporting studies carried out in LIC/ LMICs, or at lower than national level. This, and the identification of only one standardised instrument to collect such data suggests the need for a more systematic approach to the provision of socio-demographic context for assessment of service availability to be made within the context of local need.

Data aggregated at national level is not necessarily representative of the pattern of care across smaller areas, and may result in ecological fallacy. Additionally, administrative databases may be unreliable data sources, particularly in less resourced countries [70]. A bottom-up approach, gathering data at the local or regional level, can provide a more accurate and detailed picture of health care availability in small areas. However, local data can also be unreliable, difficult to obtain, and may not be collected routinely at local level. One paper identified in the search [71] related to the Emerging Mental Health Systems in LMICs' (EMERALD) project. While it did not include data on availability, and was thus excluded from the study, it focused on capacity building for mental health research in these countries, and is thus critical in this area, particularly in the context of the relatively low number of studies identified from LIC/ LMIC. Of the identified instruments using local sources of evidence, only two (ESMS/DESDE and MHCP) were standardised and psychometrically validated, and only one of these (ESMS/DESDE) gathered data on availability at this level, enabling its use in comparative studies.

Implications for policy

Policy makers require evidence from the local context as well as global evidence at all stages of the policy making process to inform policy options [5]. Data on service availability and capacity using a whole system approach can help identify gaps or duplications in care delivery, enable comparison of best practice with other areas, and assist in the prediction and monitoring of the effect of interventions. However, the research to policy gap is well documented. Guidance for health systems which is "transparent, systematic and adapted to the local contexts...(and) ...use (s) validated approaches..., in user-friendly formats" can bridge this gap [72]. Studies

which use validated instruments and a bottom up approach, collaborating with local services and policy makers to identify local need, collect data and validate information gathered, are most likely to satisfy these criteria [34]. Interpretive aids such as visual tools and glossaries, which increase accessibility to complex data could also improve dissemination and policy uptake.

Limitations of the study

1/ LSC participated in the development of one of the tools which introduced potential bias. However, this was limited by the selection process being undertaken by MF and CGE, who were not involved with the development of the system, and at this time had no experience in the use of it.

2/ Grey literature was not included in this review. However, as stated, a very high number of results were returned by the search due to factors such as imprecise terminology in the area. Had grey literature also been included, the number of results could have threatened the feasibility of the review. In some cases, copyright restrictions or lack of availability of the core instrument meant we could not access the core instrument.

Recommendation for future studies

The development of validated guidelines for the analysis of context of local service delivery is needed to increase the reliability of context studies and their relevance to policymakers through a more standardised approach. These should use a whole systems approach and provide standards for the description and grouping of target populations for international comparisons. They should also include interpretive aids such as glossaries to standardise terminology and key conceptual terms, as well as visual representations of complex data.

Further research is needed in LIC/LMIC to redress the current balance favouring Upper Income Countries in research. Developing capacity in LIC/LMIC through projects such as the EMERALD project, as well as standardised frameworks to enable comparison, is needed to enable this.

Future studies should ensure their core instrument is accessible for replicability. They should also systematically assess socio-economic context and formally define target population. There is a need for more analytical studies as opposed to purely descriptive papers.

Conclusion

This scoping review has identified that context studies in mental health services is an area of limited research. Instruments with which to assess service availability are scarce, with some of those identified not easily accessible or unable to be generalised. Fifteen papers, or around one third of included studies did not use any kind of

formal framework, and five of those made no description of method. Most studies presented a limited view of the system under study, even when using data collected by instruments designed to take a wider systems view. Four of the six instruments identified (ESMS/DESDE, WHO-AIMS, and the instruments of the PRIME and PROMO studies) took a whole system approach, but two of these (WHO-AIMS, PRIME) were from a top down perspective, and thus constrained by the limitations to local relevance of aggregated data. One instrument (ESMS/DESDE) is readily accessible and validated, and takes both a local approach and a whole systems perspective, and was used in 12 papers. In general, the challenges of commensurability, of terminological variability, and of data availability and validity which face this area of research are poorly addressed, with few standardised frameworks available and only three of these (ESMS/DESDE, WHO-AIMS, MHCP) having undergone psychometric testing. This presents a barrier to valid system comparison, particularly across regions or countries, where regional and historical variations in service provision increase terminological variability. On the other hand, we have identified the relevance to this area of research of use of a standardised instrument, formal geographic boundaries, a glossary of terms, formal target populations and a whole systems approach.

Abbreviations

AOD: Alcohol and Other Drugs; ASME: Adult Service Mapping Exercise; CALD: Culturally and Linguistically Diverse; CINAHL: Cumulative Index to Nursing and Allied Health Literature; DESDE: Description and Evaluation of Services and Directories for Long Term Care; EMERALD: Emerging Mental Health Systems in Low and Middle Income Countries; ESDE: European Social Demographic Schedule; ESMS: European Service Mapping Schedule; ID: Intellectual Disability; LMICs: Low and Middle Income Countries; MHCP: Mental Health Country Profile; mhGAP: WHO Mental Health Gap Action Program; mTT: Modified Tansella and Thornicroft matrix; PRIME: Programme for Improving Mental Health Care; PROMO: Best Practice In Promoting Mental Health In Socially Marginalized People In Europe; TT-Matrix: Tansella and Thornicroft's matrix model of mental health care; WHO: World Health Organisation; WHO-AIMS: World Health Organisation Assessment Instrument for Mental Health Systems; WoS: Web of Science

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MF and CG performed the literature search, selection and charting of the results. LSC contributed to identification of characteristics of reviewed papers and development of data extraction tool. CR reviewed the paper and made substantial contributions to the final manuscript. All authors have reviewed the final manuscript. All authors read and approved the final manuscript.

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Review/ Meta-analyses

Standardised description of health and social care: A systematic review of use of the ESMS/DESDE (European Service Mapping Schedule/Description and Evaluation of Services and DirectoriEs)

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ABSTRACT

Background: Evidence-informed planning and interpretation of research results both require standardised description of local care delivery context. Such context analysis descriptions should be comparable across regions and countries to allow benchmarking and organizational learning, and for research findings to be interpreted in context. The European Service Mapping Schedule (ESMS) is a classification of adult mental health services that was later adapted for the assessment of health and social systems research (Description and Evaluation of Services and DirectoriEs - DESDE). The aim of the study was to review the diffusion and use of the ESMS/DESDE system in health and social care and its impact in health policy and decision-making.

Method: We conducted a systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (1997–2018).

Results: Out of 155 papers mentioning ESMS/DESDE, 71 have used it for service research and planning. The classification has been translated into eight languages and has been used by seven international research networks. Since 2000, it has originated 11 instruments for health system research with extensive analysis of their metric properties. The ESMS/DESDE coding system has been used in 585 catchment areas in 34 countries for description of services delivery at local, regional and national levels.

Conclusions: The ESMS/DESDE system provides a common terminology, a classification of care services, and a set of tools allowing a variety of aims to be addressed in healthcare and health systems research. It facilitates comparisons across and within countries for evidence-informed planning.

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1. Introduction

There is growing interest in moving from evidence-based planning to evidence-informed policy, which takes into account information on the local context and other factors influencing

decision-making [1–3]. Context refers to the totality of circumstances that comprise the milieu of a given phenomenon [4] and therefore encompasses information on the physical environment, the social and demographic determinants of health and the range of services available in the local system and their costs [5,6]. The eventual aim is to allow such information to be incorporated into real world decision support systems to guide planning and resource allocation [7] and facilitate interpretation of research results.

Context analysis, including service provision, is part of “healthcare ecosystem research” [8,9], an emerging discipline that analyses the complexity of care systems and interventions in a

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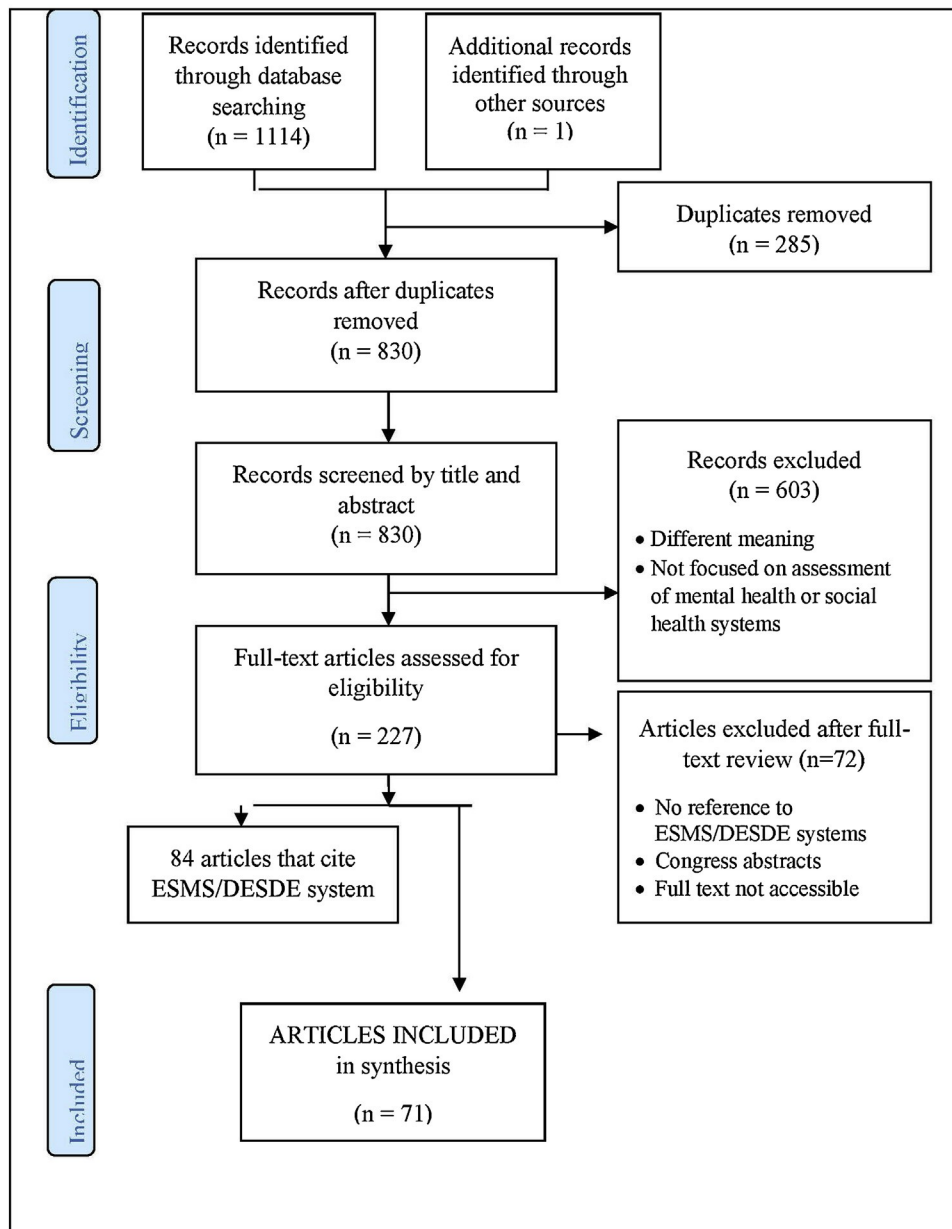


Fig. 1. PRISMA flowchart of study.

defined environment, using methods developed in environmental sciences for ecosystem services research [10].

There is wide variability in the terminology referring to services and programs delivered even in the same geographical area, and listings of services by their names alone should be analysed with caution, as the service names do not always reflect activity. Meaningful international comparisons need a common consensus-based terminology to improve health, strengthen health systems and provide essential healthcare for all [11,12]. A common coding system, using a standardised method of assessment, is important to overcome these challenges and enable better comparisons of data to inform policy and practice [6].

Comparative description of national and international health systems is important for identification of gaps in care, particularly in mental health. The World Health Organization has raised

international awareness of the gap between health care needs and available resources following the launch of the mental health Gap Action Programme in 2008 [13].

Recent guidelines on implementation research (StaRI -Standards for Reporting Implementation Studies) [14] call for transparent and accurate descriptions of the environment in which implementation studies took place [15]. The guidelines specify a detailed description of both the general context in which the intervention is implemented, and the service provision structure at personnel, health resources and sites level in which the implementation takes place.

The European Service Mapping Schedule (ESMS) was developed to facilitate the classification of mental health services and the standardised description of the care system for adults experiencing mental health problems by the EPCAT group (European Psychiatric

Care Assessment Team) between 1994 and 1997, and it was published in 2000 [16,17]. This system evaluation toolkit also included the International Classification of Mental Health Care (ICMHC) [18], which evaluated the different modalities of care available in a service, and the European Socio-demographic Schedule (ESDS) [19] for the standardised description of the sociodemographic characteristics of local catchment areas.

The ESMS was expanded and adapted for the assessment of other target groups such as children and adolescents, people with drug and alcohol problems or disabilities [20] and ageing populations [21]. This expanded version, called “Description and Evaluation of Services and DirectoriEs” (DESDE), was adapted for the evaluation of chronic or long-term care (DESDE-LTC) [22] and for the evaluation of social services (DESDE-AND) including an automated coding system [23]. Hence, the original ESMS instrument for adult mental health care, comprising 36 codes, has been expanded to an international classification of the care sector with 106 codes and over six instruments (see Fig.1). This classification is here referred as the “ESMS/DESDE” system for health care evaluation. Since the original work of the EPCAT group (1994–2000) several European Union funded research reference groups have continued the seminal work of EPCAT developing and implementing this system (Mental Health Economics Network-MHEEN, Description and Evaluation of Services and DirectoriEs for Long Term Care-DESDE-LTC research Group and REsearch on FINancing systems' Effect on the quality of MENTAL health care-REFINEMENT).

The classification and its related instruments describe care provision in catchment areas, comparing the structure, distribution and typology of services across health districts. The ESMS and the instruments derived from it, use a tree diagram to describe health services over four main domains:

- A Definition of catchments, target populations and units of analysis for services. Services are analysed as “Care Teams” or “Basic Stable Inputs of Care”. A BSIC is a combined and coordinated set of inputs (including structure, staff and organisation) that delivers care at a micro-organisation level, and has temporal and organisational stability. In summary, a BSIC is characterized by a stable group of professionals who on a routine basis provide coordinated care to the same group of patients or consumers. Catchments, target populations and services can be aggregated to provide higher-level analysis of health systems.
- B Availability of care: activities performed by the Care Teams. Each team or program is coded according to the Main Types of Care (MTCs) it provides. The MTC codes describe the principal activities of the service according to the ESMS/DESDE hierarchical tree taxonomy. There are six main MTC mapping branches (Residential, Day, and Outpatient Care, Self-help support, Information and assessment, and Accessibility), as well as optional qualifiers that can be used to develop a more granular description of services as required.
- C Resource use: The ESMS/DESDE system provides instructions for collection of standardised counts of service use. As with other sections, various levels of granularity can be obtained as required by the specific evaluation project.
- D Service characteristics checklist: A more detailed, standardised analysis of local care organisations and functional teams, including information about governance, funding sources, characteristics of the services and staffing.

This system is intended to be widely used and is open access to favour its use by non-for-profit organisations. Its tree structure has facilitated the incorporation of new codes as new target groups or sectors were coded.

Even though the ESMS/DESDE has been extensively applied in health care assessment in many countries, there has not been a comprehensive review on its “diffusion” in a range of different sectors and target groups across the world. Diffusion refers to the spreading of the innovation tool more widely in a range of different contexts [24].

This study aims to identify, describe and analyze the use and the international diffusion of the ESMS/DESDE system for health service evaluation and systems research and its impact in health policy and decision-making.

2. Method

We conducted a systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [25]. The protocol of the systematic review was published in PROSPERO, a database of prospectively registered systematic reviews in health and social care (CRD42018104864).

2.1. Search strategy

The search was carried out until December 31, 2018. There was no limitation of the search strategy based on language or year of publication. We searched for scientific publications in the following electronic databases: Web of Science, Scopus, Proquest, (Agricultural & environmental science database, Health and medical collection, Nursing & allied health database, Psycarticles, Psychology database, PsycInfo), Pubmed, Google Scholar and OVID.

We used a similar search strategy for every database search. The key words included different nomenclature applied to the ESMS/DESDE system and the instruments derived from it from its initial development to the present. For example in the case of Pubmed database, the search strategy was as follows: (“EUROPEAN SERVICE* MAPPING SCHEDULE”[All Fields] OR eDESDE[All Fields]) OR DESDE-LTC[All Fields] OR REMAST[All Fields].

2.2. Eligibility criteria

The adapted PICO method included: Participant/Population (all type of services for people with mental disorders, disability or long-term care), Intervention (assessment of services using ESMS/DESDE), and Outcome (application/diffusion of the ESMS/DESDE and policy impact).

Inclusion criteria were: Journal articles reporting studies about services or health systems evaluation that have used ESMS/DESDE, studies about services aimed at people with mental health, disability or long term care needs and introduction of the instruments of ESMS/DESDE system. No restrictions were set about country of use, year of publication or language.

Studies that did not incorporate a care service or systems evaluation or that only provide a reference to other ESMS/DESDE studies were excluded from the final selection list. The studies that only refer to ESMS/DESDE as part of a conceptual framework in evaluation of services have been counted separately but not included in the systematic review. Grey literature has not been included in this review.

2.3. Study selection

Two authors (CR and MR) carried out an independent screening and eligibility analysis. In the first phase, CR and MR checked the paper’s title and abstract to assess whether it potentially met criteria for inclusion. In the eligibility phase, they reviewed full text articles. Where there was disagreement between the two reviewers, a third researcher (JAS) was consulted to reach consensus on eligibility. A direct content analysis was made of

papers published in English, Spanish, French, Portuguese and Italian. External support was required for context analysis of papers published in German, Polish, Farsi and Mandarin.

Titles and abstracts of all citations were obtained for phase 1 of the study selection. Citation indices and reference lists of retrieved articles were checked for additional studies not identified in the original database search. The full text of the screened records was searched.

Fig. 1 provides a visual representation of the current review's methodological process, according to the PRISMA framework [25].

When necessary, the reviewers contacted the leading authors to get further clarification and information on the use of the ESMS/DESDE in other countries.

2.4. Data abstraction

The data abstraction form included: 1) bibliographic information (first author, year of publication); 2) uses of ESMS/DESDE system; 3) specific tools derived from the ESMS; 4) psychometric properties of the tools; 5) language of the version used; 6) country of application; 7) target population; 8) number of evaluated areas. Whenever possible, the catchment areas described in the study were classified in accordance with the territorialisation levels described in the DESDE-LTC instrument (H1-national level, H2-regional level, H3-hospital catchment area and H4-mental health community center catchment areas) [26]. Twenty-two papers used other territorial jurisdictions such as municipalities, urban districts or research sites and the geographical level was not specified; four studies did not describe areas. In addition, we included a description of the following characteristics: 9) number of services evaluated in functional teams or BSICS; 10) research group; (11) impact on policy for plan and health decision use; (12) funding source.

2.5. Study characteristics

The study characteristics are shown in Table 2. This description of the selected papers includes: the specific ESMS/DESDE tool used in the study, the specific tool and its metric properties (feasibility, reliability, validity), framework of service research included in the study, description of the reference areas and its social and demographic characteristics (context analysis) and demographic context (standard description or basic data), the evaluation of the service provision in the system, the agents using and/or providing care in the system (patient, family, professional), resource utilization, the main aim of the study (e.g. scale development, costs, description of the service delivery, supply and demand, health interventions or decision support system model), the use of visualization tools (geographic information system, spatial analysis and atlas), type of analysis (data analytic or decision support system), and use for decision making.

This study has followed the PRISMA quality criteria for systematic reviews [25]. The quality was assessed using a checklist based on the EPCAT model for services evaluation [27] and the domains suggested by Votruba and colleagues for health system and policy research [28]. The quality checklist included the following ten domains listed above. Studies were rated as high quality when they fulfilled at least six criteria in this checklist.

3. Results

3.1. Literature search

The search performed in our review retrieved 1.114 references. One additional paper was included after checking the list with the experts of the group. Fig. 1 shows the flowchart of the selection

process. After removing duplicates, 830 abstracts were reviewed by two independent researchers. A total of 603 records were excluded because they were not focused on assessment of health systems and services. The full text of the remaining 227 articles was text assessed for eligibility. Of these, 72 papers were excluded, of which 61 did not include a reference to the ESMS/DESDE system, six were conference abstracts and five were not available for the full text. Another 84 texts referred to the ESMS/DESDE system in the introduction or discussion but did not actually use the ESMS/DESDE classification or its related instruments.⁷

3.2. General characteristics

Since 1997, 155 papers have mentioned the ESMS/DESDE system. Out of them, 71 articles have actually used the ESMS/DESDE for service research. It should be noted that three papers authored by members of the core EPCAT team were published before the ESMS was officially released in 2000 [29–31].

The data abstraction form is included in Annex 1 with information about key features of the papers reviewed. The main characteristics of the reviewed articles are shown in Table 2.

Eleven tools for health services and system research have derived from the original ESMS [16] (Fig. 2). Six are versions of the ESMS and DESDE instruments aimed at different target groups or levels of research [32,33,20–23]. In addition three instruments have been derived from the ESMS by independent groups for a) cost analysis in schizophrenia (Service Utilization Sheet –SUS–, [34], b) analysis of community mental health services in South Africa (framework for CMHS, [35], and c) for evaluating transition services from child to adult mental health care in Finland (European CAMHS Mapping-ECM-Q Questionnaire) [36]. The REFINEMENT Decision Support Toolkit includes two tools derived from DESDE: the Mental Health Service Inventory–MHSI– [6] that summarises information from DESDE-LTC; and the REFINEMENT Glossary of terms for mental health system research [37] that extended the vocabulary developed in the ESMS/DESDE system [26]. Other instruments such as World Health Organization Assessment Instrument for Mental Health Systems (WHO-AIMS) [38] have included terms from ESMS. We have only included instruments directly derived from ESMS in Fig. 2.

The ESMS/DESDE system has been translated from English into eight languages: Italian, Finnish, German, Norwegian, Polish, Russian, Slovenian and Spanish. Contact with the authors allowed the identification of two unpublished versions of ESMS in France and Brazil, that have not been included in this review. Six papers provide a description of versions of the ESMS/DESDE system in different countries: [16,6,37,29,39,40].

From the selected papers, 21.1% fulfilled at least six criteria (high quality) of the 10 quality criteria included in this systematic review. Fifteen papers fulfilled three or fewer criteria and were considered low quality. For further details, see Table 2.

More than 64% of the papers provided a detailed description of the specific instrument used. The inclusion of a context analysis (social and demographics and other characteristics of the area) in the study is an important quality indicator of 29 articles analyzed, 18 of them using standard methodology.

3.3. Psychometric properties of ESMS/DESDE system

The psychometric properties of the different ESMS/DESDE tools have been described in 11 papers (Table 2). The feasibility of ESMS/DESDE was considered adequate in all of them, although the coding system requires intensive training. The instruments ESMS, DESDE and DESDE-LTC have shown optimal levels of consistency, descriptive validity and inter-rater reliability in studies conducted by the core group [17,41,20], [22]. The ontological properties,

content analysis and hierarchical structure of the DESDE-LTC classification has also been published [22,42].

In addition, four psychometric studies have been carried out by other independent research groups [43–46]. Becker and colleagues indicated a low usability of ESMS, but this evaluation did not follow the training recommended by the EPCAT core group. Two articles using ESMS/DESDE data for decision support system (DSS) include metric properties of the derived decision support tools such as agreement, predictive validity, feasibility and technology readiness level (TRL) [47,9].

Pilot and demonstration studies have been carried out in Spain [41,20], Italy [17] and Australia [48].

3.4. Use of ESMS/DESDE in service research

3.4.1. International diffusion of ESMS/DESDE system

ESMS/DESDE system has been used in 34 countries comprising four WHO world regions. The distribution of the countries is shown in Table 1. There are five European countries with 10 or more publications related to the application of ESMS/DESDE system.

Out of the 71 papers selected for this review, 40 have used a version of ESMS. Two have used the ESMS-b, four the ESMS-R (actually the expanded version of DESDE-LTC). Sixteen papers have used a version of DESDE (Table 2). The remaining four papers have used another tool derived from the ESMS/DESDE system (Fig. 2).

The utilization of the ESMS/DESDE system fell into six domains categories: Methodology aspects of the system (11 papers), description of Health Interventions and Services (13 papers), Context analysis (29 papers), articles describing the relationship between Supply and Demand (8 papers), use in Health Economics (6 papers) and use in Decision Support Systems (4 papers) (Annex 1).

3.4.2. Use by different research reference networks (Annex 1)

Eleven national and international research reference networks have used ESMS/DESDE system in their studies. The ESMS/DESDE system core group (EPCAT, PSICOST, DESDE-LTC and REFINEMENT) has been involved in 31 papers related to the development and use of ESMS/DESDE system. Other research networks that have applied the ESMS/DESDE in their studies include (full names available in annex 1): the EDEN study, the EUNOMIA project, EPSILON Study, LIDO Study, EuroSC project, and MILESTONE project, in Europe. In Latin America, the ESMS/DESDE has been used by the Maristan Network.

3.4.3. Use in different care sectors and target groups

Of the articles that applied ESMS/DESDE system, 48.4% carried out a cross-sectoral evaluation, in some cases focused on specific target groups. The health sector was the focus of 18.7% of the papers; 26.7% related to specific health care: one paper described primary care services for patients with depression [51], three papers evaluated mental health and substance abuse services [33,88,90], one paper evaluated transition services from child and adolescent to adult mental health care [36] and others assessed other specific mental health services. One article focused on the evaluation of vocational services for people with schizophrenia [70] and nine papers described services used for specific target population like people with schizophrenia [30,52,53,57,61,62,70,34] and intellectual disabilities [78].

3.4.4. Use in healthcare ecosystem research (context analysis)

Twenty-six of the selected papers highlighted the relevance of a standard model and method for service research for evaluating health systems. Specific references to ecosystem research were mentioned in two papers [9,91].

In spite of its wide use for describing catchment areas, only 29 studies (40.8%) provided a full description of the areas following an ecological approach. Most of these studies (18) used the European

Socio-Demographic Schedule [19], another instrument of the EPCAT Toolkit, or derived instruments from ESDS including more contextual indicators. The remaining documents did not describe socio-demographic characteristics of evaluated areas or presented a poor description (Table 1). These 29 studies provide a standard description of 585 catchment areas. These geographical areas include a wide array of urban and rural districts and different jurisdictions at meso and macro levels that have been described using the health area classification provided in the DESDE-LTC manual (H codes) [26]. One study described a whole country (Level H1) [36]. Fourteen studies have provided descriptions at regional/state level or in health districts (H2). The H3 level (hospital catchment area) has been used in 10 studies, another 16 studies describe catchment areas of community mental health centers (mesolevel-H4), and three studies provide descriptions of a combination of both H3 and H4 areas. These ecological studies should be differentiated from other studies describing purpose areas (e.g. research sites in 18 studies). Finally, three studies describe jurisdiction boundaries that do not facilitate international comparability such as municipalities or urban districts (Table 1).

These studies have allowed standard description of over 6.279 different services (Basic Stable Inputs of Care - BSICs) following the ESMS/DESDE system methodology. In some cases, the paper did not specify the number of BSICs evaluated in the study (see Annex 1)

Thirty-two papers provided comparative analysis of the context of care in nine different countries at national level: seventeen studies in Spain, five in Finland, four in Germany, three in Poland, two in Australia, Chile, Italy and Slovenia; and one in South Africa and Canada.

We also found 24 papers comparing mental health areas or health systems at international level. Six studies compared regions or districts across two countries: Russia and Norway [64,88], and Spain versus a) Bulgaria [42], b) Italy [59], c) Chile [69] and d) Finland [91]. Other international papers described service provision across three to nine countries including the EDEN study, LIDO Study, EPSILON Study, EuroSC project, eDESDE-LTC project and REFINEMENT project. The EUNOMIA study included comparisons across 12 countries in Europe: Germany, Bulgaria, Czech Republic, Greece, Israel, Italy, Lithuania, Poland, Slovak Republic, Spain, Sweden and UK [56,58,73,80].

A significant percentage (66.2%) of the articles described the provision of services of a specific area. Twenty-eight papers used ESMS/DESDE either to provide context to local outcomes or to analyse the relationship between the service delivery system and outcomes such as family burden (e.g. [61]), needs (e.g. [84]) and costs (e.g. [31]).

Eleven papers used visualization tools for representing data including basic geographical information (4), spatial analysis (1) or advanced geographical information system incorporated to atlases of care (4) (even though the maps did not appear in the paper) [49,81,82,86]. One paper used ESMS/DESDE to inform machine learning using Self-Organising Maps (SOMNET) for health planning [9].

3.4.5. Use in longitudinal studies of the evolution of care systems

ESMS/DESDE has been used to monitor the evolution of the mental health care provision in several countries and regions. The mental health improvement and its relationship to the regional plan was analysed in Catalonia (Spain) in 2002, 2006 and 2010 [81]. Two health districts in Central Chile were evaluated in 2004/05 [69], 2008/09 [95] and 2012 [94]. Three hospital districts in Finland were assessed in 2004 [71], 2011/12 [33] and 2012/14 [84]. The area

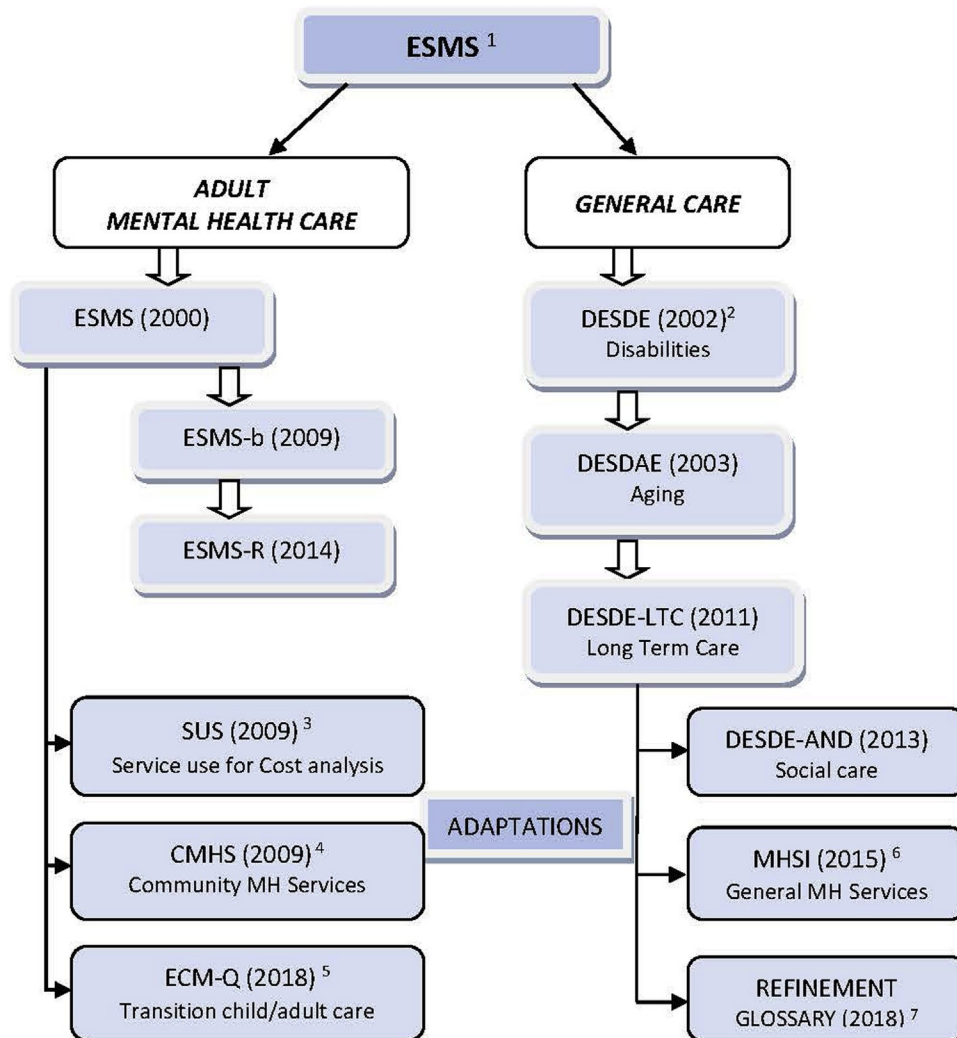


Fig. 2. Tools for service and health systems research derived from the European Service Mapping Schedule and related to the ESMS system for the international classification of care provision.

¹ESMS (European Service Mapping Schedule) [16], the brief version (ESMS-b) [32] and the extended Revised version (ESMS-R) [33] for the assessment of adult mental health care.

²DESDE (Description and Evaluation of Services and DirectoriEs). Apart from mental health it has been used for the classification of services for Disabilities (DESDE) [20], ageing (DESDAE) [21], Long Term care (DESDE-LTC)[22], automated evaluation of social services in Andalucía (Spain) (DESDE-AND) [23]. It has also been used for mapping Drug and Alcohol Services, Child and Adolescent Mental Health, Chronic care and care for homeless.

³SUS (Service Utilization Sheet) [34].

⁴CMHS (Community Mental Health Services provision) [35].

⁵ECM-Q (European Child and Adolescent Mental Health Mapping Questionnaire) [36].

⁶MHSI (Mental Health Service Inventory) [6].

⁷Glossary of terms REFINEMENT EU project [37].

of Verona (Italy) has been analysed in 2002 and 2010 [89]; and the areas in Northwest Russia and Northern Norway in 2004/05 and 2011/12 [64,88].

3.4.6 Use in health economics and health financing analysis

Seven papers have used the ESMS/DESDE system for health economics including the analysis of the context of health expenditure [51], the development of units of cost analysis and service utilization [68,34], cost of illness [31,53] and efficiency analysis [83,87].

3.5 Impact of the use of ESMS/DESDE system on decision making

A substantial number of the selected papers have been funded by public agencies or international bodies such as the European Union. Twenty-two articles (31%) received funding from national,

regional or local governmental agencies. Two papers mentioned the use of the ESMS/DESDE terminology and coding structure in the development of other major international classification and service assessment tools such as the International System of Health Accounts (SHA 2.0) [96,42]; and the WHO Assessment Instrument for Mental Health Systems (WHO-AIMS) [38,94].

The ESMS/DESDE system has been adopted for health and social policy planning by public agencies in several countries. ESMS and ESMS-R have been extensively used for health planning in Finland [84]. The DESDE coding has been adopted for the classification system for disability services in three Autonomous Communities in Spain (Navarra, Castilla la Mancha and Andalucía) [20]. Data from the Dernovšek & Šprah study was used to inform the National Mental Health Plan in Slovenia [65].

Four papers focused on models to improve decision support in healthcare systems using ESMS/DESDE system [72,83,87,9].

Table 1
International Diffusion of the ESMS/DESDE system.

WHO WORLD REGION	COUNTRY	NUMBER OF PUBLICATIONS
AFRICA (1)	SOUTH AFRICA	1
AMERICAS (5)	BRAZIL	1
	CANADA	1
	CHILE	2
	USA	1
	EUROPE (80)	ALBANIA
	AUSTRIA	3
	BELGIUM	1
	BULGARIA	6
	CROATIA	2
	CZECH REPUBLIC	6
	DENMARK	4
	FINLAND	8
	FRANCE	6
	GERMANY	17
	GREECE	4
	IRELAND	1
	ISRAEL	4
	ITALY	16
	LITHUANIA	4
	MACEDONIA	1
	NETHERLANDS	6
	NORWAY	5
	POLAND	10
	ROMANIA	4
	RUSSIA	2
	SERBIA	1
	SLOVAK REPUBLIC	5
	SLOVENIA	3
	SPAIN	35
	SWEDEN	6
	SWITZERLAND	1
	UK	18
WESTERN PACIFIC (2)	AUSTRALIA	2

4. Discussion

To fill the existing gap between the burden of diseases and the resources available to treat them, it is imperative to obtain basic information about care provision at local, regional and national levels [97]. The WPA-Lancet Psychiatry Commission on the Future of Psychiatry [98] has also underscored the need to reform the “traditional structure of services”. However, the evaluation of a system’s reform requires a detailed knowledge of the existing structure of services and how these services change over time. The ESMS/DESDE set of instruments provides key information for monitoring health systems. It incorporates a common terminology, an international taxonomy and coding of health services, a standard procedure for data collection and meaningful comparisons across and within countries.

ESMS/DESDE addresses three key problems in health service evaluation: commensurability, terminological variability and the lack of contextualisation. First, the incommensurability bias is due to the existence of different units of analysis in health care. “Service” and “interventions” are vague terms that could refer to very dissimilar units of analysis impeding comparisons like-with-like. The ESMS/DESDE has introduced an operational unit called “Basic Stable Inputs of Care” (BSIC) that allows comparison across jurisdictions [6].

Second, the terminological variability is a major source of ambiguity in healthcare research. The name of the service does not always reflect the activity it performs and this causes major problems when services classified by their names such as “nursing homes” or “day hospitals” are aggregated for care gap analysis, financing or planning. To overcome this problem ESMS/DESDE has developed a fully operational taxonomy for coding BSICs based on their Main Type of Care (MTCs). Its metric properties have been

extensively analysed by several independent groups and the usability of the system has been demonstrated around the world, including a number of key international studies on mental health service research. Papers have been appearing more frequently recently, with 29.5% published in the last five years due to growing interest in health agencies supporting this type of study.

Third, services should be understood in the context of the local system that they belong. Context analysis is now considered a key component of healthcare ecosystem research [9,99]. This approach was advanced 20 years ago by the EPCAT group when the assessment of services provided by ESMS was accompanied by the standard analysis of the social and demographic context using ESDS [19], and by the description of the main modalities of care using ICMHC [18]. Whilst WHO-AIMS [38] and the Mental Health Country Profile (MHCP) [100] have been used for describing national mental health systems worldwide, ESMS/DESDE is the only system that provides local, bottom-up information that can be used across different sectors (health, social, education, employment, housing and justice) [99] and for coding services for different target groups such as mental disorders [89,51] intellectual disabilities [78], substance abuse [33,88,90], general disabilities [20], aging and long term care [21,22]. The usability of ESMS/DESDE for the analysis of local change and improvement has been tested in Catalonia (Spain) where the evolution of the mental health care system was analysed before and after the implementation of the 2006 regional mental health plan (2002–2010) [81]. A 15 years on analysis is currently under way in this region.

This coding system has provided the basic information for producing local atlases of mental health care in America, Australia and Europe. These atlases are one of the visual tools that are being used to analyse mental health systems and support better decision making [100]. This has contributed to the development of regional and national action plans in mental health [81], intellectual disability [78] and social care [23]. In addition, the use of the ESMS/DESDE system provides relevant information for the assessment of equity to universally accessible services, an essential component of the Sustainable Development Goals and the new global health agenda on Universal Health Care [101]. Furthermore, the realisation of integrated people-centred health services depends on health system inputs, which require reliable and standardised information on service provision [102].

The use of ESMS/DESDE system in health economics and health financing identified in this review is particularly relevant for health policy and its incorporation into real world decision support systems routinely used by public agencies to inform their planning strategies [82,103].

4.1. Limitations

However, the use of this system has several limitations. ESMS/DESDE requires extensive training and the interpretation of the results by decision makers should involve additional support from experts. To overcome these difficulties the core group developed open source online training material, made the system fully accessible to non-for-profit organizations and produced a brief and user-friendly version (ESMS b). However, these initial problems persist in the current versions as the problem may not rely on the difficulty of the instrument but on the inherent complexity of care services. In addition, its easy access has led to certain nomenclature confusion in the use of the different versions of the tools, and to the development of instruments not supervised by the original authors. The participation of two members of the original core group in this study (SJ and LSC) may have skewed the review towards positive results. However, these two authors have not participated in the selection process nor the individual analysis of the documents and negative results have been reported. This

Table 2
Study characteristics of the papers included in the systematic review.

REFERENCE	TOOL	TOOL DESCRIPTION	FRAME WORK	REFERENCE AREA (area DESDE code H ¹)	DEMOGRAPHIC CONTEXT	SERVICE PROVISION EVALUATION	DESCRIPTION OF SYSTEM AGENTS	RESOURCES USE	MAIN AIM OF THE STUDY	USE OF VISUALIZATION TOOLS	TYPE OF ANALYSIS	USE FOR DECISION MAKING
Salvador-Carulla et al, 1997 [29]	ESMS	Yes	Yes						Scale development			
Haro et al, 1998 [31]	ESMS			2 MH areas (H4) + 1 Hospital area (H3)	Standard description	Cross-sectoral	Patient	Yes	Cost of illness		Data Analytic	
Salvador-Carulla et al, 1999 [30]	ESMS			1 MH area (H4) + 1 Hospital area (H3)	Standard description	Cross-sectoral		Yes	Cost of illness		Data Analytic	
Johnson et al, 2000 [16]	ESMS	Yes	Yes	5 MH areas (H4)					Scale development			
Munizza et al, 2000 [17]	ESMS	Yes (including metrics properties)		3 MH areas (H4)	Standard description	Cross-sectoral		Yes	Description of service delivery	Geographic Information System		
Salvador-Carulla et al, 2000 [41]	ESMS	Yes (including metrics properties)	Yes	4 MH areas (H4)+1 Hospital area (H3)	Standard description	Cross-sectoral		Yes	Scale development		Data Analytic	
Beperet et al, 2000 [49]	ESMS	Yes	Yes	1 MH area (H4)	Standard description	Cross-sectoral		Yes	Description of service delivery			
McCrone et al, 2000 [50]	ESMS			5 Sites		Focus on the Health sector*			Supply and demand: assessment of needs		Data Analytic	
Böcker et al, 2001 [44]	ESMS	Yes (including metrics properties)		1 Region (H2)	Basic data	Cross-sectoral	Professional	Yes	Description of service delivery	Geographic Information System		
Chisholm et al, 2001 [51]	ESMS		Yes*	6 Sites	Standard description	Focus on specific health services (primary care)*	Patient	Yes	Description of service delivery for financing			
McCrone et al, 2001 [52]	ESMS			5 Sites		Focus on the Health sector*	Patient		Supply and demand: assessment of needs		Data Analytic	
Adamowski & Trypka, 2002 [40]	ESMS	Yes	Yes						Scale development			
Baková et al, 2002 [39]	ESMS	Yes							Scale development			
Becker et al, 2002 [43]	ESMS	Yes (including metrics properties)	Yes	5 Sites	Basic data	Cross-sectoral		Yes	Description of service delivery			
Knapp et al, 2002 [53]	ESMS			5 Sites	Basic data	Focus on the Health sector *	Patient	Yes	Costs		Data Analytic	
Trypka et al, 2002 [54]	ESMS		Yes						Description of service delivery			
Brieger et al, 2003 [55]	ESMS	Yes		1 Region (H2)		Focus on the Health sector						

Mastrogianni et al, 2004 [56]	ESMS			12 Sites	Standard description*	Focus on specific health services (psychiatric inpatient units)			Description of service delivery		
Bebbington et al, 2005 [57]	ESMS	Yes		9 MH areas		Cross-sectoral*	Patient		Health interventions: Coercive psychiatric treatment		
Kallert et al, 2005 [58]	ESMS			13 Sites	Standard description	Focus on specific health services (psychiatric hospitals)			Health interventions: methods of care		
Salvador-Carulla et al, 2005 [59]	ESMS	Yes (including metrics properties)*	Yes	13 MH areas (H4)	Standard description	Cross-sectoral		Yes	Description of service delivery		Data Analytic
Tibaldi et al, 2005 [60]	ESMS	Yes	Yes	18 MH areas (H4)	Standard description	Focus on the Health sector		Yes	Description of service delivery	Geographic Information System	Data Analytic
Roick et al, 2006 [61]	ESMS	Yes		1 Municipality + 1 District		Focus on the Health sector	Patient, Family	Yes*	Supply and demand: family burden		Data Analytic
Salvador-Carulla et al, 2006 [20]	DESDE	Yes (including metrics properties)	Yes	20 MH areas (H4)		Cross-sectoral			Scale development		Data Analytic Yes
Marwaha et al, 2007 [62]	ESMS			8 Sites		Focus on specific target: schizophrenia	Patient		Health interventions: employment		Data Analytic
Moreno, 2007 [63]	ESMS			1 Region (H2)		Focus on the Health sector			Units of costs		Data Analytic
Rezvyv et al, 2007 [64]	ESMS	Yes	Yes	2 Counties (H2)	Basic data	Focus on the Health sector		Yes	Description of service delivery		Data Analytic
Salvador-carulla et al, 2007 [47]	ESMS	Yes (including metrics properties)		12 MH areas (H4)	Standard description	Cross-sectoral		Yes	Decision Support System Model		Data Analytic Support System
Dernovšek & Šprah, 2008 [45]	ESMS	Yes (including metrics properties)	Yes	12 Statistical regions (H2)		Cross-sectoral	Professional	Yes	Description of service delivery		Yes
Dernovšek & Šprah, 2008b [65]	ESMS	Yes		12 Statistical regions (H2)		Cross-sectoral		Yes	Description of service delivery		
Eichler et al, 2008 [66]	ESMS			5 Sites		Focus on specific health services (day hospital)*	Patient	Yes	Health interventions: Follow up		Data Analytic
Moreno et al, 2008 [67]	ESMS	Yes		1 MH area (H4)		Focus on the Health sector	Patient	Yes	Supply and demand: schizophrenia prevalence	Spatial Analysis	
Moreno et al, 2008b [68]	ESMS			1 Statistical region (H2)		Focus on specific health services (residential care)		Yes	Units of costs		Data Analytic
Salvador-Carulla et al, 2008 [69]	ESMS	Yes (including metrics properties)*	Yes	5 MH areas (H4)	Basic data	Cross-sectoral		Yes	Description of service delivery		
Skiba et al, 2008 [46]	ESMS-b	Yes (including metrics properties)*		5 Sites	Basic data	Focus on specific health services (Mobile Community Teams)	Professional	Yes	Description of service delivery		

Table 2 (Continued)

REFERENCE	TOOL	TOOL DESCRIPTION	FRAME WORK	REFERENCE AREA (area DESDE code H ¹)	DEMOGRAPHIC CONTEXT	SERVICE PROVISION EVALUATION	DESCRIPTION OF SYSTEM AGENTS	RESOURCES USE	MAIN AIM OF THE STUDY	USE OF VISUALIZATION TOOLS	TYPE OF ANALYSIS	USE FOR DECISION MAKING
Lund & Flisher, 2009 [35]	A framework for CMHS	Yes (including metrics properties)	Yes*	9 Provinces (H2)		Focus on specific health services (Inpatient hospital settings)	Professional		Supply and demand: Human resources needs			
Marwaha et al, 2009 [70]	ESMS			7 Sites		Focus on specific services (vocational services)	Patient		Health interventions: employment		Data Analytic	
Pirkola et al, 2009 [71]	ESMS	Yes		428 Municipalities	Standard description	Cross-sectorial		Yes	Supply and demand: Suicide rate	Geographic Information System	Data Analytic	
Prot-Klinger et al, 2009 [32]	ESMS breve			1 Site		Focus on specific health services (Community Mobile Team)*	Patient, Family	Yes*	Health interventions: community care			
Salize et al, 2009 [34]	SUS			6 Hospital areas (H3)			Patient	Yes	Cost of illness		Data Analytic	
Gibert et al, 2010 [72]	ESMS			12 MH areas (H4)		Cross-sectorial		Yes	Decision Support System Model		Decision Support System	
Raboch et al, 2010 [73]	ESMS			12 Sites		Focus on specific health services: (psychiatric inpatient units)	Patient	Yes	Health interventions: coercive measures		Data Analytic	
Jordanova et al, 2011 [74]	ESMS			5 Sites		Focus on specific health services (psychiatric hospitals)	Patient	Yes	Health interventions: psychotropic prescribing			
Prot et al, 2011 [75]	ESMS			5 Sites		Focus on specific health services (community care)	Patient, Family	Yes	Health interventions: community care			
Salvador-Carulla et al, 2011 [42]	DESDE-LTC	Yes (including metrics properties*)	Yes	2 Municipalities		Cross-sectorial			Scale development			
Kallert et al, 2013 [76]	ESMS	Yes		5 MH areas		Focus on specific health services (day hospitals)	Patient	Yes	Health interventions: psychiatric day care		Data Analytic	
Petersen et al, 2013 [77]	ESMS			1 MH area		Focus on specific health services (psychiatric hospitals)	Patient	Yes	Health interventions: Tertiary Psychiatric Residential Care		Data Analytic	
Salvador-Carulla et al, 2013 [22]	DESDE-LTC	Yes (including metrics properties)	Yes	6 MH areas (H3)		Cross-sectorial			Scale development		Data Analytic	
Salvador-Carulla et al, 2013b [78]	DESDE-LTC	Yes		16 Regions (H2)		Focus on specific target (intellectual disability)		Yes	Description of service delivery		Data Analytic	
Ungewitter et al, 2013 [79]	ESMS	Yes		1 Region (H2)		Cross-sectorial	Professional	Yes	Description of service delivery			
Ala-Nikkola et al, 2014 [33]	ESMS-R	Yes (including metrics properties)*		3 Hospital areas (H3)	Basic data	Focus on specific health services (mental health and substance abuse)			Supply and demand: needs		Data Analytic	

Kalisova et al, 2014 [80]	ESMS			10 Sites		Focus on specific health services (psychiatric hospitals)	Patient	Yes	Health interventions: coercive measures		Data Analytic
Fernández et al, 2015 [81]	DESDE-LTC	Yes	Yes	1 Region (H2)	Standard description	Cross-sectoral		Yes	Description of service delivery	Atlas	Yes
Iruin-Sanz et al, 2015 [82]	DESDE-LTC	Yes	Yes	2 Provinces (H2)		Cross-sectoral*			Description of service delivery	Atlas	Yes*
Salvador-Carulla et al, 2015 [6]	MHSI (REMAST toolkit)	Yes (including metrics properties)*	Yes	8 Hospital areas (H3)		Focus on the Health sector			Scale development		
Torres-Jiménez et al, 2015 [83]	DESDE-LTC			12 MH areas (H4)		Cross-sectoral		Yes	Decision Support System Model		Decision Support System
Ala-Nikkola et al, 2016 [84]	ESMS-R	Yes		4 Hospital areas (H3)	Standard description	Cross-sectoral	Patient, Professional	Yes	Health interventions: community care		Data Analytic
Ala-Nikkola et al, 2016b [85]	ESMS-R	Yes		13 Hospital areas (H3)	Basic data*	Cross-sectoral			Supply and demand: catchment area sizes		Data Analytic
Rodero-Cosano et al, 2016 [86]	DESDE-LTC			60 MH areas (H4)	Basic data	Cross-sectoral		Yes*	Description of service delivery	Atlas	Data Analytic
Almeda et al, 2017 [87]	DESDE-LTC			19 MH areas (H4)		Cross-sectoral		Yes	Description of service delivery		Decision Support System
Dahl et al, 2017 [88]	ESMS	Yes		3 Sites	Basic data	Focus on specific health services (outpatient services for substance abuse disorders)	Professional	Yes	Description of service delivery		
Fernandez et al, 2017 [48]	DESDE-LTC	Yes	Yes	1 Region (H2)		Cross-sectoral			Description of service delivery	Atlas	
Gutiérrez-Colosía et al, 2017 [89]	DESDE-LTC	Yes	Yes	8 Hospital areas (H3)	Standard description	Focus on the Health sector			Description of service delivery		
Ala-Nikkola et al, 2018 [90]	ESMS-R	Yes (including metrics properties)		4 Hospital areas (H3)		Focus on specific health services (mental health and substance abuse)	Professional		Description of service delivery		Data Analytic
Chung et al, 2018 [9]	DESDE-LTC	Yes (including metrics properties)	Yes	106 MH areas (H4)		Cross-sectoral*		Yes*	Decision Support System Model		Decision Support System
Montagni et al, 2018 [37]	DESDE-LTC	Yes	Yes						Scale development		
Sadeniemi et al, 2018 [91]	DESDE-LTC	Yes		2 Hospital areas (H3)	Basic data	Focus on the Health sector	Professional	Yes	Description of service delivery		
Tuomainen et al, 2018 [36]	ECM-Q	Yes		Country (H1)		Focus on specific services (transition)			Description of service delivery		
Cetrano et al, 2018 [92]	DESDE-LTC	Yes	Yes	8 Hospital areas (H3)	Standard description	Focus on the Health sector	Professional		Description of service delivery		Data Analytic
Furst et al, 2018 [93]	DESDE-LTC	Yes		1 Region (H2)	Standard description	Cross-sectoral			Description of service delivery	Atlas	
Salinas-Pérez et al, 2018 [94]	DESDE-LTC	Yes	Yes	19 MH areas (H3)	Standard description	Cross-sectoral	Professional		Description of service delivery	Atlas	

1Territorialisation levels for mental health planning and policy [25]. H: Health areas as defined in DESDE-LTC. H2 macro level (regional), H3 meso-level (e.g health district, catchment area), H4: micro level MH: Mental Health. *Implicit information. Type of analysis: Data analytic (statistical analysis of the data to draw conclusions); Decision support systems (tools supporting decision making processes).

review does not include grey literature or technical reports by public agencies even though these sources of information are key for its use in policy and practice. A complementary review of the grey literature of the ESMS/DESDE system is currently under way.

5. Conclusion

The ESMS/DESDE system provides a common terminology, an ontology based classification of care services, a set of instruments covering different aims in healthcare research, a standard method for data collection of service provision in health and social care, and facilitates comparisons across and within countries. This system has been extensively used to provide context information at every level of the health system (local, regional, national), for care gap analysis, health economics, and for modelling healthcare ecosystems. It has been used across different care sectors and has been effectively incorporated into decision support systems to guide evidence-informed planning.

Availability of data and materials

Supplementary materials (Annex 1) are available in the <http://psicost.org/> website, and upon request.

Declaration of Competing Interest

The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing their work. Authors declare no conflicts of interest.

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References marked with an asterisk indicate studies included in the systematic review.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.eurpsy.2019.07.003>.

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Organisational impact of the National Disability Insurance Scheme transition on mental health care providers: the experience in the Australian Capital Territory

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Abstract

Objectives: Concerns raised about the appropriateness of the National Disability Insurance Scheme (NDIS) in Australia for people with mental illness have not been given full weight due to a perceived lack of available evidence. In the Australian Capital Territory (ACT), one of the pilot sites of the Scheme, mental health care providers across all relevant sectors who were interviewed for a local Atlas of Mental Health Care described the impact of the scheme on their service provision.

Methods: All mental health care providers from every sector in the ACT were contacted. The participation rate was 92%. We used the Description and Evaluation of Services and Directories for Long Term Care to assess all service provision at the local level.

Results: Around one-third of services interviewed lacked funding stability for longer than 12 months. Nine of the 12 services who commented on the impact of the NDIS expressed deep concern over problems in planning and other issues.

Conclusions: The transition to NDIS has had a major impact on ACT service providers. The ACT was a best-case scenario as it was one of the NDIS pilot sites.

Keywords: National Disability Insurance Scheme, psychosocial disability, service provision, service funding, care delivery

The provision of support for people with psychosocial disability related to a mental health condition was a late addition to the National Disability Insurance Scheme (NDIS). Key NDIS concepts of access, choice and control¹ are relevant to people with mental illness whose ability to fully participate in life is impaired by the economic and social consequences of their illness. Access to appropriate and integrated care at all levels of need in a 'stepped care' approach are central to the Fifth National Mental Health and Suicide Prevention Plan.² However, core differences between mental illness and physical disabilities in the course of illness and type of supports required have raised doubts about the appropriateness of the NDIS for this population.³

As a pilot site, and the first jurisdiction to accept all eligible residents across all age groups into the NDIS, the Australian Capital Territory (ACT) is well placed to provide valuable feedback and unique insight. The geographically small size and comparatively well educated and affluent population of this national capital should enable relative ease of implementation. However, inter-

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views with mental health service providers for a service mapping study of the ACT revealed an incidental finding of distress and uncertainty associated with the transition from block to individualised funding, both on their own and on their clients' behalf.

Method

All service providers supporting people with mental illness across all relevant sectors in the ACT were contacted to contribute to the development of an Integrated Atlas of Mental Health in the ACT.⁴ Service providers included publicly funded, state managed services and non-governmental organisations (NGOs) providing universally accessible support without a significant out-of-pocket cost. Interviews with managers were conducted by researchers from the Centre for Mental Health Research at the Australian National University. The methodology was the Description and Evaluation of Services and Inventories for Long Term Care (DESDE-LTC), an internationally validated service classification previously used to map mental health care in Europe⁵ and Australia.⁶ This method follows the European Psychiatric Care Assessment Team (EPCAT) model, which demonstrates the need for a proper contextual background for the assessment of care programs, including a standard description of the area and a mapping of all available services.⁷ DESDE-LTC can be used to measure availability and capacity of services providing support to people with long term health care needs at the local level.⁸ Its taxonomical structure and clearly defined units of analysis at individual care team level address issues of commensurability in mental health service research. Types of support provided by professional care teams are coded according to characteristics such as target population and temporal and organisational stability. Additional code extensions describe characteristics of the services relevant for health and social planning, such as the 'v' (variable) extension to indicate short term fluctuating capacity or services under transition due to changes in the overall health or financing system.⁴ DESDE-LTC also provides interviewees with the opportunity to provide further general comment about their service provision.

Interviews were conducted face to face and by phone, and lasted between 30 to 60 minutes.

Results

Ninety-two people identified service providers in relevant public sector services ($n=6$) and 90% of identified NGOs ($n=27$) (Table 1). Two NGOs did not respond to the invitation, and a third believed they did not meet the inclusion criteria. Of those commenting on their experience of the transition to the NDIS, 75% ($n=11$) reported negative experiences or future expectations.

Key areas of concern included lack of understanding on the part of the scheme administrator (the National

Table 1.

Number of service providers identified by sector

Sector	Number of service providers identified
Public sector	6
NGOs	27
Other	59
Total	92

Characteristic	Number of service providers	Percentage of total
Identified	92	100%
Responded to invitation	84	91%
Did not respond	8	9%
Met inclusion criteria	78	85%
Did not meet inclusion criteria	14	15%
Reported negative experiences or future expectations	11	12%
Reported positive experiences or future expectations	67	73%

coded with providers 'v' qualifier

Service

Table 2. NGOs' experiences of transition to NDIS

Compatibility of NDIS with needs of people with mental illness	<ul style="list-style-type: none"> • Incompatibility of NDIS principles of permanence and disability with philosophy of recovery (four providers); and with episodic nature of mental illness (one provider) • Complexity of application process leading to poor engagement: reluctance to be labelled; difficulties navigating or persisting with application process (four providers) • Lack of NDIA planners' knowledge of needs of people with mental illness, including fundamental concepts of recovery and of episodic nature of illness (two providers). Some NDIS staff have been 'creatively collaborative' to assist in meeting people's needs (one provider); however, there were reports of support staff initially not being allowed into the planning meeting (one provider) • Eligibility issues for many and uncertainty about ongoing support for those found to be ineligible or hard to reach groups (five providers) • However, plans when done well have enhanced life for those participants (one provider)
Challenges for mental health workforce	<ul style="list-style-type: none"> • Need to spend additional time supporting service users with application process and educating planners in mental health: relationship with, and advocacy of, support staff thus potentially crucial to outcome of application process (two providers), particularly in relation to the identified lack of NDIA planners' knowledge of needs of people with mental illness • Need to perform other duties, for example providing direct support such as accompanying people to appointments when not necessarily trained in this: filling support gaps caused by changes in service availability • Lower pay grades in NDIS and reduced capacity of providers to fund staff training
Changes to system of delivery and ability of service providers to plan	<ul style="list-style-type: none"> • 33% of total number of services or 50% of NGOs ($n=38$) did not have guaranteed ongoing funding beyond 12 months • Concern about reduced service provision (seven providers), with some services already closed, including services providing assistance with accessing relevant supports, clinical case management, day programs, psychosocial disability friendly support groups, respite and after school care • Changes in type of care: supported accommodation becoming longer stay (one provider) • Slow payments to services following withdrawal of block funding (one provider) • Lack of clarity regarding ongoing support for those ineligible, family members or hard to reach groups (five providers) • Previous funding model allowed for a more integrated approach of property case management (one provider) • Difficulties in training and retaining staff due to changes to pay grade and hourly rates (one provider) • Lack of clarity around service provision funding for those not eligible for NDIS packages (one provider) • Lack of anticipation of issues such as skill level of planners in mental health (one provider) • Potential for increased accountability and better governance (one provider) and for service expansion (one provider) • 'Ages and stages' rollout helped with addressing problems as they arose. • Some service providers not engaging adequately with NDIA in introductory stages (one provider)
Challenges to the system's ability to provide integrated care	<ul style="list-style-type: none"> • Reduction in service funding: less opportunity to develop collaborative activities with other services (one provider) • Increased competition between providers: potential for 'cherry picking' or focusing on those services most lucrative financially (one provider) • Risk of duplication of care or antagonistic care: increased personalisation of care and individual planning meaning service providers may be unaware of the other services already being provided to a service user (one provider)

NGO: non-governmental organisation; NDIS: National Disability Insurance Scheme; NDIA: National Disability Insurance Agency

Disability Insurance Agency (NDIA)) of the needs of people with mental illness; problems with eligibility and access; the effect of the funding model on workforce competence and stability; declining service availability; uncertainty around the future direction of service provision; and the effect of a more competitive environment on service collaboration and integration of care. Funding not guaranteed beyond current contracts, or slow to eventuate, was causing difficulties with planning (Table 2). Downward pressure on pay rates was affecting skill level and stability of a direct support workforce attempting to fill emerging gaps in care while providing additional support to clients engaging with the NDIA. Concerns were held about continuing effective outreach for those with serious mental illness unable, unwilling or ineligible to participate in the application process. Experiences were not all negative, however: plans, when well developed, were noted to be improving support for participants.

Discussion

To our knowledge this is the first survey reporting information on the transition to NDIS at the macro level, targeting the whole mental health system of the ACT, where all the service provider organisations have been contacted and interviewed. We have used the EPCAT model,⁷ which approaches services research with the same rigour as that applied to epidemiological studies: that is, taking the whole population as the sample under analysis. Results obtained are thus representative of the system as a whole, and not just a selected group.

The transition to the NDIS is concurrent with the establishment of local Primary Health Networks (PHNs) across Australia, whose priorities include mental health and the commissioning and co-ordinating of locally relevant health services.⁹ Results of our survey indicate that this transition, coinciding with the newly established PHNs and recently released Fifth National Mental Health Plan, has produced a major reform in the mental health care system. Other larger jurisdictions, not subject to the close monitoring of a pilot site, could experience these impacts to an even greater extent than that experienced in the ACT.

Issues described by ACT providers are consistent with those identified by national stakeholders in a recent report,³ including gaps in eligibility and assessment processes, and concerns for ongoing service delivery for those with serious mental illness outside the scheme. The NDIA has responded to this report with a claim of insufficient supporting evidence. Problems with eligibility for people with psychosocial disability are not unprecedented: in Germany and Spain, the complexity of assessment of mental illness in comparison with other disabilities has hampered attempts to rely on a common evaluation system.¹⁰ There is an urgent need for a fit for purpose assessment tool.¹¹ Of particular concern in the absence of a clear approach to hard to reach groups is

the impending phasing out of Partners in Recovery, which provides outreach to people with severe mental illness.¹² The importance of the role of support staff to the outcomes of applications is also troubling, given the reported decline in skill level.

A stepped care approach to mental health care delivery relies on availability of a range of services at all levels. However the 'asset-stripping' of community mental health¹³ seen in the ACT is of particular significance for the 'missing middle', or those too complex for primary care but not unwell enough for tertiary services. Individuals in this group are primary users of many of the services, such as day programs and support groups, which have closed.¹⁴ The high number of services without temporal or organisation stability creates a fragile system, in which planning is highly problematic. It reflects a 'component-based' rather than a 'systems thinking'¹⁵ approach. This leads to a reactive, rather than proactive, system and an inefficient use of resources, as investment is made in new services whilst core services are absent or not appropriately resourced.⁴

Conclusion

This is the first report of the impact of NDIS implementation in a regional care provision system in Australia. The experience of service providers in trial sites of the transition to the NDIS is significant in identifying potential problems in the national rollout; in ACT particularly so, as it was the first to fully transition. The impact on service providers indicates that the NDIS transition has been one of the major reforms of the mental health system in Australia. However, gaps identified in the ACT in engagement and assessment processes, service availability and potential for service collaboration do not align with key priorities of the Fifth National Mental Health Plan, and suggest that the NDIS is failing to achieve its core aims for people with psychosocial disability. This report also indicates the relevance of standard mapping of service availability and capacity in monitoring change and reform of mental health systems

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Appendix 2

The Integrated Mental Health Atlas of the ACT Primary Health Network Region

THE INTEGRATED MENTAL HEALTH ATLAS OF THE AUSTRALIAN CAPITAL TERRITORY PRIMARY HEALTH NETWORK REGION

2016



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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ACT PHN	Australian Capital Territory Primary Health Network
ADC	Acute Day Care
AOD	Alcohol and other drugs
ARIA	Accessibility/Remoteness Index of Australia
ATAPS	Access to Allied Psychological Services
AW	Aboriginal Worker
BSIC	Basic Stable Inputs of Care
CALD	Culturally and Linguistically Diverse
CCG	Clinical Commission Groups
CCM	Clinical Case Manager
CHN	Capital Health Network
CESPHN	Central and Eastern Sydney Primary Health Network
DESDE- LTC	Description and Evaluation of Services and Directories in Europe for Long-Term Care
GIS	Geographical Information System
HASI	Housing and Accommodation Support Initiative
IN	Aboriginal and Torres Strait Islander peoples
ICF	International Classification of Functioning
IRSD	Index of Relative Socio-Economic Disadvantage
LGA	Local Government Area
LHD	Local Health District
LTC	Long Term Care
MHN	Mental Health Nurse
MHNIP	Mental Health Nurse Incentive Program
NA	Not Available at the Time of Publication
NGO	Non-Governmental Organisation
NDIS	National Disability Insurance Scheme
NHSD	National Health Services Directory
NICE	National Institute for Health and Care Excellence
NSW	New South Wales

OT	Occupational Therapist
PARC	Prevention and Recovery Care
PC	Primary Care
PHIDU	Public Health Information Development Unit
PHN	Primary Health Network
PIR	Partners In Recovery
PW	Peer Worker
SA1	Statistical area 1
SF	Support Facilitator
SLA	Statistical Local Area
SW	Social Worker
TAMHSS	Transforming Australia's Mental Health Service Systems
WHO	World Health Organisation

A note on the language

The language used in some of the service categories mapped in this report e.g. outpatient-clinical, outpatient-social, day hospital is not aligned with the most recent advances in the terminology of community mental health care and recovery-oriented support. However, these terms are employed for international comparability following a standard glossary of terms and classification of services. This terminology is not intended to replace the current terms used for naming and understanding service provision in this region. The actual name of the services is provided together with the assigned international code using the "Description and Evaluation of Services and Directories in Europe for long-term care" model (DESDE-LTC).

EXECUTIVE SUMMARY

The 2014 *National Review of Mental Health Programmes and Services* by the National Mental Health Commission drew attention to the need for local planning of care for people with a lived experience of mental illness in Australia, and to the relevance of a bottom-up approach to understanding “services available locally [in] the development of national policy” (National Mental Health Commission, 2014). It also called for responsiveness to the diverse local needs of different communities across Australia. In its response to this review, the Australian Government prioritised integrated regional planning and service delivery, and the development of a stepped model of care: a model predicated on the availability to consumers of a mental health care system characterised by a broad range of different types of services at several levels of need (Australian Government Department of Health, 2015). Integrated regional planning and service delivery is a focus of the Fifth National Mental Health and Suicide Plan, which “commits all governments to work together to achieve integration in planning and service delivery at a regional level” and “recognises that PHNs and LHNs provide the core architecture to support integration at the regional level” (Health, 2017).

The Primary Health Network (PHN) operating in the Australian Capital Territory (ACT), the Capital Health Network, has a vision for person-centred and integrated health and social care, with clear health pathways. This aligns with the national plan, as well as with the key Primary Health Network objectives set out by the Commonwealth Government of increasing effectiveness and efficiency, and improving co-ordination of care (Capital Health Network, 2015). The ACT government has embarked on whole-of-system agendas which include a focus on joined up support between sectors, reducing duplication, and improving access in government service delivery (Capital Health Network, 2015). The ACT PHN has committed to “responding to the needs and priorities of the local community by commissioning programs and services that fill service gaps and provide integrated care solutions to some of our most vexing health and social care challenges” (Capital Health Network, 2015). Areas of focus include “achieving system integration through new or strengthened models of care, enhanced and information technology (IT) enabled health pathways and inter-professional collaboration tailored to the needs of the individual” (Capital Health Network, 2015). In mental healthcare, the ACT PHN acknowledges the importance of “a focus on ensuring regional needs are met” and of “integrated, more accessible and equitable primary mental health care services” (ACT PHN, 2016). It aims to develop a primary mental health stepped care model which is well integrated, and which meets local needs (ACT PHN, 2016).

The Integrated Mental Health Atlas of the ACT PHN region aligns with these objectives. The Atlas is the region’s first inventory of available services specifically targeted for people with a lived experience of mental illness, from which it will be possible to derive

benchmarks and comparisons with regions of NSW and elsewhere which have been similarly mapped. This will inform service planning and the allocation of resources. It is a tool for evidence-informed planning that critically analyses the pattern of mental health care provided within the boundaries of the ACT PHN region. The Atlas revealed major differences between the provision of mental health care in the ACT PHN region and other regions and countries. These are:

- 1) the good availability of inpatient acute care and outpatient care;
- 2) a comparative lack of services providing acute day care and non-acute day care (i.e. day centres providing structured activities to promote health and social inclusion);
and
- 3) a lack of specific employment services for people with a lived experience of mental illness.

Taken together, the information in this Atlas highlights key areas for consideration for future planning for the provision of mental health services in the ACT PHN region. The findings also mirror some of the issues raised more broadly by the National Mental Health Commission's 2014 Review.

To conduct this mapping, we used a standard classification system, the "*Description and Evaluation of Services and Directories in Europe for long-term care*" model (DESDE-LTC) (Salvador-Carulla et al., 2013), to describe and classify the services; as well as geographical information systems to geo-locate the services.

Utilisation of the DESDE-LTC tool, a system widely used in Europe, has enabled a more robust understanding of what services actually provide, and will enable planners to make comparisons across areas and regions.

1. FRAMEWORK

The Integrated Mental Health Atlas of the ACT PHN region provides information on all services specifically for people with a lived experience of mental illness in the ACT PHN region. It includes health, social, home, education, employment and justice services. The Atlas does not map all the services used by people with a lived experience of mental illness: for example primary care, fee-for-service care, or services designed primarily for other target groups, such as people who are homeless, or who have an intellectual disability. Although very relevant, these services fall outside the scope of the ACT PHN commissioned project.

1.1. PRIMARY HEALTH NETWORKS IN AUSTRALIA

Primary Health Networks were established in 2015 as key components of primary health care reform. PHNs are tasked with increasing the efficiency and effectiveness of services, and improving co-ordination of care “to ensure patients receive the right care in the right place at the right time”, through an analysis of local need and identification of available services and gaps in service delivery (Department of Health, 2016c).

Funding for PHNs is based on a number of elements, including population, rurality and socio-economic factors. In addition, funding has been specifically provided to PHNs for mental health, suicide prevention, drug and alcohol treatment services, and Aboriginal and Torres Strait Islander health.

The Department of Health has indicated that future PHN infrastructure may include:

- a “National Health Services Directory (NHSD)” which will provide a consistent directory of key primary health services, including after-hours services;
- a “Primary Health Map” that will enable capability to view health needs, overlaid with the location of the health services identified from the NHSD; and
- PHN websites with centralised content and “reporting dashboard” – providing a template website solution to support centralised reporting and sharing of content and service information (Health, 2016).

The above PHN initiatives emphasise the importance of activities that support service planners and consumers to understand the comprehensive structure of the health system, and to identify available services and service capacity within individual PHN regions.

1.2. MENTAL HEALTH CARE REFORM

The philosophy of mental health care reform has been built on key principles of community

psychiatry, with four interlinked areas of action (Vazquez-Bourgon, Salvador-Carulla, & Vazquez-Barquero, 2012):

- deinstitutionalisation and the end of the traditional model of care of internment in mental hospitals;
- development of alternative community services and programs;
- integration with other health services; and
- integration with social and community services.

More recently, this has also included a focus on recovery oriented and person-centred care. Australia started its journey of reform in 1983, with David Richmond's report on care for people experiencing mental illness and intellectual disabilities in New South Wales (NSW): *Inquiry into Health Services for the Psychiatrically Ill and Developmentally Disabled*. It took ten years to establish the first National Mental Health Strategy (Mendoza, 2013). Since then, there have been considerable systemic changes made, including the closure or downsizing of many large psychiatric hospitals, and the development of the community mental health and consumer movement.

Australia's reform journey continues, and application of reform is variable. The assessment of the current mental health system as having developed on an ad hoc basis, resulting in a system which is "poorly planned and badly integrated" (National Mental Health Commission, 2014) is despite a succession of national mental health plans and strategies in the years since the first National Mental Health Strategy. A national approach to a system of accountability to measure outcomes in areas such as service delivery, financial efficiency, consumer outcome and policy objectives is lacking, impeding meaningful quality improvement, jurisdictional comparisons and justifications for calls to increase resources (Rosenberg & Salvador-Carulla, 2017). The Australian mental health system has high rates of readmission to acute care, with at least 46% of hospitalised patients being readmitted during the following year following (Zhang, Harvey, & Andrew, 2011). There are also high rates of compulsory community treatment orders, ranging from 30.2 per 100,000 population in Tasmania to 98.8 per 100,000 population in Victoria (Light, Kerridge, Ryan, & Robertson, 2012); and high rates of seclusion, with 10.6 seclusion events per 1,000 bed days in 2011-12 (Australian Institute of Health and Welfare, 2015). These features are associated with a system characterised by a fragmented, hospital-based, and inefficient provision of care (Mendoza, 2013).

The balanced care model developed by Tansella and Thornicroft (Thornicroft & Tansella, 2013) is an evidence-informed approach to the planning of mental health care delivery, relevant to different resource settings.

According to that model, high-resources settings, such as Australia, need to focus on:

- the recognition and treatment of common mental illness **in primary care** for common mental illnesses;
- a good range of ‘**general adult mental health services**’, including outpatient clinics, community mental health teams, acute inpatient services, community residential care and work/occupation;
- provision of ‘**specialised mental health services**’ in the categories listed under ‘general mental health’. This implies the provision of:
 - **specialised out-patient facilities** (for instance for eating disorders, based on an analysis of the local context);
 - **specialised community mental health teams**, such as assertive community treatment or early intervention teams;
 - **alternatives to acute inpatient care**, including acute day care, crisis houses; and home treatments;
 - **alternative types of long-stay community residential care**, ranging from 24-hour staffed residential care to lower supported accommodation; and
 - **specialised services for increasing access to employment**, such as the Individual Placement and Support model, in addition to vocational rehabilitation.

Similarly, the Transforming Australia's Mental Health Service Systems (TAMHSS) group has recently recommended *The Essential Components of Care for Community-Oriented Mental Health Services* to be provided in Australia (Department of Health and Ageing, 2013). In addition to inpatient hospital care, the Australian mental health system should guarantee the provision of:

- access and triage;
- early intervention;
- care co-ordination;
- crisis intervention and acute treatment in the community;
- recovery oriented practices for community living;
- engagement and community based support for people with complex needs;
- medication;
- physical health care; and
- effective psychological therapies.

Both models are quite similar, highlighting the need to improve integrated and coordinated care which enables the inclusion of people with lived experience of mental illness in the community.

A key part of the reform agenda is the stepped care approach (Australian Government

Department of Health, 2015; Health, 2016). The stepped care approach is a staged system comprising a hierarchy of interventions from the least to the most intensive, matched to individual need and building more options and range into the market (See *Figure 1*).

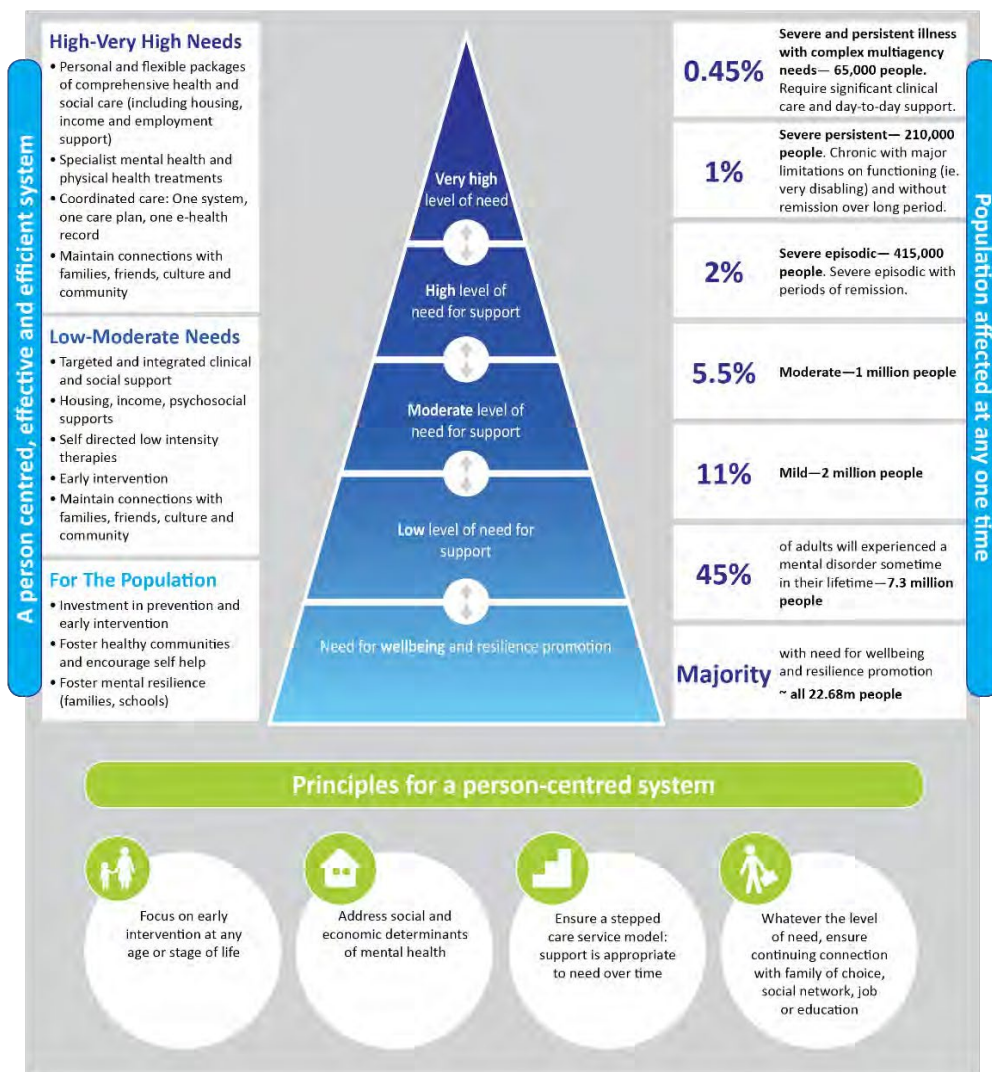


Figure 1 System changes to strengthen the stepped care model in primary mental health care clinical service delivery

Source: (National Mental Health Commission. (2014). Report of the National Review of Mental Health Programmes and Services. Canberra: Australian Government)

As part of this approach, The National Mental Health Commission review in 2014 recommended shifting funding to rebalance the system (National Mental Health Commission, 2014). The review recommended redirecting funding away from separate siloed payments to primary and secondary and post-acute services, and towards prevention and promotion for the general community and Integrated Care Pathways for those at risk, for a more efficient use of resources, and reduced pressure on “downstream” services through

better resourced “upstream” services (see Figure 2).

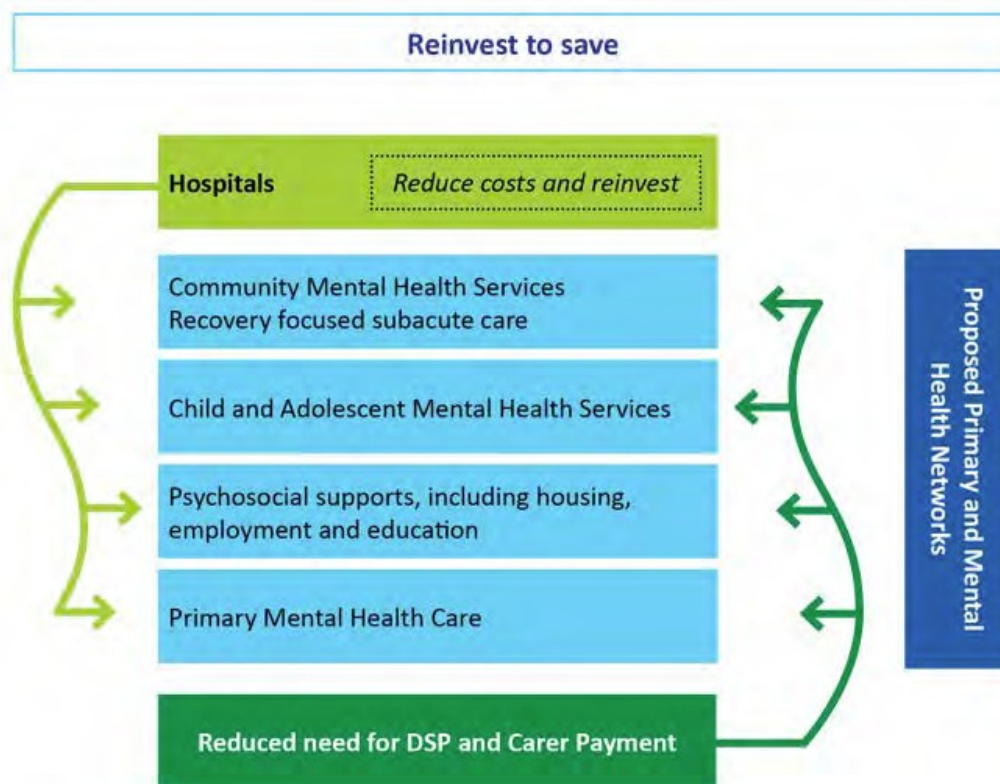


Figure 2 Reinvesting to save through regional integrators.

Source: (National Mental Health Commission. (2014). Report of the National Review of Mental Health Programmes and Services. Canberra: Australian Government).

The stepped care model focuses on promotion and prevention for healthy populations; increasing early interventions for at risk groups; providing and promoting access to lower cost and lower intensity services for individuals with mild mental illness; increasing service access and evidence-based intervention for individuals with moderate mental illness; improving access to primary mental health care intervention; and coordinated care for individuals with severe mental illness (Australian Government Department of Health, 2015). A comprehensive and integrated system is a key requirement of an effective stepped care model, as it assumes both availability of, and clear pathways between, services required at an individual level. The Integrated Mental Health Atlas of the ACT PHN region has mapped the available services for people with a lived experience of mental illness in the ACT to identify service availability and gaps in the system of service delivery in the region.

1.3. CAPITAL HEALTH NETWORK AND MENTAL HEALTH CARE REFORM

The ACT PHN, the Capital Health Network, is one of 31 PHNs in Australia. It covers a population of 385,996 (according to the 2011 census). In 2015, the Commonwealth government announced six priorities for the PHN's commissioning role for mental health and suicide prevention services (Minister for Health, 2015). They represent a combination of populations to target, and services to develop and commission (Department of Health, 2016a):

- early intervention for children and young people with or at risk of mental illness;
- enhancing and integrating Aboriginal and Torres Strait Islander mental health services;
- services for people who experience severe and complex mental illness who are supported in primary care;
- addressing service gaps in the provision of psychotherapies for underserved groups and/or hard to reach populations;
- improving targeting of and development of low intensity mental health services; and
- promotion of a regional approach to suicide prevention.

These priorities are expected to be implemented in the frame of a stepped care model adapted to the local characteristics and health needs of each PHN, with a focus on the specific priority groups.

The ACT PHN has created a Primary Mental Health Strategic Reform Group which contributed to a baseline needs assessment and to informing the mental health reform process in the ACT, as well as developing an evidence-based, integrated psychological interventions model to form the base of the stepped care model and increase access to early intervention and appropriate care. In April 2017, the ACT PHN, in combination with CatholicCare and Woden Community Service, launched a stepped care program, known as "Next Step", aimed at providing seamless care between low and high intensity psychological interventions for people with mild to moderate, and moderate to severe illness.

The areas covered by the ACT PHN are mainly urban, and characterised by high accessibility of services, according to the Accessibility/Remoteness Index of Australia (ARIA) (Australian Bureau of Statistics (ABS), 2010, 2014). The ARIA is a continuous index developed by the Australian Bureau of Statistics (ABS) to assess remoteness of Australian areas based on road distances between localities and services such as education and health. It allows for classification areas within five groups from "Major Cities of Australia" (high accessibility) to "Very remote Australia" (high remoteness) (Australian Bureau of Statistics (ABS), 2014). The provision of mental health care in urban areas presents specific

challenges that require tailored planning, as mental illnesses are particularly prevalent in urban Australia (Australian Bureau of Statistics (ABS), 2009; Caldwell, Jorm, & Dear, 2004; Jablensky et al., 2000).

In this context, it is crucial to provide policy and service decision makers with every tool and opportunity to make better, more informed choices about future investments in urban mental health care, including which services are needed, and where, and how they can be most effectively delivered. In other words, they need a map that will guide them through the mental health reform journey in urban areas.

The Atlas of the ACT PHN region is an ideal tool to support this process.

1.4. WHAT ARE INTEGRATED MENTAL HEALTH ATLASES?

The WHO Mental Health Gap Action Program (mhGAP) (WHO, 2008) highlighted the need for a comprehensive and systematic description of all the mental health resources available, and the utilisation of these resources. It is not only important to know the numbers of services in each health area, but also to describe what they are doing, and where they are located. This information enables an understanding of the context of health-related interventions essential for the development of evidence-informed policy.

Evidence-informed policy is an approach to policy decisions intended to ensure that the decision making process is well-informed by the best available research evidence. Evidence gathered from the local context needs to be valued and interpreted by policymakers. Context is generally understood as all the variables related to “where” the process is happening, including organisational and divisional structures, group norms, leadership, political processes and broader economic, social and cultural trends (Foundation, 2014). Evidence-informed policy combines ‘global evidence’ available from around the world with ‘local evidence’ from the specific setting in which decisions and actions will be taken. This includes a detailed analysis of the area, taking into account the prevalence of mental illness and other demand driven indicators, together with the availability of resources (Oxman, Lavis, Lewin, & Fretheim, 2009). An in-depth understanding of the local context is crucial to the implementation of any new strategy.

The ‘integrated care model’ (Goodwin, 2013) has challenged the way health-related care should be assessed and planned. It enables us to identify new routes for linked, consumer-centred approaches to care. Greater integration relies on an overall picture of all the services available in a mental health system, regardless of which sector is funding them (e.g. health, social welfare and family, employment, justice). Such ‘systems thinking’ enables policy planners to capture the complexity of service provision holistically, and ensures that planning of health services accounts for contextual factors that might affect its implementation and

sustainability (context analysis). It offers a way of anticipating synergies and mitigating problems and barriers, with direct relevance for creating policies that integrate the different systems of care (Aslanyan et al., 2010; Savigny, 2009). A systems approach is particularly important in the mental health care sector, with an increasing personalisation of services, the co-ordination of care in programs such as Partners in Recovery (PIR), and the transfer of social services to the National Disability Insurance Scheme (NDIS).

Within this context, Integrated Atlases of Mental Health are essential tools for decision making and quality assessment. Integrated Atlases include detailed information on socio-economic and demographic characteristics and health-related needs, as well as data on service availability and care capacity. Integrated Atlases of Mental Health allow comparison between small health areas, highlighting variations of care, and detecting gaps in the system. The holistic service maps produced through an Integrated Atlas of Mental Health also allow policy planners and decision makers to build bridges between the different sectors and to better allocate services (Salinas-Pérez, García-Alonso, Molina-Parrilla, Jordà-Sampietro, & Salvador-Carulla, 2012).

Integrated Atlases of Health include maps and graphics as a main form of presenting the data. As a visual form of communicating health information, visual tools crucially bridge the gap between complex epidemiological presentations of statistics, and the varied educational backgrounds represented by policymakers, other decision makers, and consumers (Parrott, Hopfer, Ghetian, & Lengerich, 2007). Policy makers and health planners may use the information presented in the Atlas as a visual reference point from which to quickly present and structure their ideas. In addition, the new knowledge presented in an Atlas will quickly increase a planner's self-efficacy and personal mastery of the field. Consequently, policy makers and health planners will be more willing to make informed decisions bolstered by solid evidence. In addition, as Atlases are integrated (e.g. they include all funding providers and sectors) they may increase collaboration across services, acting as a shared reference point from which to discuss the system. It is therefore expected that the Integrated Mental Health Atlas of the ACT PHN region will change the culture of planning and, from this, the provision of care, through facilitating the integration and co-ordination of services. This will be reflected in the quality of care provided and, in the longer term, better health outcomes for people with a lived experience of mental illness (Fernandez et al., 2014).

The *National Review of Mental Health Programmes and Services* (National Mental Health Commission, 2014) indicates that the current mental health system is highly fragmented, difficult to navigate, and characterised by disjointed policy, financing and service delivery systems at national and state levels. Furthermore, there is a mismatch between top-down policies developed centrally at national and state levels, and the local need for efficient resource allocation. The lack of a comprehensive mapping of the available services constitutes an additional barrier to understanding the accessibility of mental health services

in this disjointed system, as well as to system accountability (Rosenberg & Salvador-Carulla, 2017).

The Integrated Mental Health Atlas of the ACT PHN region can help us to understand the current scenario in the provision of mental health care.

1.5. HOW WAS THE INTEGRATED ATLAS OF MENTAL HEALTH ASSEMBLED?

Typically, general Atlases of health are formed through lists or directories of the services, and inclusion of services is based on their official, or everyday, titles. This is particularly problematic for several reasons, including (Salvador-Carulla et al., 2015):

- the wide variability in the terminology of services and programs, even in the same geographical area, and the lack of relationships between the names of services and their actual functions (e.g. day hospitals, day centres, social clubs, etc.), as the service name may not reflect the actual activity performed in the setting; and
- the lack of a common understanding of what a service is. The word ‘services’ is an umbrella term used to describe very different components of the organisation of care. It merges permanent, highly structured services, with clinical units, or even short-term programs and interventions.

As an example, the Department of Health defines “mental health services” as “services in which the primary function is specifically to provide clinical treatment, rehabilitation or community support targeted towards people affected by mental illness or psychiatric disability, and/or their families and carers. Mental health services are provided by organisations operating in both the government and non-government sectors, where such organisations may exclusively focus their efforts on mental health service provision, or provide such activities as part of a broader range of health or human services” (Australian Government Department of Health, 2015). This broad definition does not provide a formal description of “services” for their standard description and comparison.

In order to overcome these limitations, we have used the "*Description and Evaluation of Services and Directories in Europe for Long-Term Care*" (DESDE-LTC) (Salvador-Carulla et al., 2013). This is an open-access, validated, international instrument for the standardised description and classification of services for Long Term Care. It includes a taxonomy tree and coding system that allows for the classification of services in a defined catchment area according to the main care structure/activity offered, and determines their level of availability and utilisation. Classification is based on the activities of the service, rather than simply the name of the service provider. The classification of services based on the actual activity of the service thus reflects the real provision of care in a defined catchment area.

It is important to note that in research on health and social services there are different units of analysis, and that comparisons must be made across a single and common ‘unit of analysis’ group. Different units of analysis include: macro-organisations (e.g. a Local Health District), meso-organisations (e.g. a hospital), and micro-organisations (e.g. a service). They could also include smaller units within a service: Main Types of Care, Care Modalities, Care Units, Care Intervention Programs, Care Packages, Interventions, Activities, Micro Activities or Philosophy of Care. Our analysis, based on DESDE-LTC, is focused on the evaluation of the minimal service organisation units or Basic Stable Inputs of Care (BSIC).

1.6. WHAT ARE BASIC STABLE INPUTS OF CARE (BSIC)?

A Basic Stable Input of Care (BSIC) can be defined as a team of professionals working together to provide care for a defined group of people. They have time stability (typically they have been funded for more than three years) and structural stability. Structural stability means that they have administrative support, their own space, their own finances (for instance a specific cost centre) and their own forms of documentation (i.e. they produce their own report by the end of the year)

<p>Criterion A: Has its own professional staff</p> <p>Criterion B: All activities are used by the same clients/consumers</p> <p>Criterion C: Time continuity (more than three years)</p> <p>Criterion D: Organisational stability</p> <p>Criterion D.1: The service is registered as an independent legal organisation (with its own company tax code or an official register). This register is separate and the organisation does not exist as part of a meso- organisation (for example a service of rehabilitation within a general hospital) → IF NOT:</p> <p>Criterion D.2.: The service has its own administrative unit and/or secretary’s office and fulfils two additional descriptors (see below) → IF NOT:</p> <p>Criterion D.3.: The service does not have its own administrative unit but it fulfils three additional descriptors:</p> <p>D3.1. To have its own premises and not as part of other facility (e.g. a hospital)</p> <p>D3.2. Separate financing and specific accountability (e.g. the unit has its own cost centre)</p>

We identified the BSIC using these criteria, and then labelled them. The typology of care provided by the BSIC (or service) is broken down into a smaller unit of analysis that identifies the “Main Type(s) of Care” (MTC) offered by the BSIC. Each service is described using one or more MTC codes based on the main care structure and activity offered by the service. For instance, the same service might include a principal structure or activity (for example a ‘residential’ code) and an additional one (for example, a ‘day care’ code). Figure 2 depicts the different types of care used in our system.

There are six main types of care (Salvador-Carulla et al., 2013):

- **Residential care:** The codes related to residential care are used to classify facilities which provide beds overnight for clients for a purpose related to the clinical and social management of their health condition. It is important to note that consumers do not make use of such services simply because they are homeless, or unable to reach home. Residential care can be divided into acute and non-acute branches, and each one of these in subsequent branches (see Figure 5).
- **Day care:** The day care branch is used to classify facilities which (i) are normally available to several consumers at a time (rather than delivering services to individuals one at a time);(ii) provide some combinations of treatment for problems related to long-term care needs (e.g. providing structured activities or social contact/and or support); (iii) have regular opening hours during which they are normally available; and (iv) expect consumers to stay at the facility beyond the periods during which they have face to face contact with staff (see Figure 6). **Please note that the term “day care” is not often used in the Australian context and these types of services are more commonly referred to as day programs.**
- **Outpatient care:** The outpatient care branch is used to code facilities which (i) involve contact between staff and consumers for some purpose related to the management of their condition and associated clinical and social needs and (ii) are not provided as a part of delivery of residential or day services, as defined above (see Figure 7).
- **Accessibility to care:** The accessibility branch classifies facilities whose main aim is to facilitate accessibility to care for consumers with long term care needs. These services, however, do not provide any therapeutic care (see Figure 8).
- **Information for care:** These codes are used for facilities that provide consumers with information and/or assessment of their needs. Services providing information are not involved in subsequent monitoring/follow up or direct provision of care (see Figure 9).
- **Self-help and voluntary Care:** These codes are used for facilities which aim to provide consumers with support, self-help or contact, with un-paid staff that offer any type of care as described above (i.e. residential, day, outpatient, accessibility or information). See Figure 10.

A detailed description of each one of the branches is available here: http://www.eDESDEproject.eu/images/documents/eDESDE-LTC_Book.pdf

In the result section of the Atlas, the figures, rates per 100,000 residents, and comprehensive description of MTC by age group and specific population are provided by MTC, while the detailed analysis of the service delivery system in the tables is provided by functional teams or BSIC. These different approaches facilitate comparisons of main types of care and the care system in other local jurisdictions, and at the same time allow a detailed description of the

structure of service organisation at macro (e.g., hospital), meso (e.g., service of mental health) and micro-levels (e.g., functional teams). In the terms of a modified version of Thornicroft and Tansella’s matrix for mental health services, service activity and capacity at the individual service, or “micro”, level, will be described and measured, to provide a picture of total care provision at the “meso” or small area level (Tansella & Thornicroft, 1998) (See Figure 3).

	INPUT	THROUGHPUT	OUTPUT
Macro Country/region	1A	1B	1C
Meso Local área	2A	2B	2C
Micro Service	3A*	3B	3C
Nano Individual	4A	4B	4C

Figure 3 Mental Health Matrix (adapted Tansella & Thornicroft, 1998)

**STC or BSICs are part of 3A.*

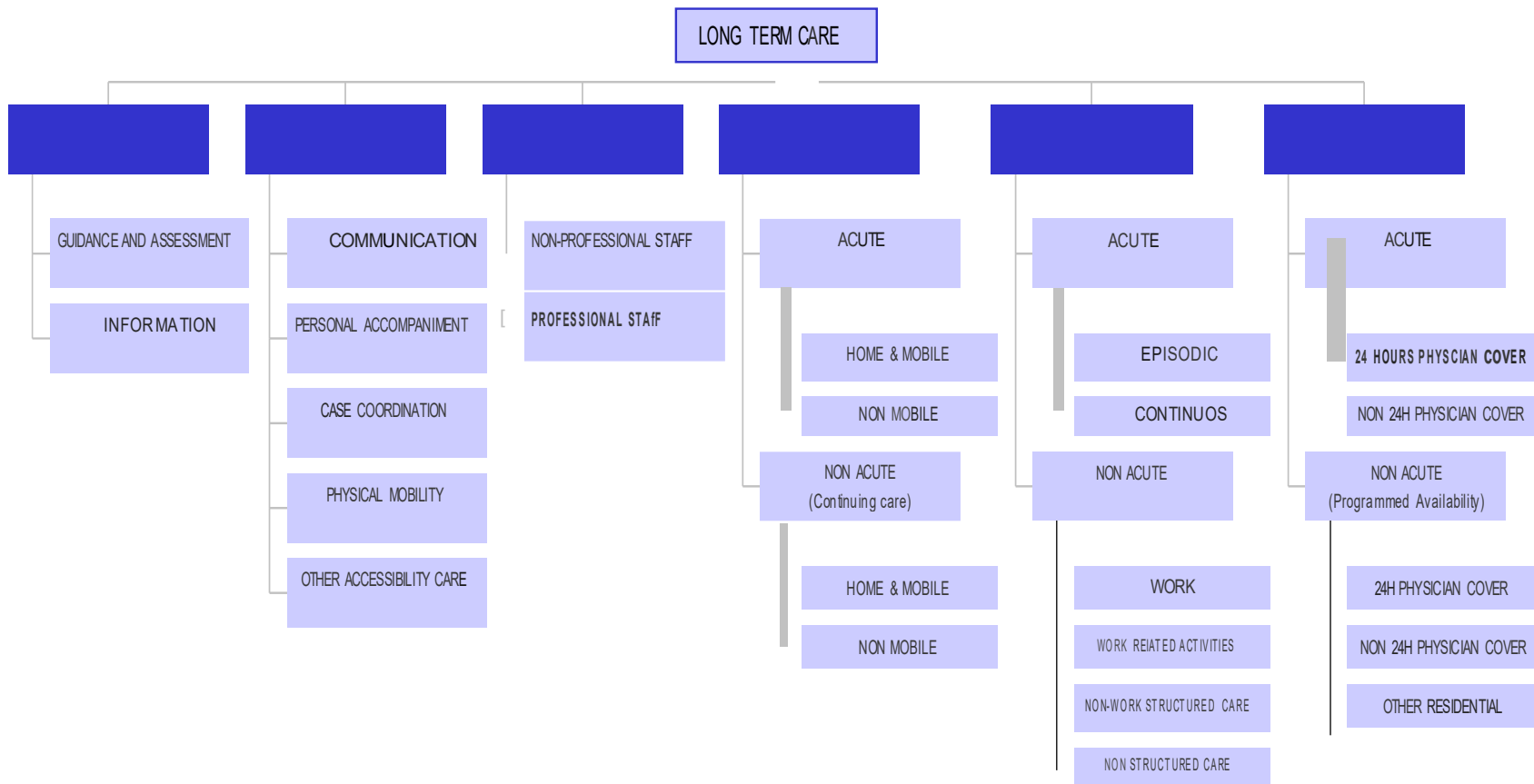


Figure 4 Main Types of care: core codes.

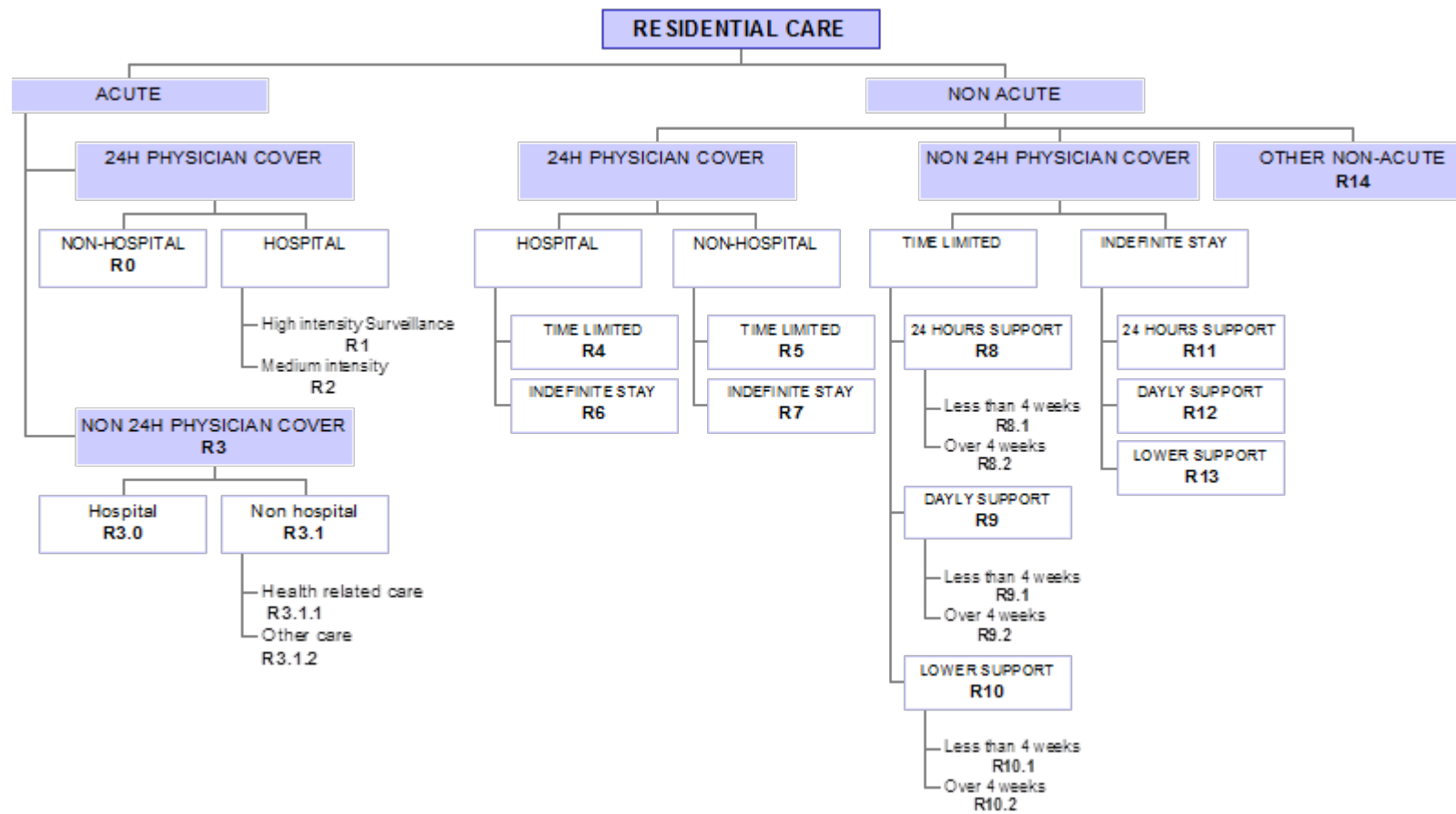


Figure 5 Residential care coding branch.

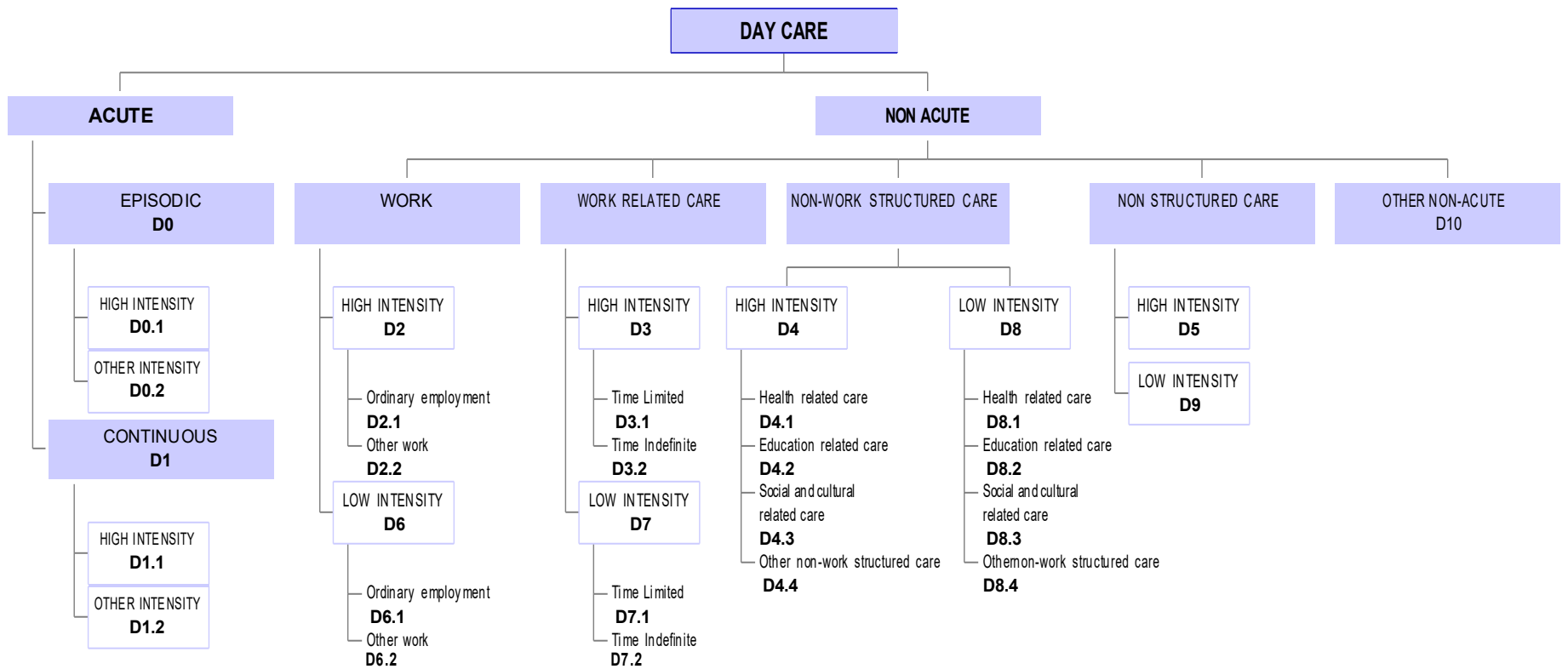


Figure 6 Day care coding branch.

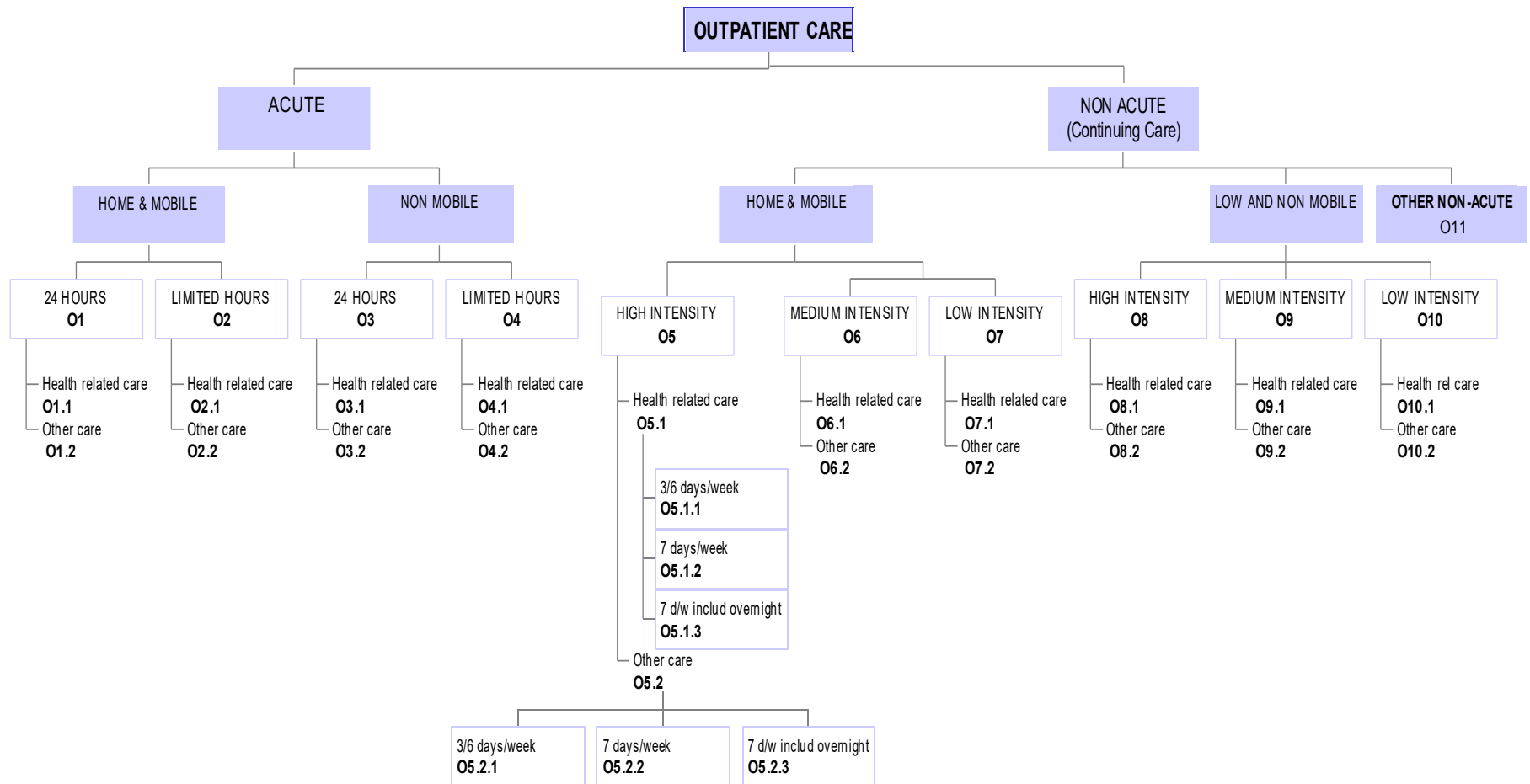


Figure 7 Outpatient care coding branch

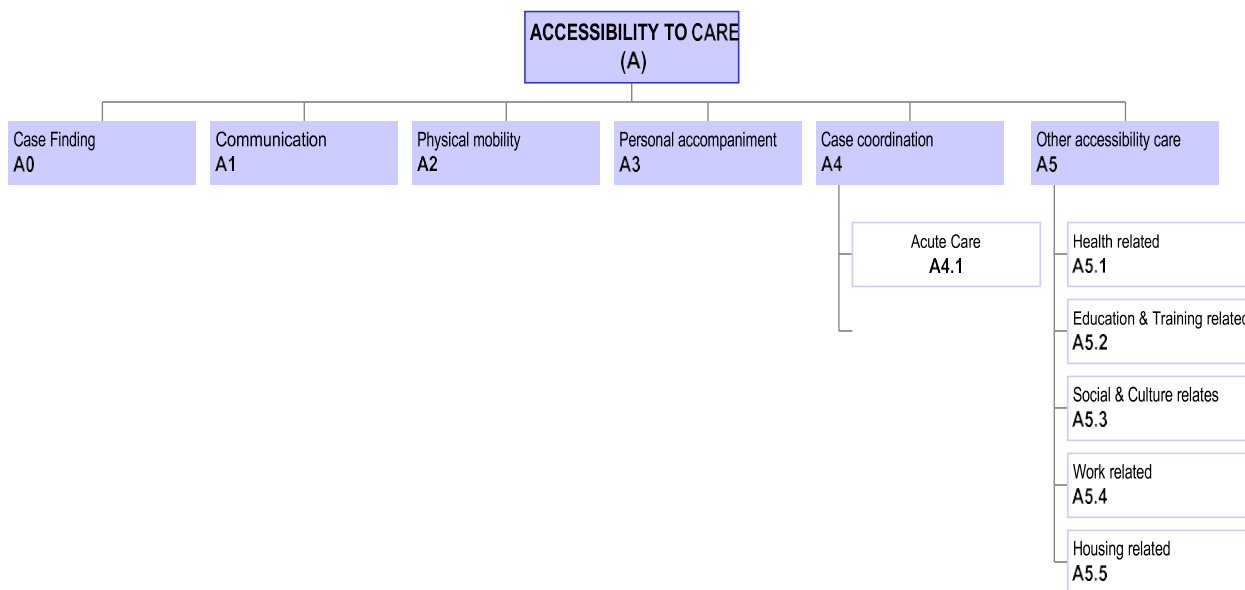


Figure 8 Accessibility to care coding branch

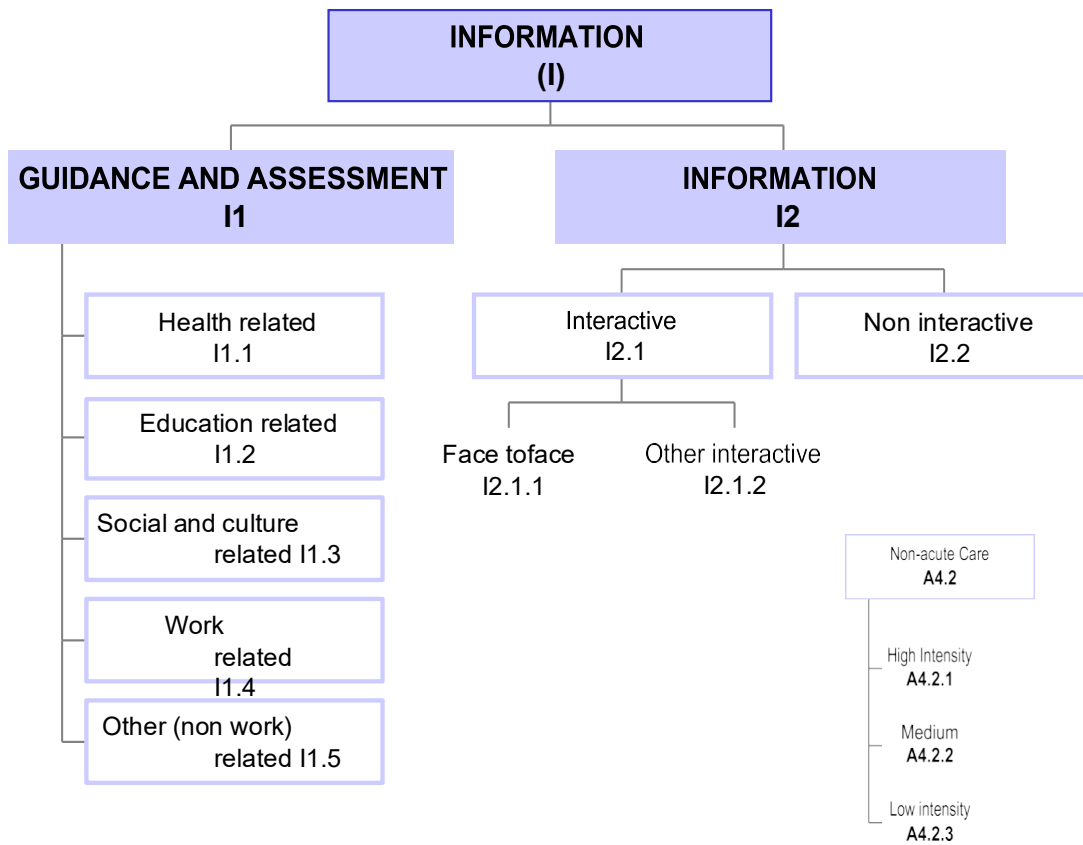


Figure 9 Information and Guidance coding branch.

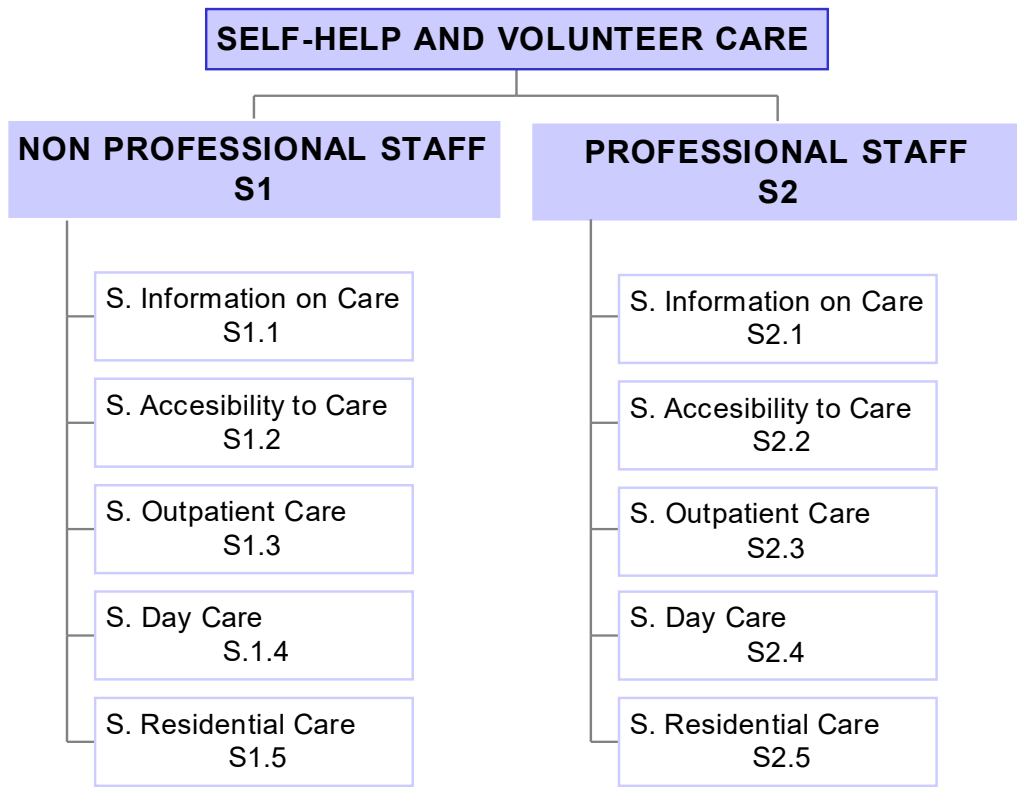


Figure 10 Self-Help and Volunteer coding branch

1.7. INCLUSION CRITERIA

In order to be included in the Atlas, a service had to meet certain inclusion criteria:

- 1 **The service targets people with a lived experience of mental illness:** The primary reason for using the service is a mental health issue or a psychosocial disability. The inclusion of services that are generic, and lack staff with the specialised training and experience to treat people with a lived experience of mental illness, may lead to bias which obscures the availability of services providing the specialised focus and expertise needed in mental health.
- 2 **The service is universally accessible:** The study focuses on services that are universally accessible, regardless of if they are publicly or privately funded. We have included services that do not have a significant out-of-pocket cost. In spite of the availability of Medicare- subsidised mental health-related services, access to most private mental health services in Australia requires an individual to have additional private health insurance coverage, high income or savings. The inclusion of private providers would give a misleading picture of the resources available to most people living with mental illness and obscures the data for evidence-informed planning of the public health system. Most private services have some level of public funding, for example Medicare subsidies of private hospitals or community- based psychiatric specialist services. It would be useful in future mapping exercises to include an additional layer of private service mapping to inform those who can afford private health care and for planning in the private sector. However, as a baseline the importance of establishing the nature of universal and equitably accessible health care necessitates that these maps remain distinct.
- 3 **In other atlases, we have only included services that have received funding for more than three years:** the inclusion of stable services (rather than those provided through short term grants) guarantees that we are mapping the robustness of the system. Generally, if we include services with less than three years of funding it will jeopardize the use of the Atlas for evidence-informed planning. However, in the case of the ACT PHN region, we have found that up to one third of services do not have such stable funding. To exclude such a large number of services would produce a biased picture of service availability in the region, and thus these services have not been excluded in this atlas. We have, however, identified such services, as explained below.
- 4 **The service is within the boundaries of the ACT PHN region:** The inclusion of services that are within the boundaries of the ACT PHN region is essential to have a clear picture of the local availability of resources. Although some ACT residents access services in Queanbeyan, no formal agreement is in place between the two jurisdictions to facilitate this, and so we have not included Queanbeyan services in the atlas.
- 5 **The service provides direct care or support to consumers:** We excluded services that were only concerned with the co-ordination of other services or

system improvement, without any contact with people with a lived experience of mental illness.

1.8. WHAT PROCESS WAS FOLLOWED?

There were four distinct steps in the creation of the Integrated Mental Health Atlas of the ACT PHN region. These steps are explained below, and summarised in Figure 12.

Step 1: Data collection: First we developed a list of all health related services providing care for people with a lived experience of mental illness. Then we contacted the services by phone to gather the following information: a) basic service information (e.g. name, type of service, description of governance); b) location and geographical information about the service (e.g. service of reference, service area); c) service data (e.g. opening days and hours, staffing, management, economic information, legal system, user profile, number of consumers, number of contacts or admissions, number of days in hospital or residential accommodation, number of available beds or places, links with other services); d) additional information (name of coder, date, number of observations and problems with data collection). We then contacted the providers via email, and asked them to fill in an online survey. Alternatively, they could ask for a face-to-face on-site interview with one of the researchers.

Step 2: Codification of the services followed criteria defined in DESDE-LTC, according to their MTC (not the official service name). The codes can be split into four different components:

- a) **Client age group:** This represents the main target group for which the service is intended or currently accessed by, using capital letters.

GX All age groups

NX None/undetermined

CX Child & Adolescents (e.g. 0-17)

CC Only children (e.g. 0-11)

CA Only adolescent (e.g. 12 – 17)

CY Adolescents and young adults (e.g. 12-25)

AX Adult (e.g. 18-65)

AY Young adults (e.g. 18-25)

AO Older Adults (e.g. 50- 65)

OX Older than 65

TC Transition from child to adolescent (e.g. 8-13)

TA Transition from adolescent to adult (e.g. 16-25)

TO Transition from adult to old (e.g. 55-70)

b) **Diagnostic group:** ICD-10 codes in brackets after the age group code but before DESDE-LTC code were used to describe the main diagnostic group covered by the service. In the majority of the services we have used the code [F0-F99], which means that the service includes all types of mental illnesses or does not specify any. If the client of the service is a child, but the professional is working with the family, or if the service is for Carers, we have included the code [e310] (immediate family) from the International Classification of Functioning (ICF).

F0-F99 All types of mental disorders

F10-F19 Alcohol and Other Drug disorders

F2X Unspecified psychosis not due to a substance or known physiological condition. Includes early psychosis

F3X Mood (affective) Disorders

F50 Eating Disorders

F53 Puerperal psychosis; also used as proxy for perinatal mental health disorders

e310 Services for immediate family or carers

Z63 Other problems related to primary support group, including family circumstances

Z63.4 Disappearance and death of family member
(with T14.91 it denotes bereavement by suicide)

c) **DESDE-LTC code:** The third component of the code is the core DESDE-LTC code which is the MTC. As we have explained before, the services were classified according to their main type of care. This care can be related to: a) Residential care (codes starting with R); b) Day care (codes starting with D); c) Outpatient care (codes starting with O); d) Accessibility to care (codes starting with A); e) Information for care (codes starting with I); and f) Self-help and voluntary care (codes starting with S).

d) **Qualifiers:** In some cases, a fourth component may be incorporated to facilitate a quick appraisal of those characteristics of the services which may be relevant to local policy. The qualifiers used in this Atlas are:

- **“c” Closed care:** This qualifier describes secluded MTCs with high level of security provided under locked doors;

- **“g” Group:** This qualifier refers to outpatient services where most of their care

is provided through group activities (typically over 80% of their overall care activity);

- **“h” Hospital (Care provided in a hospital setting):** This qualifier describes non-residential MTCs (“O”, “D”) provided in a meso-organisation registered as a “hospital” but which is different from acute residential care (e.g. an outpatient unit or a day hospital placed in a general hospital setting in order to differentiate these SCTs from similar units placed in the community);
- **“i” Institutional care:** This qualifier describes residential facilities characterised by indefinite stay for a defined population group, which usually have over 100 beds and which could be described as “Institutional care”
- **“j” Justice care:** This qualifier describes BSIC whose main aim is to provide care to individuals in contact with criminal and justice services;
- **“l” Liaison care:** This qualifier describes a liaison BSIC where specific consultation for a subgroup of consumers is provided to other area (e.g. outpatient consultation on intellectual disabilities to a general medical service, or consultation on mental illness for the general medical services of a hospital);
- **“m” Management:** This qualifier describes BSICs whose main aim is defined as management, planning, co-ordination or navigation of care, but which also includes several forms of clinical care as part of their activity (e.g. the care team typically provides therapeutic counselling as part of its case management activities).
- **“q” Mobile-care:** This qualifier is used in those non-mobile services, which have between 20% and 49% mobile contacts;
- **“s” Specialised care:** This qualifier describes a BSIC for a specific subgroup within the target population of the catchment area (e.g. services for Elderly people with Alzheimer’s disease within the “E” group, or services for Eating Disorders within the “MD” group);
- **“u” Unique:** This qualifier describes a single-handed BSIC provided by a health professional;
- **“v” Variable :** This qualifier is used when the code applied at the moment of the interview could vary significantly in the near future (from example from acute outpatient care to non- acute). This depends on the capacity of the service to provide the type of care described by the code due to fluctuations in the demand or the supply capacity. For example a crisis accommodation team for homeless or a crisis domestic violence refuge may fluctuate in its capacity of providing

acute care within 24 hours depending on the demand and the availability of places. This code can be also applied to services under transition due to a health reform, a change in the whole financing system of health or social care, or the development of a new disability scheme. This variability in the pattern of service provision is independent of the time continuity of the service. For example, a continuous service can have a ‘v’ code due to a health reform while a care program limited to two years may show organisational stability during the period when it is funded.

- **“w” Whole:** This qualifier indicates that the centre only provides the extreme level of the activity described by MTC. For example, applied to a mobile service (O6) it indicates that 100% of its activity is mobile.

Example: A sub-acute forensic unit in a hospital for adults with lived experience of mental illness will receive the following code presented in Figure 11.

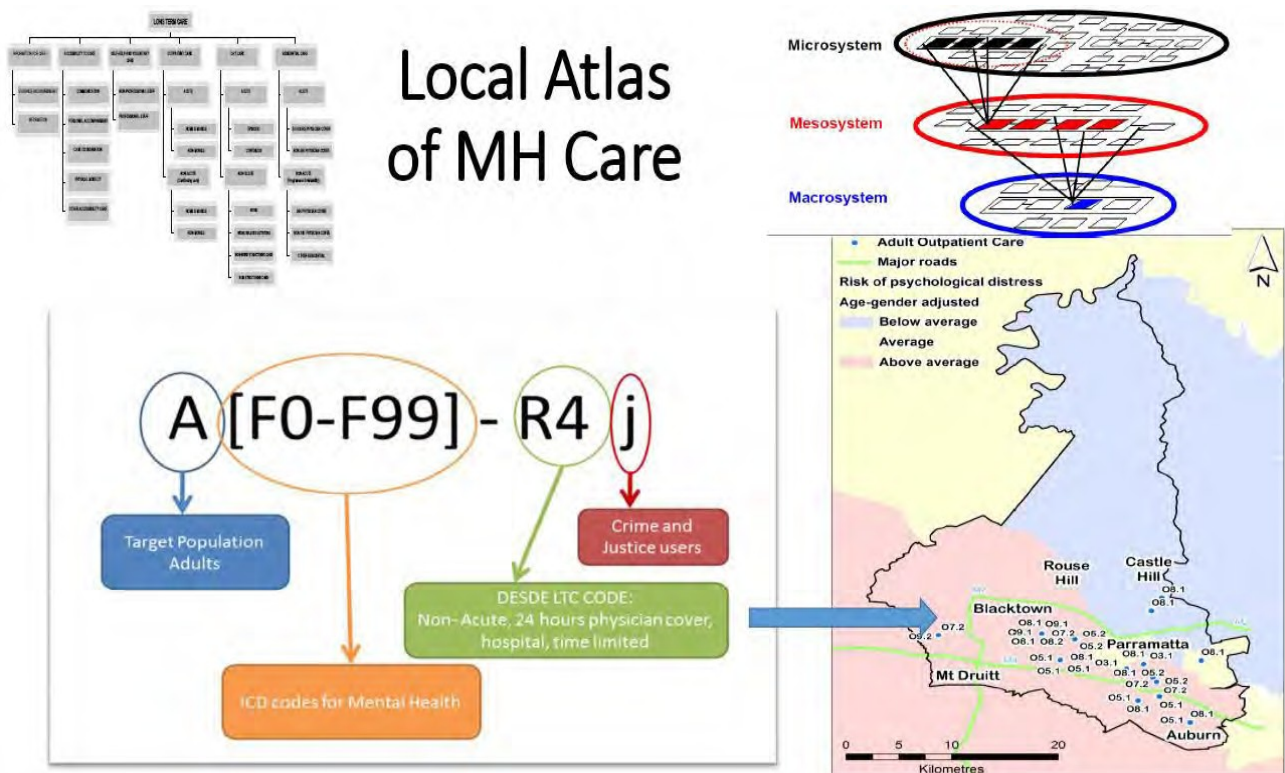


Figure 11 Components of the code- an example of a sub-acute forensic unit based in a hospital

Step 3: Mapping the BSIC:

BOUNDARIES

The importance of the boundaries of the PHN has been signaled in the 2016 PHN Guidelines (Department of Health, 2016b). In general, the boundaries of PHNs include factors such as population size, state and territory borders, patient flow, stakeholder input and administration efficiencies. In the case of the ACT, the ACT PHN boundaries include the entire territory.

JURISDICTIONS AND GEOGRAPHICAL UNITS OF ANALYSIS

This report displays data at statistical Area 3 (SA3) in the table of socio-demographic indicators, at statistical Area 2 (SA2) in the maps, and at Population Health Areas (PHA), a specific area used by the Public Health Information Development Unit (PHIDU), for the psychological distress indicator.

For the Geographical Information Systems (GIS) analysis of an area the size of the ACT PHN region, the most effective unit of analysis is the SA2. The use of SA2 ensures that concentrated pockets of deprivation and disadvantage, and risk factors for mental disorders are captured, enabling the design of targeted programs and services.

Socio-demographic indicators are visualised using choropleth maps (maps that use different colours inside defined geographical areas), which were depicted using the GIS to illustrate the distributions and small-area variations (SA2) in each of the indicators calculated. The maps are structured in a large zoom-in inset which shows the ACT's urban areas, and a small zoom-out inset displaying the whole ACT. In each map, the values have been divided in four intervals based on the mean value. Thus, the intervals 1 and 2 represent the SA2 below the mean, and the intervals 3 and 4 above the mean. The SA2 with population density below 100 inhabitants per km² have been removed due to they have large surfaces with very low number of residents what may distort the interpretation. Even so, their values can be seen in the zoom-out inset.

A second set of maps was then constructed to visualise the locations of the services/BSIC in relation to two indicators: population density and percentage of population with psychological distress.

INDICATORS

A series of indicators were calculated to describe the area. They were built based on information extracted from Australian Bureau of Statistics (ABS) census data (2011), and from the Social Health Atlases of Australia of the Torrens University Australia (2011-

12), developed by PHIDU.

The indicators which were used as base layers for the mapping in ACT PHN region are as follows:

- Density index: population/km²
- Ageing index: (population >64 years old/ population 0-15) *100
- Dependency index: (population between 0-15 + and >64 years old/ population 16-64) *100
- Unemployed rate: (number of unemployed people/ population 16-64 years old) *100
- Percentage of lone parents: (number of lone parents/total population) *100
- Percentage of people living alone: (number of households with just 1 person/ total population) *100
- Percentage of Aboriginal and/or Torres Strait Islanders living in the area: (number of Aboriginal and/or Torres Strait Islanders living in the area/ total population) *100
- Percentage of people with low English proficiency: (population speaking English not well or not at all/total population) *100
- Percentage of women in the population: (number of women/total population) *100
- Percentage of people not married or in a de facto relationship: (number of people non married or in a de facto relationship/population >17 years old) *100
- Percentage of people who expressed need of assistance with core activities: (Number of people who express they are in need of assistance with core activities/ population 16-64 years old) *100
- Index of Relative Socio-Economic Disadvantage (IRSD): decile of the area (lowest to highest corresponds to the most disadvantaged to the least). The IRSD is a general socio-economic index summarising a range of information about the economic and social conditions of people and households within an area. It includes variables related mostly to education level, employment status, level of income and disabilities.
- Percentage of private dwellings with no internet connection: (number of private dwellings with no internet connection/total number of private dwellings) *100
- Percentage of people born overseas: (population born overseas/ total population) *100
- Percentage of people with year 12 of high school or equivalent completed: (population with year 12 of high school completed or equivalent or more/ population ≥ 15 years old) *100
- Percentage of people with less than \$600 income per week: (number of people with less than \$600 income per week/population 16-64 years old) *100
- Percentage of people with psychological distress: age standardized ratio of people with high or very high levels of psychological distress according to the Kessler psychological distress scale (K10) which is a scale of non-specific psychological distress based on ten questions related to negative emotional states in the prior four weeks (calculated from PHIDU data) (Andrews & Slade, 2001; Kessler et al.,

2002).

Step 4: Description of the pattern of care: service availability and capacity

We have analysed the availability of services, by MTC as well as the capacity.

- **Availability:** Defined as the presence, location and readiness for use of services or other organisational units in a care organisation or a catchment area at a given time. A service is available when it is operable or usable upon demand to perform its designated or required function. The availability rates of MTC are calculated by 100,000 residents.
- **Placement capacity:** Maximum number of beds in residential care, and of places in day care, in a care delivery organisation or a catchment area at a given time. Rates have been calculated by 100,000 residents.
- **Workforce capacity:** Maximum number of staff available in a care delivery organization, or in a catchment area at a given time. Care workforce capacity usually refers to paid staff providing direct care (e.g. it excludes voluntary care providers and administrative staff). It is typically measured in Full Time Equivalents units (FTE), in this case 37.5 hours per week. Rates have been calculated by 100,000 residents.

This analysis allowed us to compare the availability and capacity rates with other areas, and to estimate if the provision is adequate for populations need. We have compared the ACT PHN region with urban and rural areas from Northern Europe (Norway, Finland), and Southern Europe (Italy, Spain), and the UK. The information on the other countries has been mainly developed as part of the REFINEMENT project (The Refinement Project Research Consortium, 2013), funded by the European Commission, which focused on the links between the financing of mental health care in Europe and the outcomes of mental health services. The information on Spain is from the Integrated Mental Health Atlas of Catalonia.

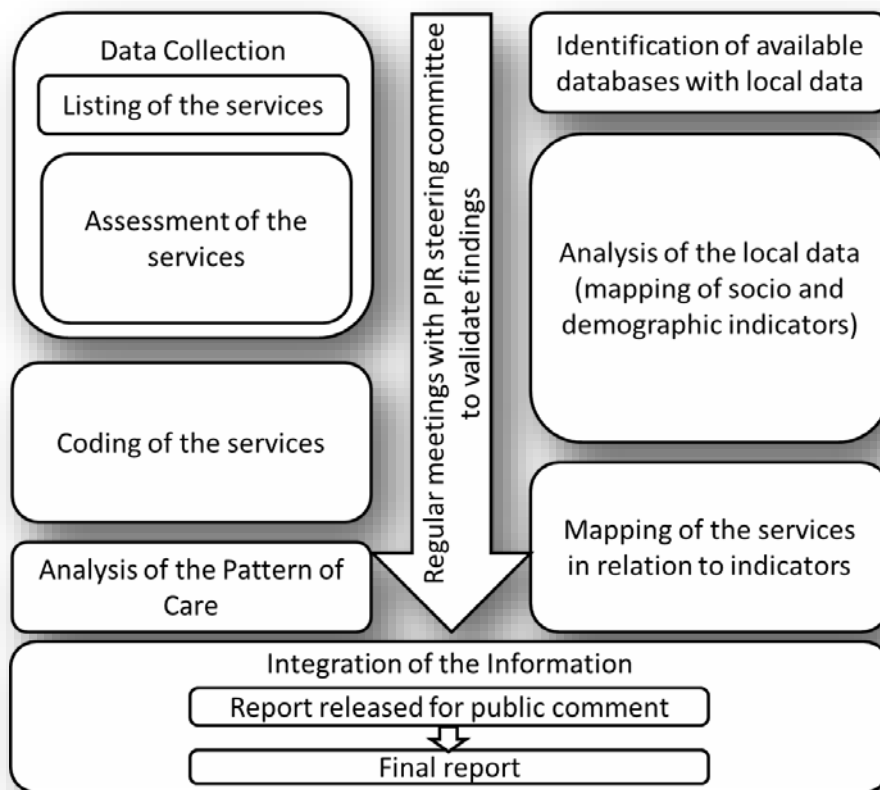


Figure 12 Steps followed in the development of the Atlas

2. MAPPING THE AREA: BOUNDARIES AND INDICATORS

2.1. THE BOUNDARIES AND JURISDICTION

Australian Capital Territory has an area of 2,351 km². Around 55% of this territory corresponds to protected areas such as a National Park, Botanic Gardens, a Wilderness Zone and several Nature Reserves. The most relevant natural area is the Namadgi National Park located in the South-West, which comprises around 46% of the ACT. Canberra is its only city, with around 390,000 inhabitants in 2015. The ACT is the fastest growing jurisdiction in Australia (<http://www.abc.net.au/news/2017-06-27/census-results-canberra-what-data-shows-for-the-act/8655110>). The city is organized in seven districts: North Canberra, South Canberra, Woden Valley, Belconnen, Weston Creek, Tuggeranong and Gungahlin. It is necessary to note that the city of Queanbeyan (about 40,000 inhabitants), in the Eastern border with the neighbouring State of New South Wales, has a strong functional link with Canberra, given its proximity.

ACT Medicare Local (ACTML) transitioned to Capital Health Network, ACT PHN on 1 July 2015. ACT PHN has a major impact on the health care planning and service utilization in the Southern NSW Local Health District (SNSWLHD) (SNSWLHD, 2013). This neighboring Local Health District does not have a major hospital, so Canberra Hospital is its principal tertiary referral hospital, and provides specialised care such as mental health services. This relationship is especially strong for the Queanbeyan Health Service (QHS), and the Yass Valley Health Service, for whom ACT hospitals also provide acute services. It has been estimated that ACT public hospitals met half of the demand for inpatient services in 2013 (QHS, 2015). Thus, health administrations on both sides of the border have compensation agreements for cross border activities. This strong relationship in the delivery of health care between both territories is highlighted in the Southern NSW services plan (SNSWLHD, 2013), where one of its stated objectives is to build stronger strategic and clinician relationships with the ACT PHN. In addition, the QHS health care service plan (QHS, 2015) stated that one of the key themes is to work closely with ACT to build a functional relationship.

2.2. SOCIO-ECONOMIC INDICATORS

The ACT has the highest percentage of population with mental health problems of all states and territories (15.5%, compared to a national figure of 13.4%) (ACT Health, 2014). Canberra, in the northeast of the ACT, is the area of highest population density in the territory, bounded to the south and west by a mountainous and sparsely populated area, which includes Namadgi National Park.

In comparison to the rest of Australia, the ACT has a lower ageing and dependency index, lower unemployment, higher rate of people having attained Year 12 or equivalent, fewer Aboriginal and Torres Strait Islander people, and significantly lower percentage of households on a low income. However, variations exist within the region.

In Fyshwick-Pialligo-Hume, more than 10% of the population have a high or very high risk of psychological distress, and almost half the population in this district is in the lowest 20% of the IRSD indicators. This SA3 has the lowest rates in the territory for completion of Year 12 or equivalent, the lowest incomes, and highest unemployment rates, due to fact that the Alexander Maconochie Centre is located here. In addition, people living alone, the ratio of females and of ageing show unusual values. This area also has the highest number of Aboriginal and Torres Strait Islander peoples, thus most of the ATSI population in the ACT live in a deprived area.

Another singular SA3 is Cotter-Namadgi, which is linked to the National Park and only has 548 residents and a population density of 0.32 inhabitants per km². The size of the populations of older people and of younger people are extremely low, so the dependency index and the percentage of people with needs of assistance are the lowest in the ACT. However, it is also the area with the highest ageing index because there are more old people than children. Most adults are employed.

On the other hand, Tuggeranong has the lowest rate in the territory for completion of Year 12 or equivalent, and the highest rates of lone parents. North Canberra, South Canberra and Woden have the highest rates of people with a level of education of Year 12 or equivalent. North Canberra, however, also has one of the higher rates of households earning less than \$600 per week relative to the rest of the ACT, as well as the second highest unemployment rate in the ACT. This may be due to its proximity to the Australian National University, as many students would live in this area.

Also noteworthy, the percentage of lone parents is mainly higher in the districts in the South of Canberra, together with Belconnen in the North. The figures of people living alone and non-married are higher around the CBD and the administrative areas in North Canberra and South Canberra districts.

The following table summarises the main socio and economic indicators in the ACT PHN region at SA3 level in 2011. Later figures will present visualisations of key indicators using choropleth maps at SA2 level.

Table 1 Description of the socio and economic characteristics of the area (2011)

SA3	Population (% of the PHN)	Density index	Women (%)	Aging index	Dependen cy index	Unemploy ment rate (%)	Lone parent (%)	Living alone (%)	Not married or in a de facto relationship (%)	Needs assistance for core activities (%)	% people within 20% lower IRSD
Belconnen	92,445 (25.9)	1200.76	50.60	21.74	44.21	3.76	3.90	8.01	40.65	3.41	1.60
Cotter - Namadgi	548 (0.2)	0.32	46.25	122.22	29.23	1.17	2.39	6.97	37.13	1.09	NA
Fyshwick - Pialligo - Hume	1,502 (0.4)	6.78	32.89	18.27	44.03	5.44	2.80	19.31	55.14	3.00	45.54
Gungahlin	47,304 (13.3)	522.26	50.64	82.85	31.57	3.08	3.31	5.42	34.86	2.01	NA
North Canberra	48,029 (13.5)	1274.49	49.38	93.36	44.62	5.12	2.85	11.81	49.38	3.31	4.24
South Canberra	24,152 (6.8)	697.17	51.10	35.50	42.75	3.35	3.20	12.25	43.95	4.35	4.52
Tuggeranong	86,900 (24.4)	577.57	50.75	83.96	59.65	3.09	4.84	6.37	39.84	3.10	1.01
Weston Creek	22,748 (6.4)	1437.91	51.20	98.23	56.23	3.11	3.98	9.17	38.11	4.50	NA
Woden	32,958 (9.2)	1152.37	51.24	57.11	44.18	3.32	3.40	11.22	41.39	4.31	NA
ACT PHN	356,586	151.23	50.53	54.09	43.83	3.60	3.81	8.48	40.97	3.35	1.57 (incom plete)
Australia	21.507.719	2.8	50.6	68.1	54.5	5.6	4.2	8.8	41.3	4.9	18.9

SA3	Aboriginal and Torres Islander People (%)	Strait Born abroad (%)	Low proficiency (%)	English school or completed (%)	Year 12 of high school or completed (%)	Income <\$600 per week (%)	Dwellings with no internet connection (%)	% of the population with high or very high psychological distress (K10)
Belconnen	1.26	25.02	2.63	69.47	7.57	11.84	9.24	
Cotter - Namadgi	0.55	17.12	0.00	64.58	6.72	19.02	NA	
Fyshwick - Pialligo - Hume	4.92	17.08	0.45	46.07	12.32	35.23	13.16	
Gungahlin	1.22	30.09	3.65	72.63	5.75	7.83	8.04	
North Canberra	1.12	30.29	2.38	81.37	8.02	15.63	9.87	
South Canberra	1.47	25.54	1.55	77.84	5.39	13.52	8.39	
Tuggeranong	2.08	19.45	1.48	61.51	7.04	10.79	9.49	
Weston Creek	1.24	21.85	1.65	70.31	6.61	13.30	8.64	
Woden	1.10	29.65	2.39	74.36	6.59	14.11	8.32	
ACTPHN	1.45	25.24	2.28	70.65	6.94	12.19	9.06	
Australia	2.5	26.0	3.2	47.6	51.4	19.7	10.8	

NA: not available

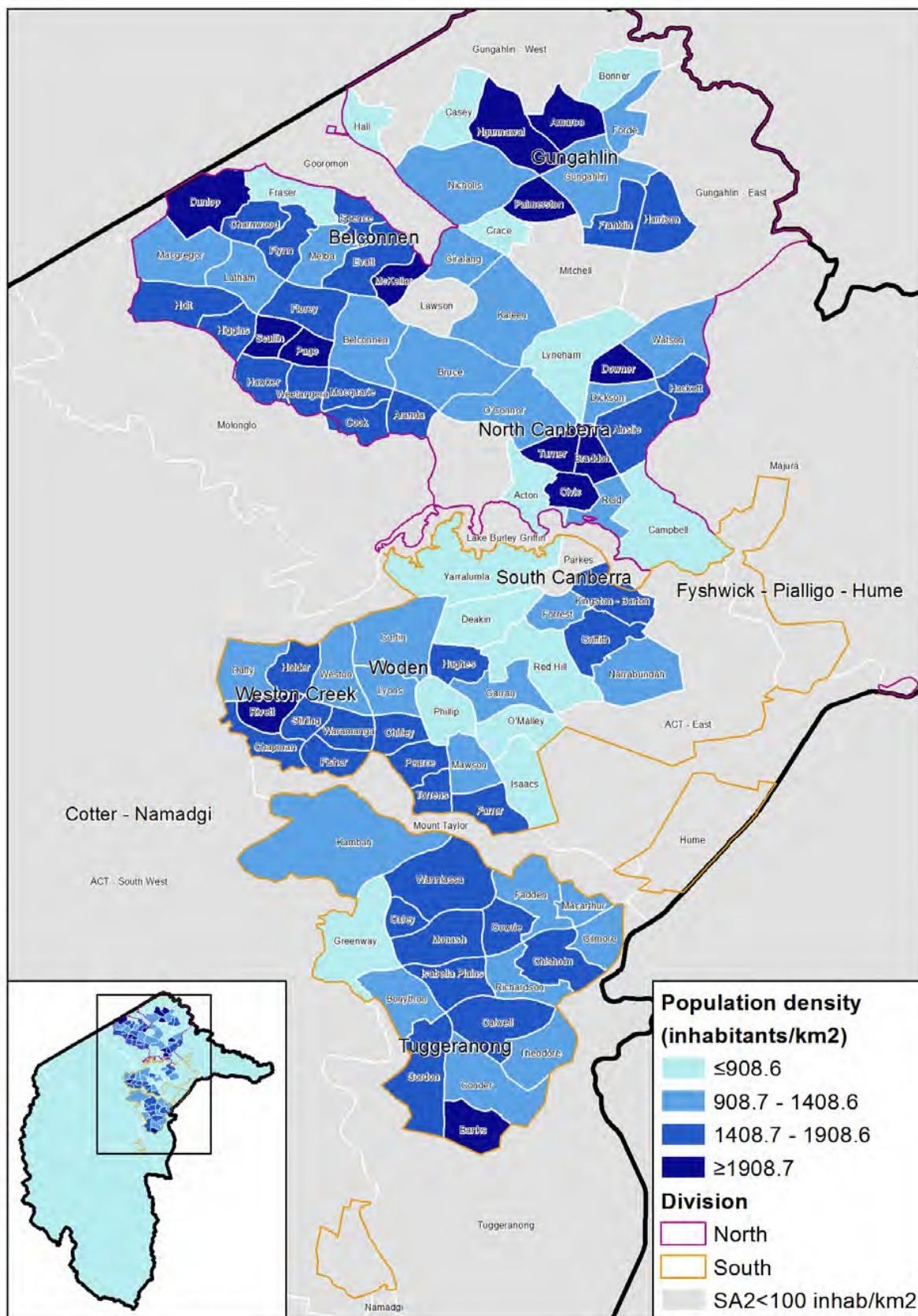


Figure 13 Population Density

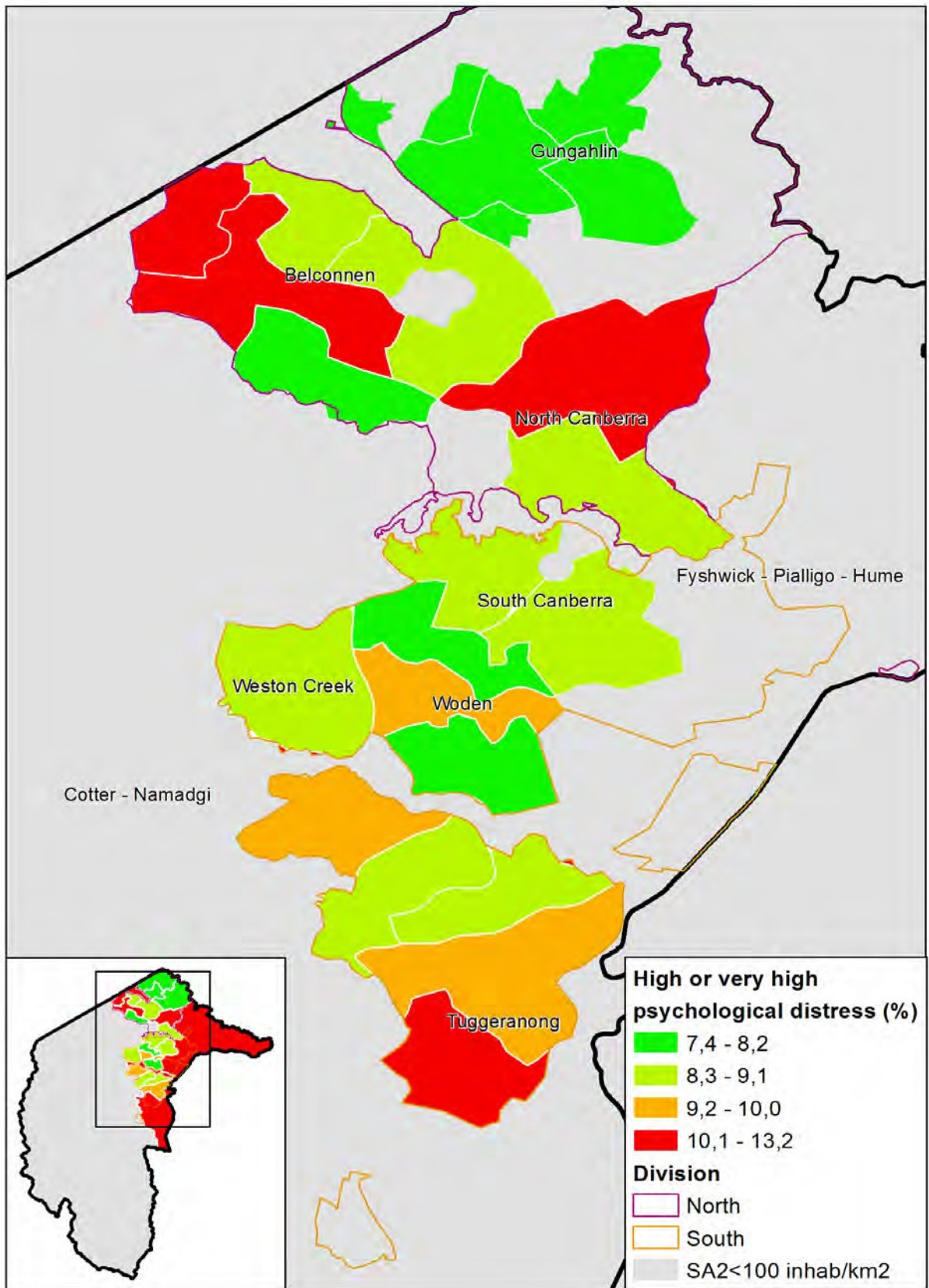


Figure 14 Risk of Psychological Distress

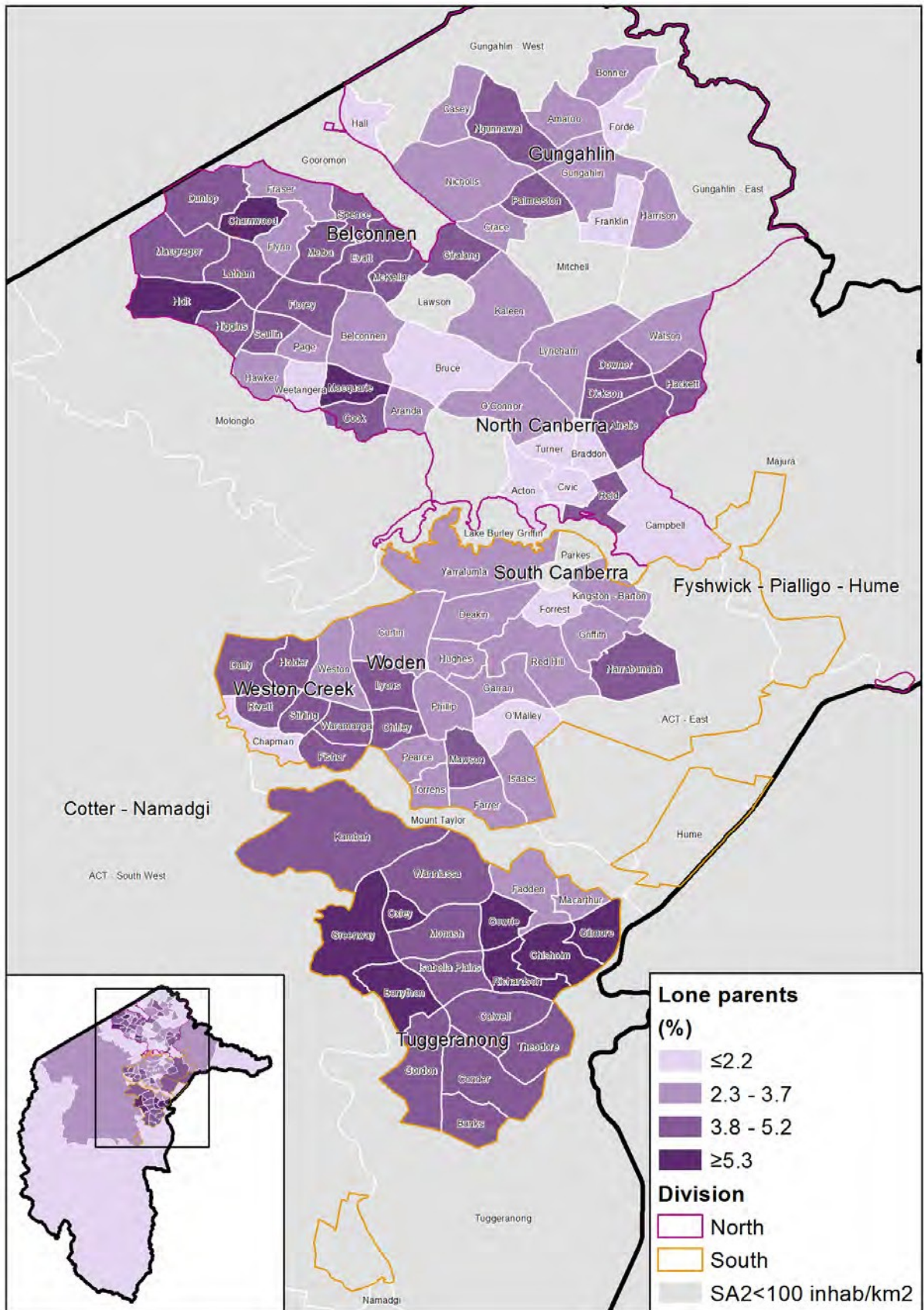


Figure 15 Distribution of Lone Parents.

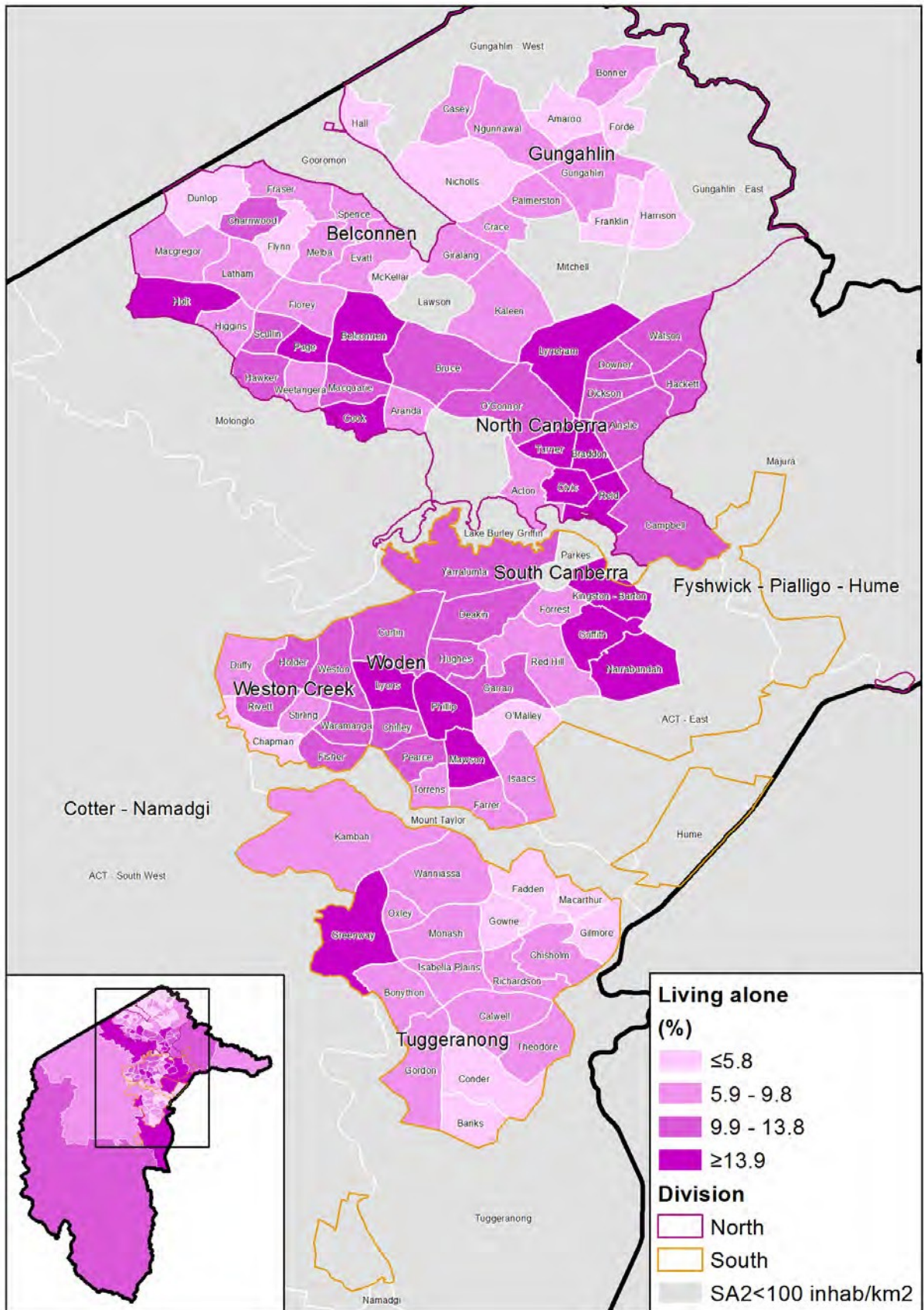


Figure 16 Distribution of People Living Alone.

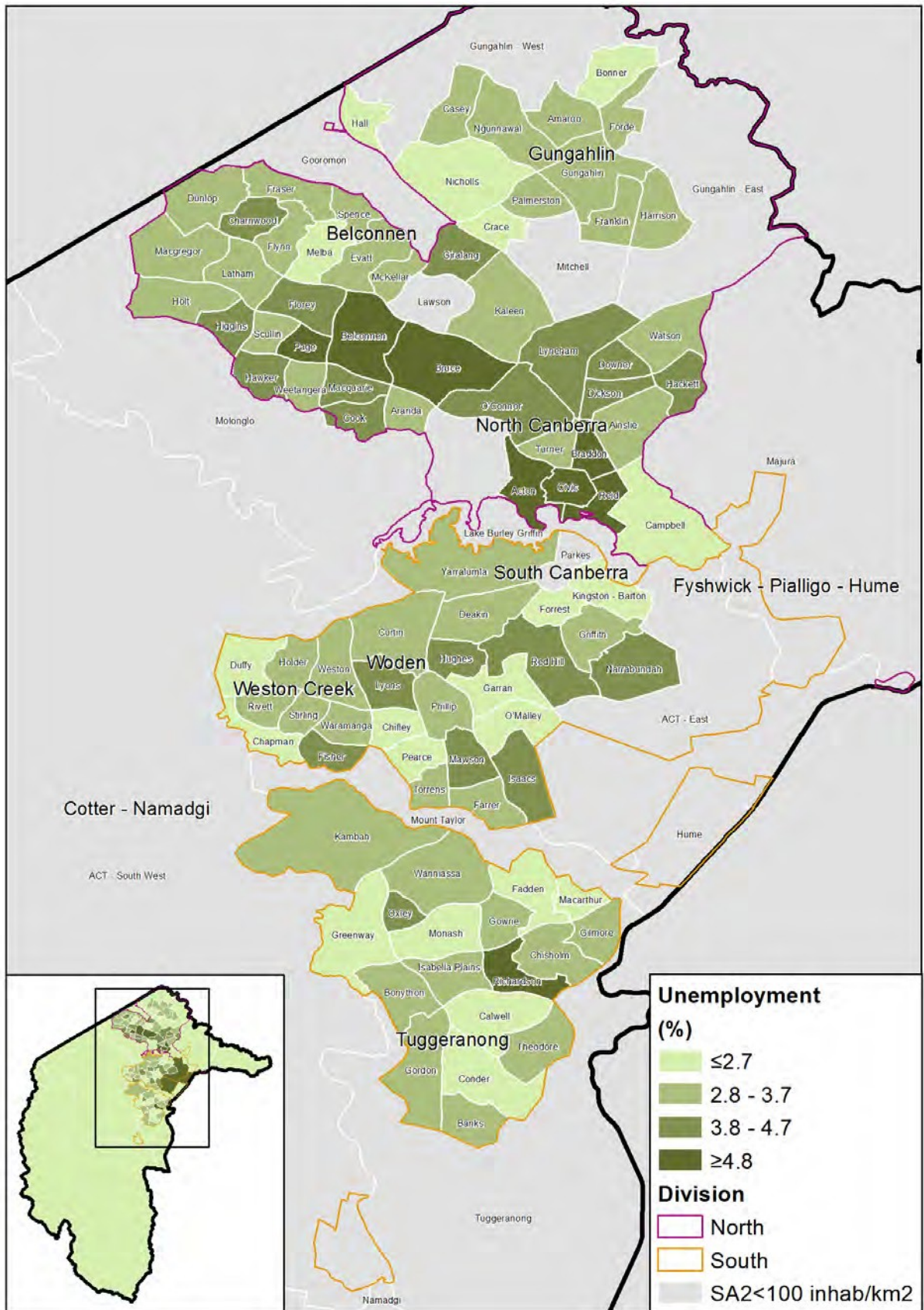


Figure 17 Distribution of Unemployment.

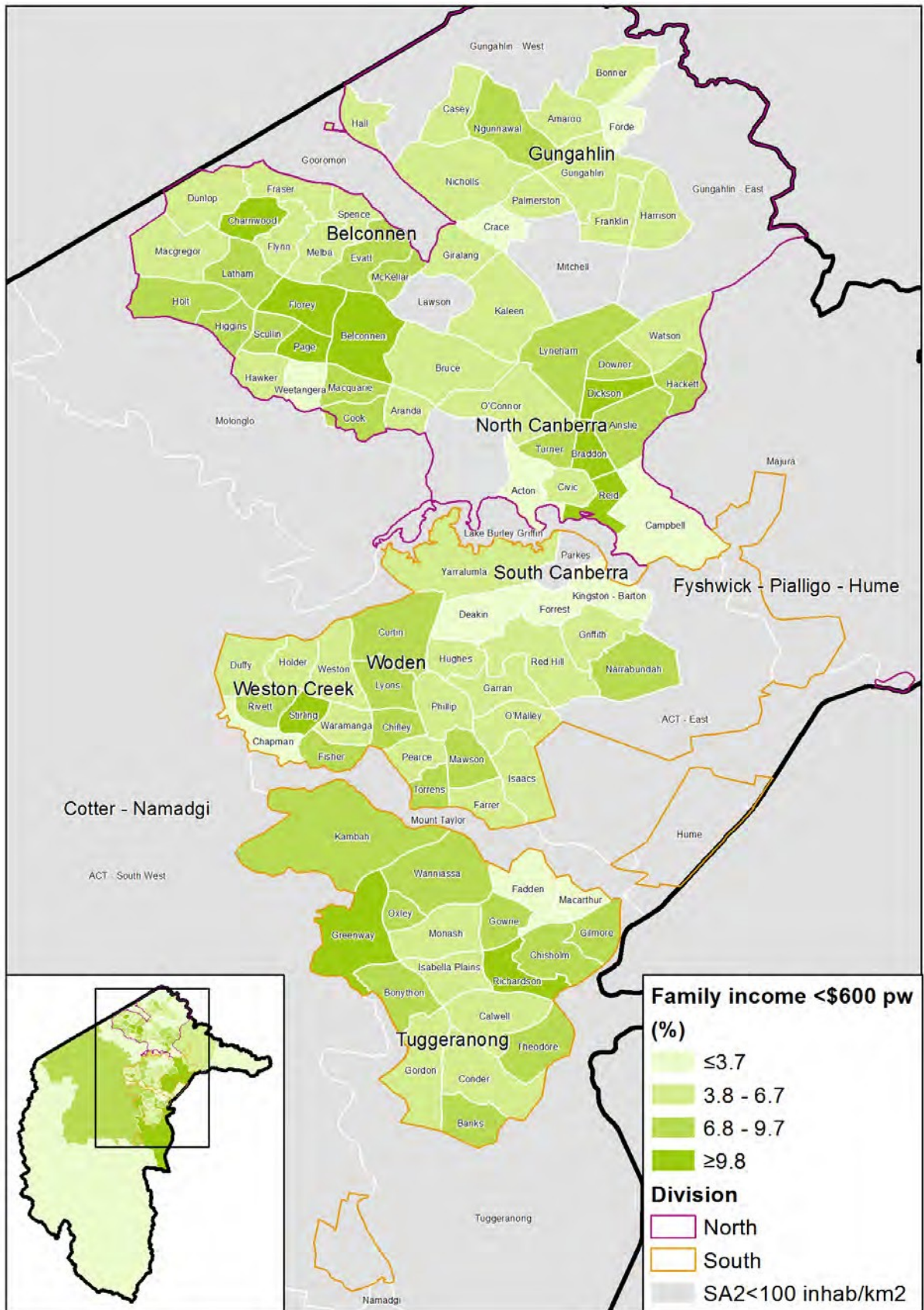


Figure 18 Distribution of Family Income < \$600 pw.

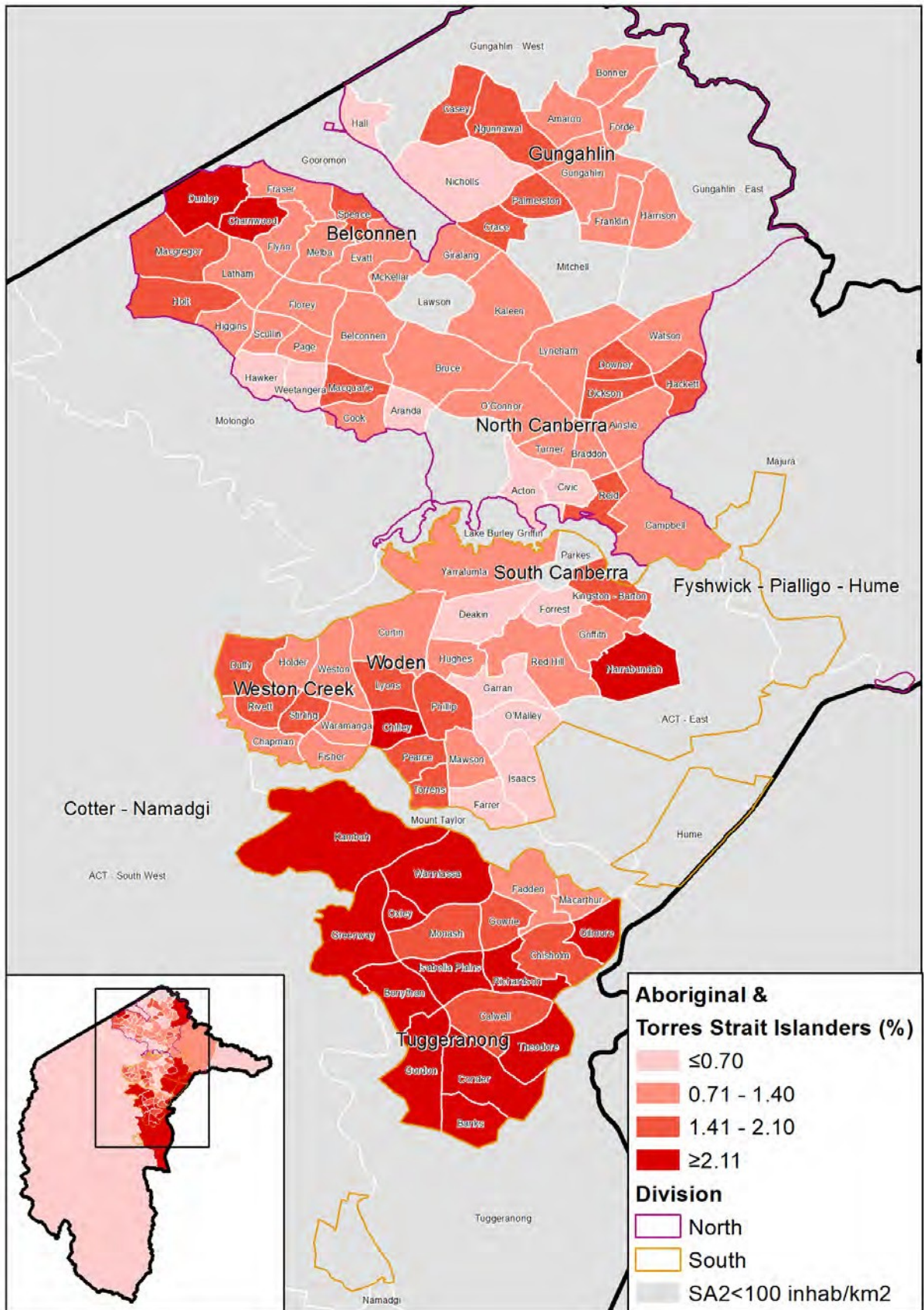


Figure 19 Distribution of Aboriginal and Torres Strait Islanders.

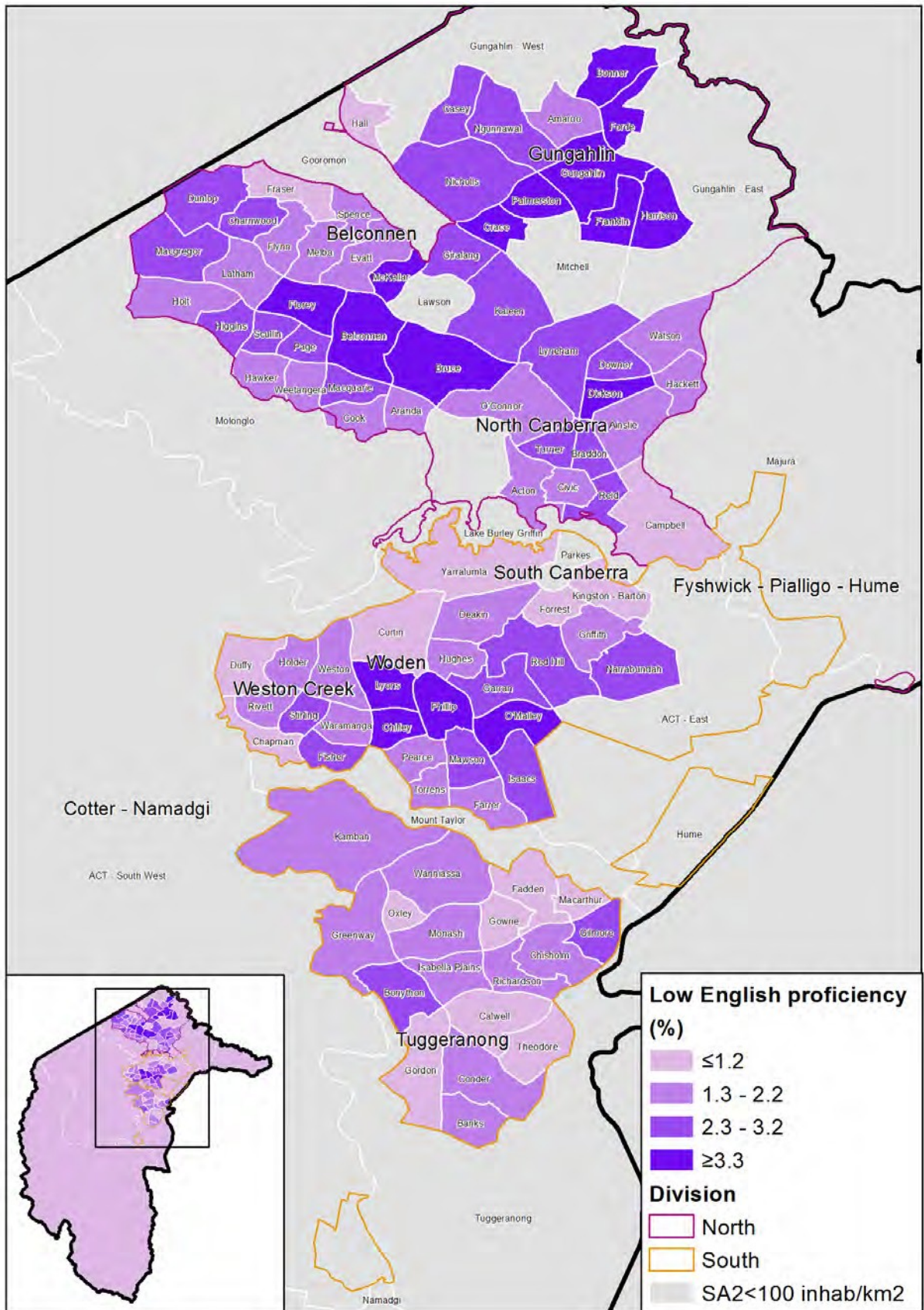


Figure 20 Distribution of Low English Proficiency.

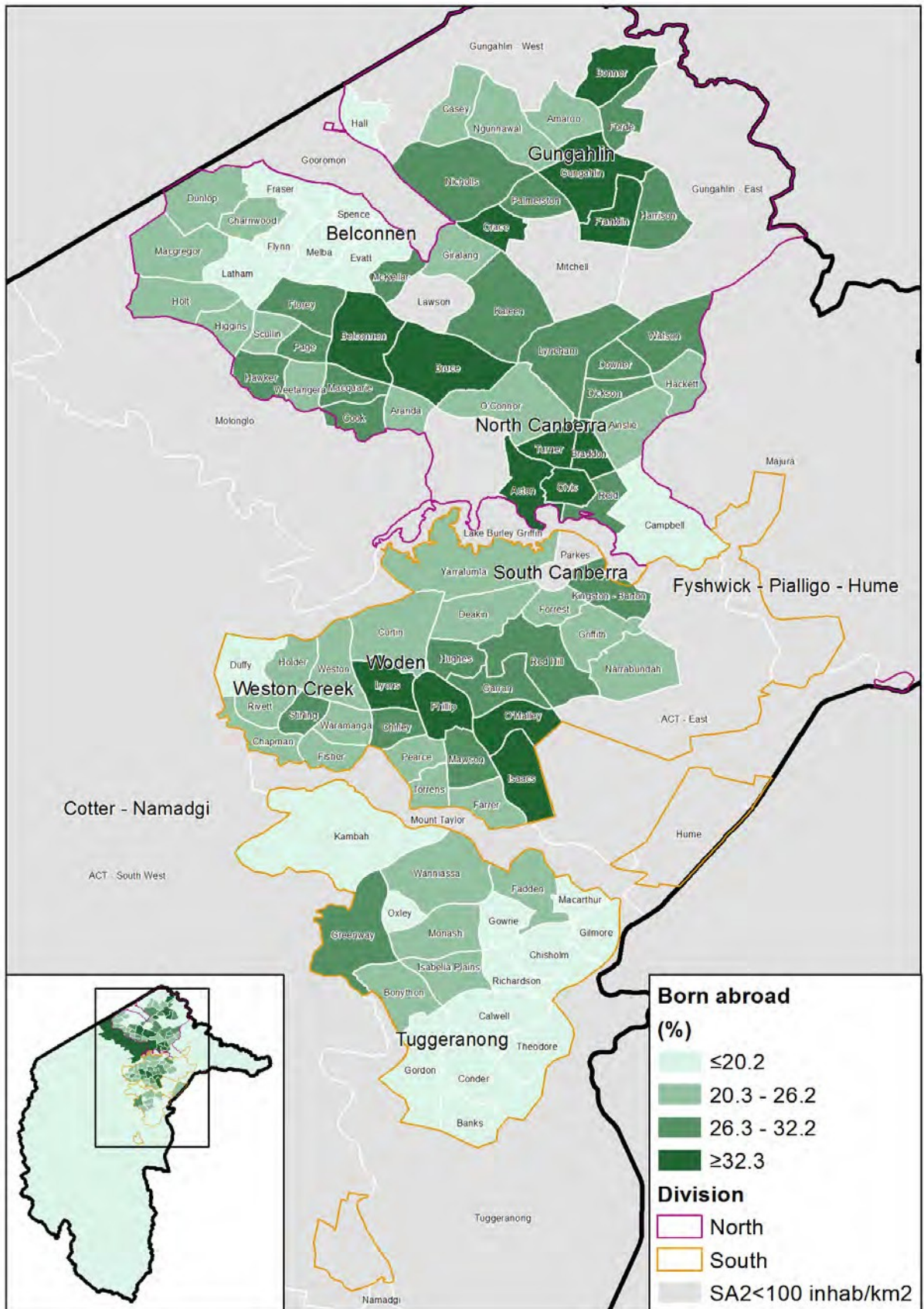


Figure 21 Distribution of People Born Abroad.

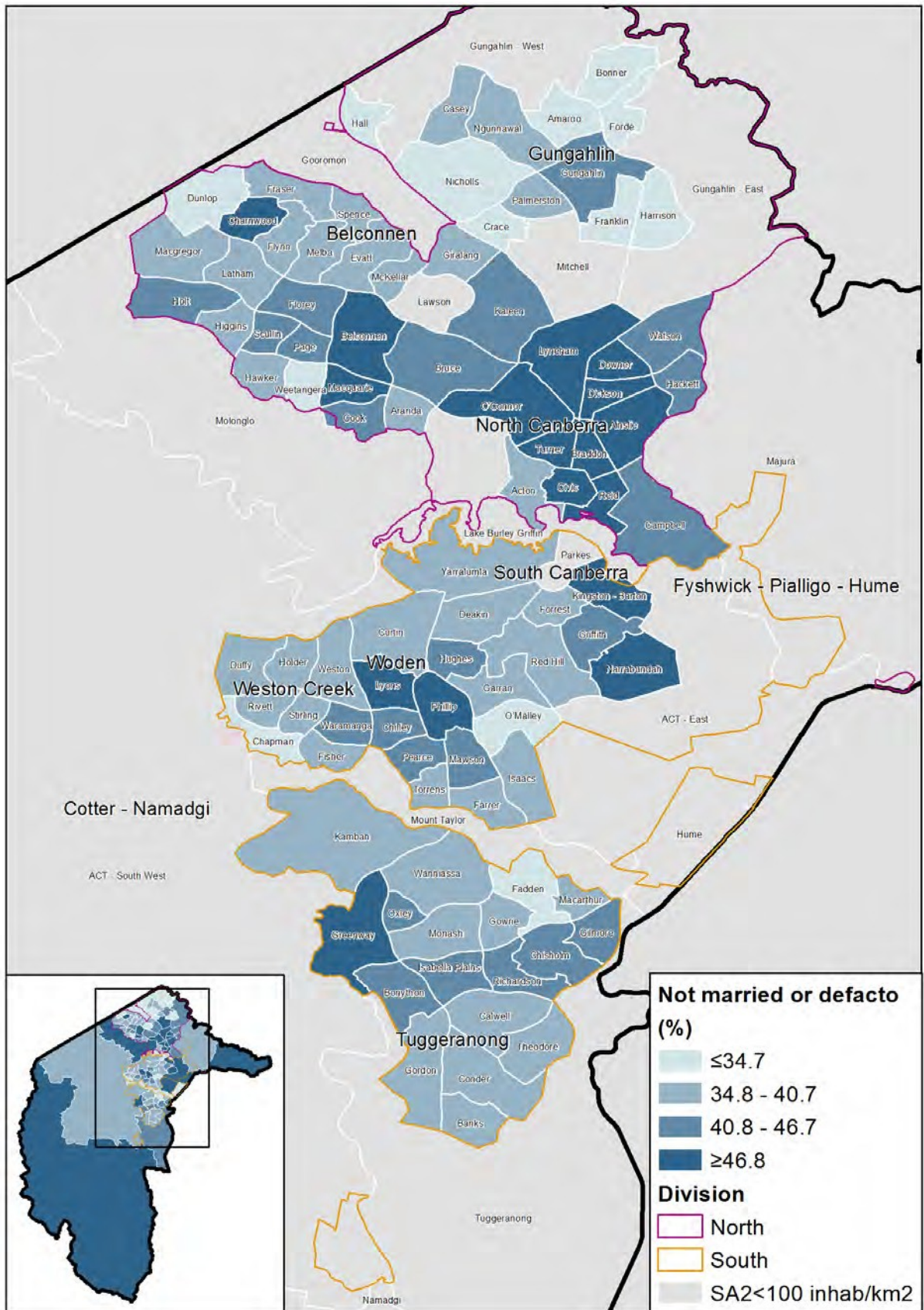


Figure 22 Distribution of people not married or living in a de facto relationship.

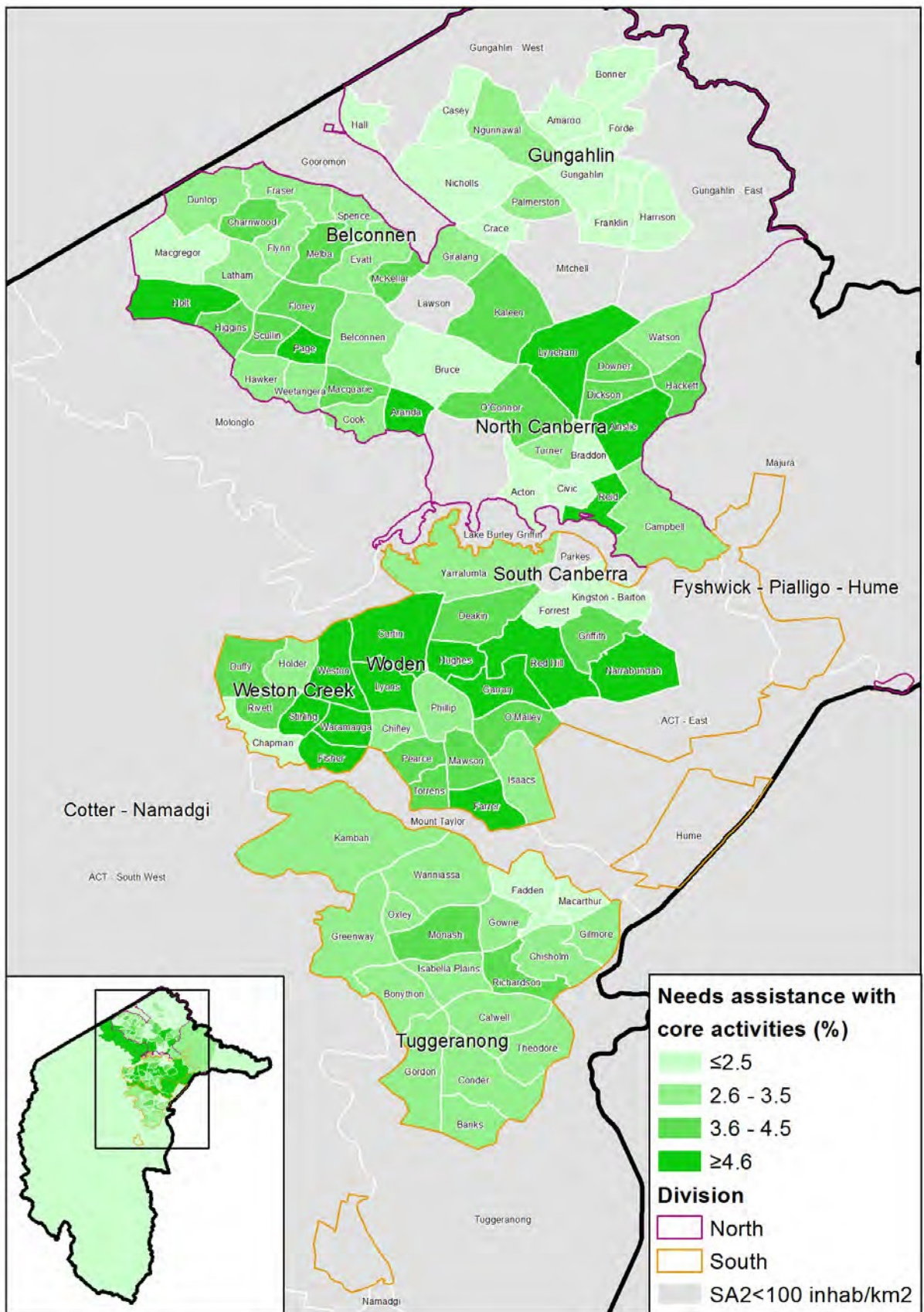


Figure 23 Distribution of People Needing Assistance with Core Activities

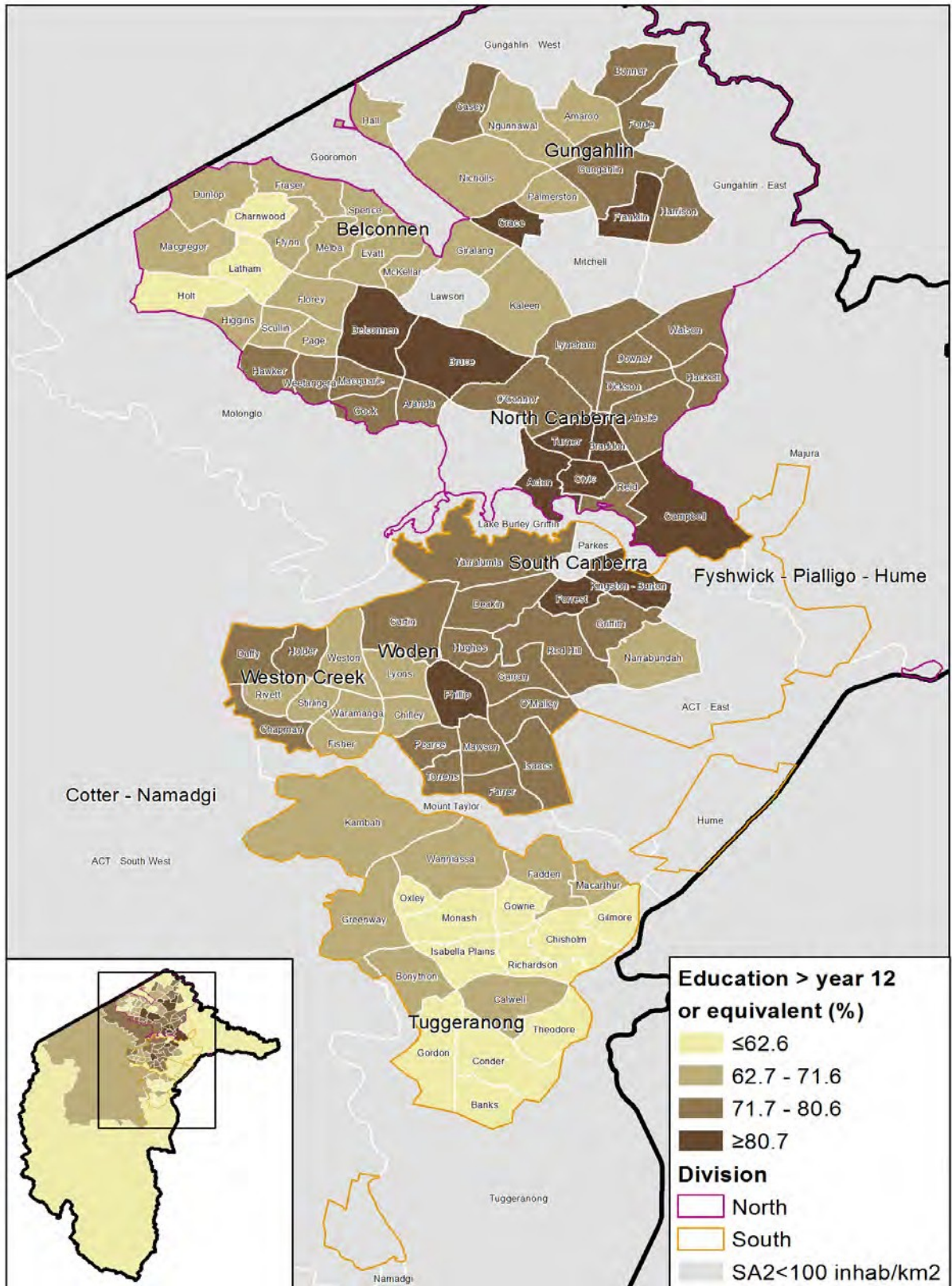


Figure 24 Distribution of people with year 12 or equivalent level of education.

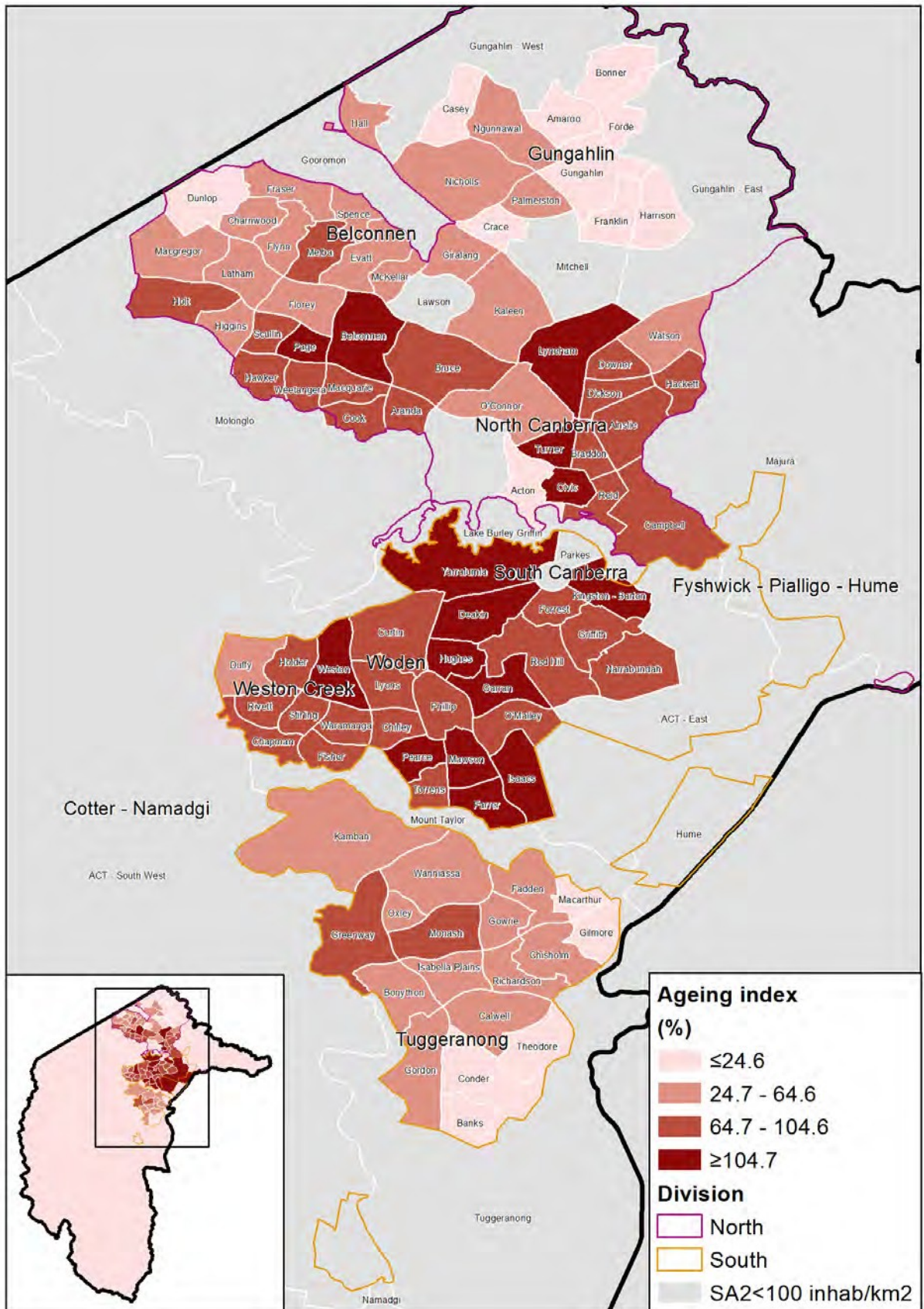


Figure 25 Ageing Index.

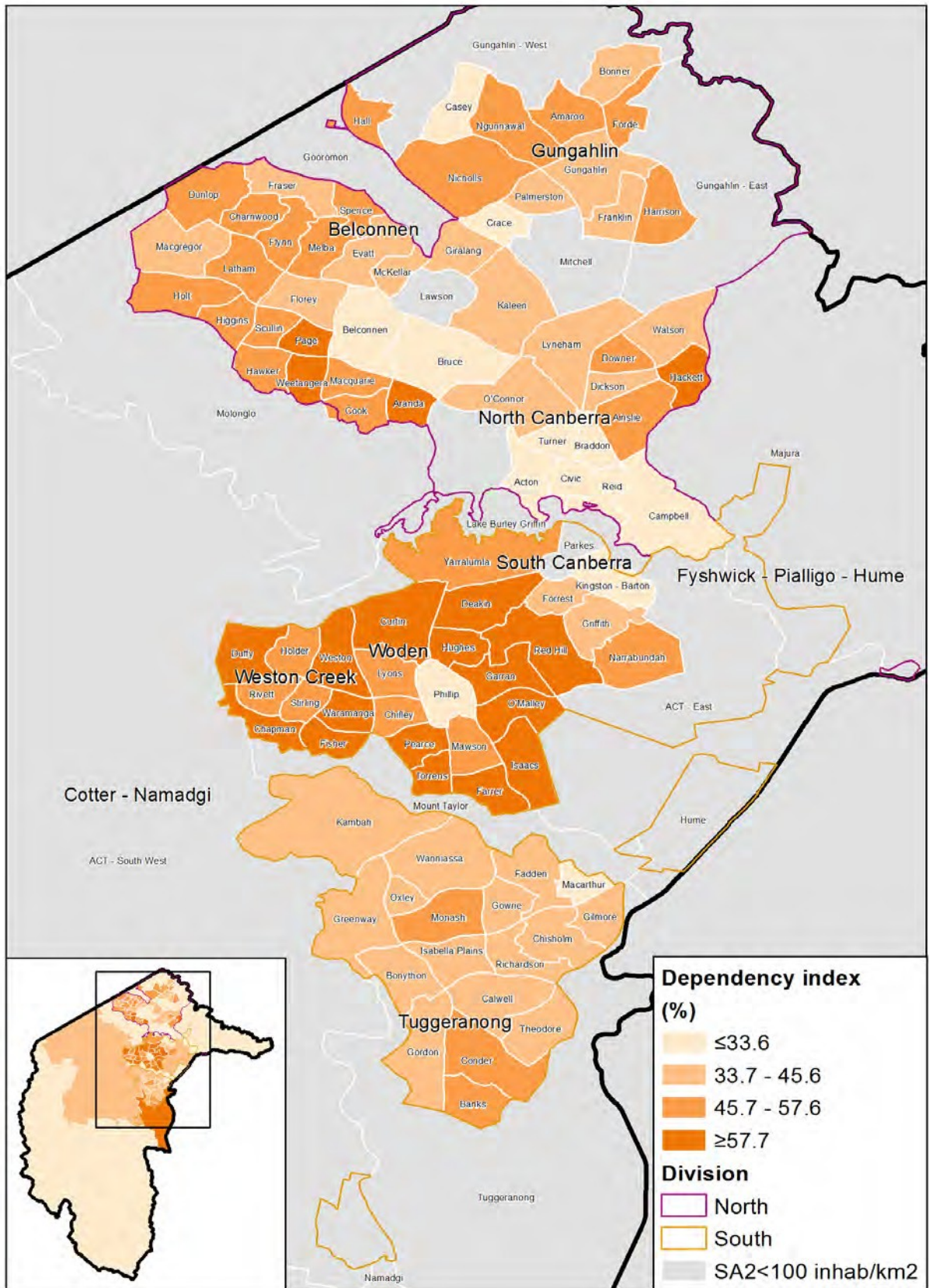


Figure 26 Dependency Index.

3. DESCRIBING THE SERVICES PROVIDING CARE FOR PEOPLE WITH A LIVED EXPERIENCE OF MENTAL ILLNESS

3.1. GENERAL DESCRIPTION

Data on services providing care for people with a lived experience of mental illness in the ACT PHN region was collected from the 3rd June to the 25th November 2016. Data was collected via 33 face-to-face or telephone interviews with mental health provider organisations. A total of 110 BSICs were identified, providing 122 MTC. 11 functional teams had more than one MTC. Services for whom the primary presentation criteria is not for mental health, such as those providing support to people with needs related to intellectual disability, homelessness, and alcohol and other drugs, were excluded from this coding as they require independent mapping.

76 MTCs (62.3%) of support provided is for adults in general (without a target specific population); 3 MTCs (2.46%) for older people; 7 MTCs (5.74%) for those transitioning to adulthood (this includes services for young carers and gender specific services for young people); 10 MTCs (8.2%) for both children and adolescents; and 26 (21.31%) for non-age related specific groups (including carers, offenders, gender specific, CALD, Aboriginal and Torres Strait Islander population, veterans, parents with mental illness).

The “core” health sector, provided in the ACT by public health (ACT Health), and including Children and Adolescent Mental Health Service (CAMHS), provides 38 MTCs (31.1%) of available support, while 84 MTCs are provided by “other” care : 79 MTCs (64.8%) are provided by the NGO sector, and 5 MTCs (4.1%) by Justice Health.

Four (40%) of services for children and adolescents, are core public health services, and 6 (60%) by NGOs.

In the public health sector, 8 MTCs (21.1%) of support provided was classified as residential; 26 MTCs (68.4%) as outpatient; 2 MTCs (5.3%) as Information and Guidance; and 2 MTCs (5.3%) as Daycare/programs. Regarding other services, 17 MTCs (20.2%) of services were classified as Residential; 38 MTCs (45.2%) as Outpatient, 17 MTCs (20.2%) as Accessibility; 5 MTCs (6%) as Daycare/programs; 5 MTCs (6%) as Information and Guidance; and 2 (2.4%) as Voluntary and Self Help.

A detailed description of the MTCs identified is provided in the following figures.

Distribution of MTCs according to target population

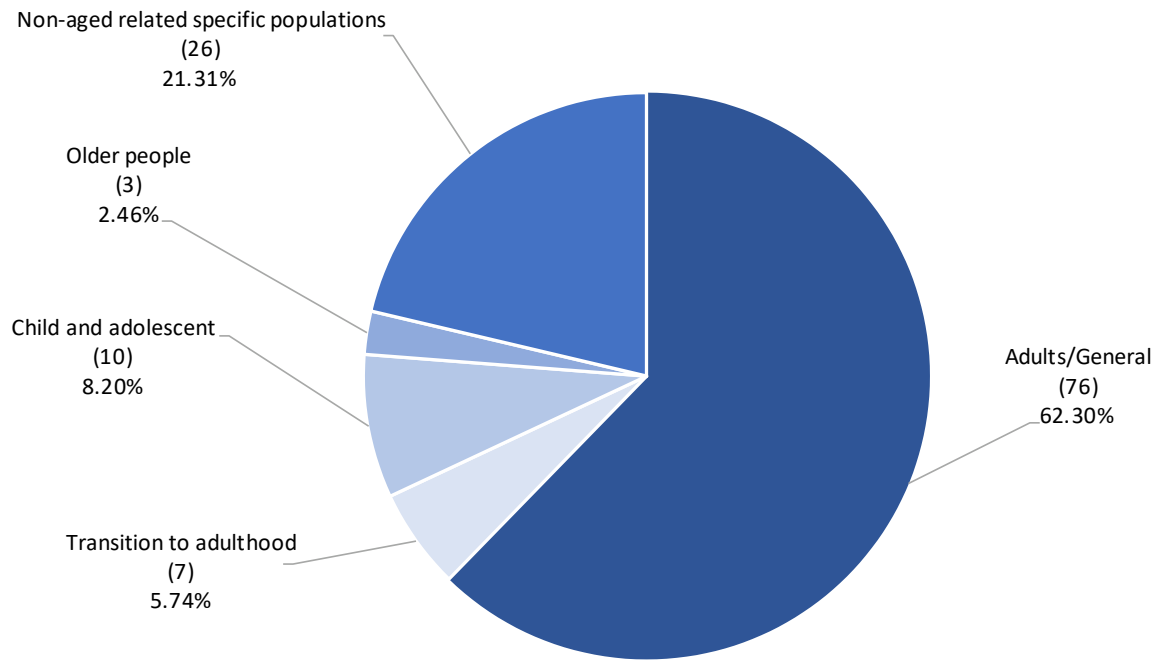


Figure 27 Distribution of MTCs in ACT according to target population (2016)

Distribution of the MTCs according to sector

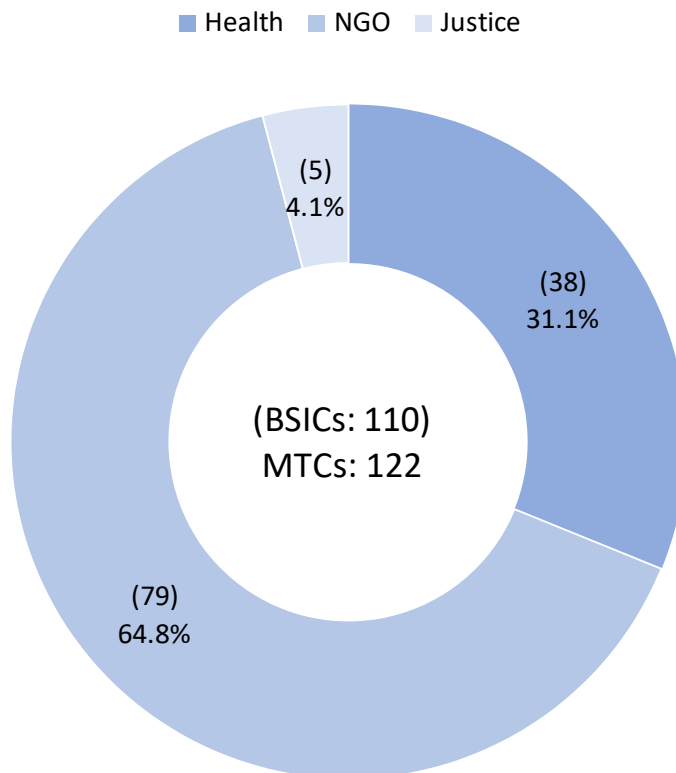


Figure 28 Distribution of MTCs in ACT according to sector (2016)

**Distribution of the MTCs according to sector
(children and adolescents)**

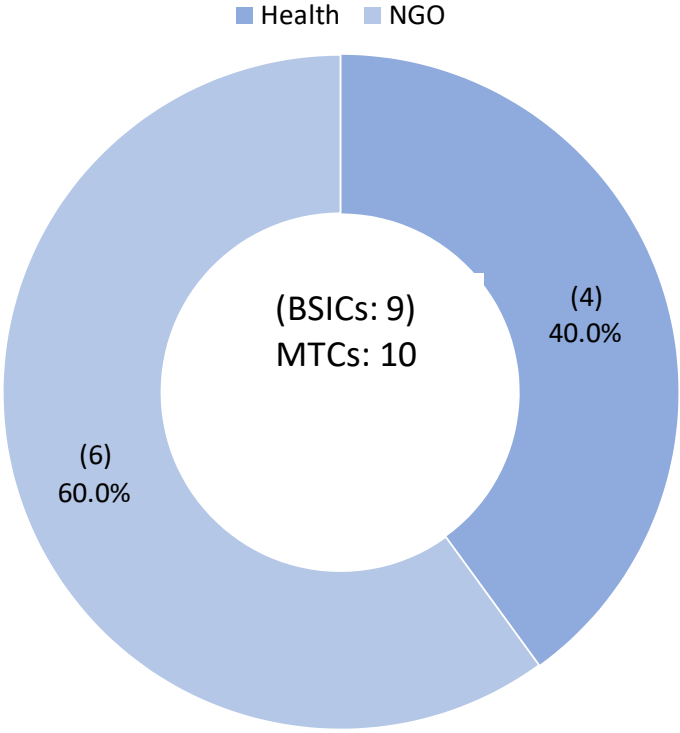


Figure 29 Distribution of Child and Adolescent MTCs in ACT according to sector (2106)

Distribution of the MTCs by type of care and sector

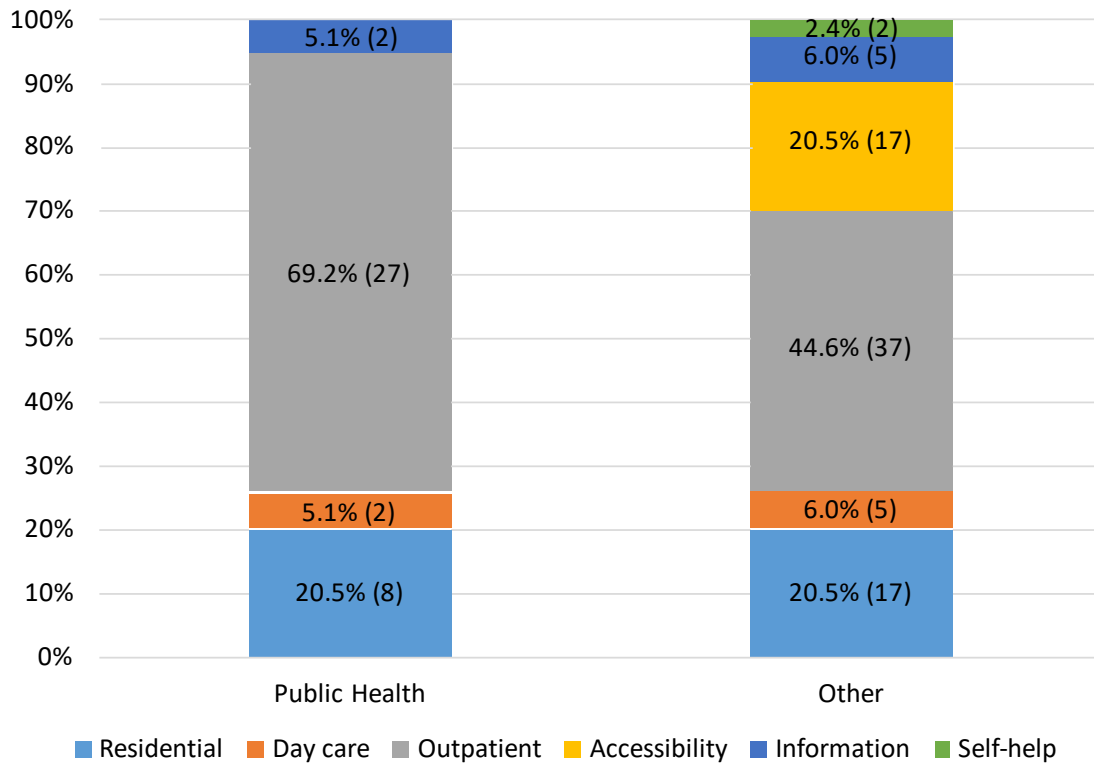


Figure 30 Distribution of MTCs in ACT according to type of care and sector (2016)

Table 2 Description of the MTCs per target population and care sector

MTC	Specific populations																				Total				
	Adults				Children & adolescents				Transition to adulthood				Older adult:				Non-age related specific populations								
	H	NGO	J	TOT	H	NGO	J	TOT	H	NGO	J	TOT	H	NGO	J	TOT	H	NGO	J	TOT	H	NGO	J	TOT	
R	6	12	1	19	0	1	0	1	1	0	1	0	1	2	0	0	2	0	2	0	2	8	16	1	25
D	1	3	0	4	1	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	2	5	0	7	
O	20	15	0	35	4	4	0	8	0	3	0	3	1	0	0	1	1	13	3	17	26	35	3	64	
A	0	12	0	12	0	1	0	1	0	0	0	0	0	0	0	0	0	4	0	4	0	17	0	17	
I	2	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	2	4	1	7	
S	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	
TOTAL	29	46	1	76	5	6	0	11	0	6	0	6	3	0	0	3	1	21	4	26	38	79	5	122	

R:Residential; D:Daycare; O:Outpatient; A:Accessibility; I:Information and Guidance;S:Self-help and Voluntary
MTC:Main Types of Care
H:Public Health; NGO: Non- Government Organisation; J:Justice

Please note the following with regard to ACT Health data:

The total FTEs for each service area based on budgeted FTE as of March 2017 with the exception of Medical FTE (psychiatrists/registrars) as this was based on staffing estimates at the time of data collection so may vary from current actual and budgeted FTE.

FTE shown do not include management or administrative staff.

Breakdown of clinical staff into health professional subcategories (Psychologists/Occupational Therapists/Social Workers) is based on a combination of actual staff mix composition at time of data collection and expected staff mix composition (noting that there are a number of multi-classified positions within a number of areas) so FTE for each listed professional group (Psychologist/Social Worker/Occupational Therapist) may not accurately reflect current composition based on a number of staff movements.

3.2. ADULTS

In this section we describe the availability and placement capacity (number of places or beds available in every functional team) of the BSICs/services providing care for adults (residents over the age of 17 years) with a lived experience of mental illness, by care sector. Specific age related services, including services for adults over 65 years, and services providing support to specific groups, such as carers and Aboriginal and Torres Strait Islander people, or gender specific services, are described in other sections.

3.2.1. RESIDENTIAL CARE

3.2.1.1. RESIDENTIAL CARE PROVIDED BY THE PUBLIC HEALTH SECTOR

ACUTE RESIDENTIAL SERVICES

Three acute residential services (BSICs) provided by the public health sector in the ACT PHN region were identified. These services provided a total of 4 MTC. At Canberra Hospital, a 6 bed Mental Health Short Stay Unit (MHSSU) provides a 24 hour mental health care presence in the Emergency Department for short stays of up to 48 hours. **The total number of acute adult inpatient beds provided by the public health sector is 63, or 22.74 per 100,000 residents over the age of 17 years. The number of acute residential BSICs per 100,000 residents over the age of 17 years is 1.1.**

Table 3 Acute Residential services: availability and capacity (2016).

Provider	Name	Main DESDE code	Other DESDE Codes	Beds/Places	Town/Suburb	Area of coverage
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Adult Acute Mental Health Services	Adult Mental Health Unit (AMHU)-Low dependency Beds/High Dependency	AX[F00-F99]-R2	AX[F00-F99]-R1	27/10	Garran	ACT
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Adult Acute Mental Health Services	Mental Health Short Stay Unit (MHSSU)	AX[F00-F99]-R2		6	Garran	ACT
Calvary Healthcare Mental Health Services-Calvary Hospital	2N-Adult MH Inpatient Services	AX[F00-F99]-R2		20	Bruce	Primarily northern suburbs of Canberra, but depends on bed availability

Total	3	63
Rate per 100,000 residents (>17 years old)	1.1	22.74

The following table shows workforce capacity in acute adult residential services provided by the public health sector in the ACT PHN region. As would be expected, psychiatrists, psychiatric registrars and mental health nurses comprise the bulk of the workforce, with additional support provided by an allied health workforce of psychologists, social workers and occupational therapists, as well as Health Services Officers and a Recovery Support Officer in the AMHU. The Mental Health Short Stay Unit also uses Allied Health Support accessed from the AMHU.

Table 4 Acute Residential services: workforce capacity (2016).

Provider	Name	Total FTE	Psych/reg	Psychol	MHN	SW	OT	Other
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Adult Acute Mental Health Services	Adult Mental Health Unit (AMHU)- Low dependency Beds/ High Dependency beds	81.76	7.0	3.78	61.82	3.0	3.0	3.16
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Adult Acute Mental Health Services	Mental Health Short Stay Unit (MHSSU)	12.57	2.0		10.57			
Calvary Healthcare Mental Health Services-Calvary Hospital	2N-Adult MH Inpatient Services	NA	NA	1.3	28.0	1.0	0.5	
Total		NA						
Rate per 100,000 residents (>17 years old)		NA						

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker; OT: Occupational therapist.NA: Data not available or incomplete

*Please note Psychiatry Cover is shared with ED Consultation Liaison Services

NON- ACUTE RESIDENTIAL SERVICES

One BSIC/service providing non-acute residential care in the ACT PHN region by the public health sector was identified, incorporating 2 MTC. The Brian Hennessy Rehabilitation Centre provides 20 beds for supported accommodation such as respite, rehabilitation, and sub-acute care, with an additional smaller secure facility with 10 beds providing appropriate care for consumers with higher needs. The rehabilitation services provided at BHRC will be transferred to the University of Canberra Public Hospital in 2018. **There is 1 BSIC, or 0.4 BSICs per 100,000 residents over the age of 17 years. There are 30 non- acute residential beds, or 10.8 per 100,000 people over the age of 17 years, in the ACT PHN region.**

Table 5 Non-acute Residential services: availability and capacity (2016).

Provider	Name	Main DESDE Code	Other DESDE Codes	Beds/ Places	Town/ Suburb	Area of Coverage
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	Brian Hennessy Rehabilitation Centre (BHRC)	AX[F00-F99]- R11	AX[F00-F99]- R11vc	20/10	Bruce	ACT
Total	1			30		
Rate per 100,000 residents (>17 years old)	0.4			10.8		

The workforce capacity in non- acute residential care is again comprised mostly of mental health nurses, along with psychiatric physicians and allied health staff. **There are 42.08 FTEs, or 15.19 FTEs per residents over 17 years of age, providing non-acute inpatient care in the public health sector in the ACT PHN region.**

Table 6 Non- acute Residential services: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT	Other
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	Brian Hennessy Rehabilitation Centre (BHRC)	42.08	2.0	0.8	27.28	1.0	1.0	10.0

Total	42.08
Rate per 100,000 residents (>17 years old)	15.19

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker; OT: Occupational therapist.

OTHER RESIDENTIAL CARE PROVIDED BY THE PUBLIC SECTOR

It is important when coding services to distinguish between those providing accommodation and support, and those providing in-home support to people living in housing provided by other means, such as community housing. Thus, services which provide both accommodation and in-home support to people with a lived experience of mental illness are coded as residential care, and services which provide in-home support only, are coded as outpatient care. Additionally, it is not always possible to identify the percentage of beds specifically designated for people with mental health needs. An example is the HASI (Housing Accommodation and Support Initiative)/HARI (Mental Health Housing and Recovery Initiative) programs. These support sustainable tenancies in public housing for people with moderate to severe mental health issues, and can be delivered at an individual’s privately owned or rented property or through social housing. It could be argued that the way housing for people with mental illness is provided is more accurately conceptualised as a financing mechanism than a service providing care. In the ACT PHN region, a HASI/HARI supportive tenancy service, funded by the ACT and provided by a partnership of Woden Community Services and the YWCA, ended on June 30, 2016, with the transitioning of programs to the NDIS.

There are no acute residential BSICs provided by NGOs.

3.2.1.2. RESIDENTIAL CARE PROVIDED BY THE NGO SECTOR

Twelve BSICs/services providing non-acute residential support for people with a lived experience of mental illness in the ACT PHN region were identified. Richmond Fellowship provide a Residential Recovery Program, which comprises 6 services in different locations around the ACT, one of which (North Lyneham) provides transitional support. The homes in Page, Scullin, Holt, Lyneham and Curtin provide 24 hour support. Richmond Fellowship liaises when necessary with Mental Health Services, Justice Services and Alcohol and Drug Services. The Mental Health Foundation provide a Supported Accommodation and Rehabilitation Program (SARP), which at the time of interview provided homes at three satellite sites, served by the same team, and comprising 7 beds, but which has since expanded to 5 sites, with a further site potentially to be added. Mental Health Foundation both leases the properties, and provides the support. Mental Health Foundation also provide a Residential Respite program at Warren I’Anson House which can provide respite accommodation either to the person with a lived experience of mental illness, or, if preferred, to their carer. GROW- Community Based Mental Health Support provide 5 beds for long-stay residential rehabilitation, accommodation (up to

nine months) in a long lease from Barton Housing of purpose built housing, with daily structured support. Wellways (previously known as Mental Illness Fellowship) also provides five beds in its Adult Step Up and Step Down program, aimed at assisting recovery from acute episodes of illness, and preventing relapse. Wellways also manages a Youth Step Up Step Down service in Kambah in partnership with ACT Health with 6 beds for people aged 18-25 years (coded in Transition to Adulthood section). A residential service provided by Catholic Care specifically for men, is included in the gender specific section later in the report.

Ten BSIC have been coded with the “v” qualifier as they do not have guaranteed funding for three years.

There are 12 BSICs, or 4.3 BSICs per 100,000 residents over the age of 17 years, providing a total of 55 beds, or 19.9 beds per 100,000 residents over the age of 17 years.

Table 7 Residential care provided by the NGO sector: availability and capacity (2016).

Provider	Name	Main DESDE Code	Other DESDE Code(s)	Beds/ Places	Town / Suburb	Area of Coverage
Grow - ACT	Residential Rehabilitation Program	AX[F10- F19]-R10.2		5	Narrabundah	ACT predominantly- NSW if space available
Mental Health Foundation	Residential respite- Warren I’Anson House	AX[F00-F99]-R9.1v	AX[e310][F00-F99]-R9.1	9	Chifley	ACT
Mental Health Foundation	The Supported Accommodation Rehabilitation Program (SARP) (satellite)	AX[F00-F99]-R12v		3	Kambah	ACT
Mental Health Foundation	The Supported Accommodation Rehabilitation Program (SARP) (satellite)	AX[F00-F99]-R12v		3	Narrabundah	ACT
Mental Health Foundation	The Supported Accommodation Rehabilitation Program (SARP) (satellite)	AX[F00-F99]-R12v		2	Griffith	ACT
Richmond fellowship ACT	Residential Recovery program - Curtin	AX[F00-F99]-R11v		5	Curtin	ACT
Richmond fellowship ACT	Residential Recovery program -Holt	AX[F00-F99]-R11v		5	Holt	ACT

Richmond fellowship ACT	Residential Recovery program -Lyneham	AX[F00-F99]-R11v	5	Lyneham	ACT
Richmond fellowship ACT	Residential Recovery program -Page	AX[F00-F99]-R11v	5	Page	ACT
Richmond fellowship ACT	Residential Recovery program -Scullin	AX[F00-F99]-R11v	5	Scullin	ACT
Richmond fellowship ACT	Residential Recovery Program- North Lyneham	AX[F00-F99]-R9v	3	North Lyneham	ACT
Well Ways (previously known as Mental Illness Fellowship) Mental Health Services	Step up and Step down	AX[F00-F99]-R8.2	5	North Lyneham	ACT
Total	12		55		
Rate per 100,000 residents (>17 years old)	4.3		19.9		

Support workers are the largest group of professionals employed in residential care provided by NGOs. Warren I'Anson House and the SARP program provide support from staff with a minimum qualification of Certificate IV, and which may also include health professionals, such as psychologists. Mental Health Foundation provides on call support overnight, and also has a small (0.2 FTE) peer workforce. Wellways provides the support of three FTE during business hours, and 1 FTE outside of business hours. This program includes support from a mental health nurse. **There are 31 FTE, or 11.2 per 100,000 residents over the age of 17 years, providing residential care in the NGO sector.**

Table 8 Residential care provided by NGOs: workforce capacity (2016).

Provider	Name	Total FTE	OT	SupW	Peers	Others
Grow - ACT	Residential Rehabilitation Program	1.8		1.8		
Mental Health Foundation	Residential Warren I'Anson House	4.0		3.8	0.2	

Mental Health Foundation	The Supported Accommodation Rehabilitation Program (SARP) (satellite)	0.5			0.5
Mental Health Foundation	The Supported Accommodation Rehabilitation Program (SARP) (satellite)	0.5			0.5
Mental Health Foundation	The Supported Accommodation Rehabilitation Program (SARP) (satellite)	0.4			0.4
Richmond Fellowship ACT	Residential Recovery program - Curtin	3.3	0.1		3.2
Richmond Fellowship ACT	Residential Recovery program - Holt	3.3	0.1		3.2
Richmond F Fellowship ACT	Residential Recovery program - Hynham	3.3	0.1		3.2
Richmond Fellowship ACT	Residential Recovery program - Page	3.3	0.1		3.2
Richmond f Fellowship ACT	Residential Recovery program - Scullin	3.3	0.1		3.2
Richmond Fellowship ACT	Residential Recovery Program- North Lyneham	3.3	0.1		3.2
Well Ways -(previously known as Mental Illness Fellowship)/Mental Health Services	Step up and Step down	4.0			4.0
Total		31			
Rate per 100,000 residents (>17 years old)		11.2			

FTE: Full Time Equivalents; OT: Occupational therapist; SupW: Support Worker/Community worker; Peer: Peer worker.

3.2.2. DAY CARE (STRUCTURED PROGRAMS)

3.2.2.1 DAY CARE/PROGRAMS PROVIDED BY THE PUBLIC HEALTHSECTOR

We identified one service providing day care funded by the public health sector. This is a program which, while treating adults, is actually operated by Child and Adolescent Mental Health Services (CAMHS). It is an Eating Disorders Program located at Phillip Health Centre in Woden, staffed by a multidisciplinary team, including social work, psychology, occupational therapy and nursing staff. It provides support to people of all ages, and their families, in the ACT. **There are 0.4 Daycare BSICs provided by the**

public health sector per 100,000 residents in the ACT PHN region. There are 4.52 FTE, or 1.63 per 100,000 residents in the ACT PHN region.

Table 9 Day programs provided by the public health sector: availability and capacity (2016).

Provider	Name	Main DESDE Code	Beds/ Places	FTE	Town / Suburb	Area of Coverage
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Child and Adolescent Mental Health Services	Eating Disorders Program	GX [F50]-D8.1	NA	4.1	Woden	ACT
Total	1					
Rate per 100,000 residents (>17 years old)	0.4					

Table 10 Day programs provided by the public health sector: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Child and Adolescent Mental Health Services	Eating Disorders Program	4.52	0.1	1.51	1.0	1.0	1.0
FTE Total		4.52					
Rate per 100,000 residents (>17 years old)		1.63					

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker; OT: Occupational therapist..

3.2.2.2 DAY CARE/PROGRAMS PROVIDED BY THE NGO SECTOR

SOCIAL/CULTURE RELATED

We have identified three NGO funded BSICs/services offering structured day care/day programs.

The Day to Day Living program provided by Belconnen Community Service Inc. provides sessional tutoring in a range of areas, including arts based programs: for example, participants have recently been given support to run an art exhibition. It has recently also been supporting participants to prepare for their NDIS interview. Funding of this program has been reduced in line with the move to NDIS. Sunflower Services (previously Schizophrenia Fellowship) also provide a service which incorporates two

MTC, one of which is also a Day to Day Living program. This program includes workshops teaching participants skills such as furniture restoration, or art based skill; or skills based on participant's needs such as barista training to support work readiness. It also provides a service for consumers who are not linked in with other services. At the time of data collection, the Mental Health Foundation offered The Rainbow Psychosocial Rehabilitation program, combined with a Skills for Life program. These provided centre based group activities including the development of individual plans and teaching of basic skills such as computer skills or other work skills, and a safe place for participants to spend time during the day. *Please note that The Rainbow has since closed, in December 2016.* Belconnen Day to Day have staff from a range of backgrounds including teaching or other degrees, and lived experience. Staffing qualifications required for The Rainbow were a minimum of Certificate IV; Sunflower Services is also staffed by professionals with diploma level qualifications, such as Counselling, Mental health and Wellbeing, and Youth Drug and Alcohol.

Two BSIC have been coded with the “v” qualifier as they do not have guaranteed funding for three years.

There are 3 BSICs or 1.1 BSICs per 100,000 residents over the age of 17 years, with a workforce capacity of 7.3, or 2.6 per 100,000 residents.

Table 11 Social and culture-related Day programs provided by NGOs: availability (2016).

Provider	Name	Main DESDE Code	Other DESDE Code(s)	Town / Suburb	Area of Coverage
Belconnen Community Service	Day to Day living program	AX[F00-F99]-D8.2v		Belconnen	ACT
Mental Health Foundation	The Rainbow psychosocial rehabilitation program + The Skills for Life Program*	AX[F00-F99]-D5v		Chifley	ACT
Sunflower Services (previously Schizophrenia Fellowship NSW)	Day to Day Living Canberra City	AX[F00-F99]-D5	AX[F00-F99]-A4	Ainslie	ACT
Total	3				
Rate per 100,000 residents (>17 years old)	1.1				

**Please note: The Rainbow has since closed, in December 2016.*

Table 12 Social and culture-related Day programs provided by NGOs: workforce capacity (2016).

Provider	Name	Total FTE	Others
Belconnen Community Service	Day to Day Living program	3.0	3.0
Mental Health Foundation	The Rainbow psychosocial rehabilitation program + The Skills for Life Program *	1.5	1.5
Sunflower Services (previously Schizophrenia Fellowship NSW)	Day to Day Living Canberra City	2.8	2.8
Total		7.3	
Rate per 100,000 residents (>17 years old)		2.6	

FTE: Full Time Equivalents.

*Please note: The Rainbow has since closed, in December 2016.

WORK RELATED

We did not identify any BSICs providing work related day programs: that is, services where users carry out an activity closely resembling work, and for which payment would be expected in the open market, but where they are paid less than 50% of the expected wage for the type of work.

However, the Richmond Fellowship PHAMS program includes one employment specialist. Wellways (previously known as Mental Illness Fellowship) previously provided a vocational rehabilitation program, which is no longer funded.

3.2.3 OUTPATIENT CARE

3.2.3.1 OUTPATIENT CARE PROVIDED BY THE PUBLIC HEALTH SECTOR

ACUTE MOBILE OUTPATIENT CARE

We identified one BSIC/service provided by the public health sector, incorporating two MTC, offering acute mobile outpatient care. The Crisis Assessment and Treatment Team (CATT) provide a mental health triage service, crisis support and short term intervention 24 hours a day. It is staffed by a range of health and allied health professionals, including medical staff (psychiatrist or registrar), as well as psychology, social work and nursing

staff. Nurses are the largest group of health professionals employed in this service. **There is 1 BSIC, or 0.4 BSICs per 100,000 residents over 17 years providing acute mobile outpatient care in the public health sector in the ACT PHN region, with 29.56 FTE, or 12.30 per 100,000 residents over the age of 17 years.**

Table 13 Acute mobile Outpatient care provided by the public health sector: availability (2016).

Provider	Name	Main DESDE Code	Other DESDE Code(s)	Town/ Suburb	Area of Coverage
ACT Health- Health, Justice Alcohol and Services- Community Health Services	Mental Health, and Drug Adult Mental Crisis Assessment and Treatment Team (CATT)	GX[F00-F99]-O1.1	GX[F00-F99]- O1.1	ACT	ACT
Total	1				
Rate per 100,000 residents (>17 years old)	0.4				

Table 14 Acute mobile Outpatient care provided by the public health sector: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT
ACT Health- Health, Justice Alcohol and Drug Services- Community Mental Health Services	Mental Health, and Drug Adult Mental Crisis Assessment and Treatment Team (CATT)	29.56	2.0	10.0	12.16	4.4	1.0
Total		29.56					
Rate per 100,000 residents (>17 years old)		12.3					

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker

ACUTE NON-MOBILE OUTPATIENT CARE

We identified two public health sector BSIC/service providing acute non- mobile outpatient care in the ACT PHN region. Consultation Psychiatry Liaison Services provide specialist assessment to patients on medical wards at Calvary Hospital. Emergency Department Mental Health Consultation Liaison Services at Canberra Hospital are for the Emergency Department and other non-MH inpatient wards. **There are 2 BSIC, or 0.8 BSIC per 100,000 residents over 17 years of age providing acute non-mobile outpatient care in the public health sector.**

Table 15 Acute non-mobile Outpatient care provided by the public health sector: availability and workforce capacity(2016).

Provider	Name	Main DESDE Code	FTE MHN	Town/ Suburb	Area of Coverage
Calvary Healthcare Mental Health Services- Calvary Hospital	Consultation Psychiatry Liaison Team	AX[F00-F99]-O4.1lh	6.0	Bruce	Primarily North Canberra, Belconnen and the Gungahlin precinct, but may include some people from southside.
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Acute Mental Health Services	Emergency Department Consultation Liaison Services	AX-[F00-F99]-O4.1lh	5.37*	Garran	ACT
Total	2		11.37		
Rate per 100,000 residents (>17 years old)	0.8		4.55		

* Please note 2 FTE Psychiatry cover is shared with MHSSU

NON-ACUTE MOBILE OUTPATIENT CARE

We have identified two public health BSICs/services providing non-acute mobile outpatient care. The Mobile Intensive Treatment Team (Northside) is a specialist mobile service, providing care which includes medication monitoring of people with low adherence to medication regimes. MITT is staffed predominantly by mental health nurses, with psychiatric and allied health support. They also have three recovery support workers. The CAMHS Early Intervention Team provides care for people aged 14-25 years of age, and their families, experiencing a severe initial episode of mental illness including psychosis. Both BSICs are staffed mostly by nurses, with medical and allied health support. The CAMHS team also includes 1 Recovery Support Officer/ Youth Worker. **There are 2 BSICs or 0.7 BSICs per 100,000 residents over the age of 17 years providing non- acute mobile outpatient care in the public health sector with a workforce capacity of 23.1, or 8.34 FTEs per 100,000 residents.**

Table 16 Non-acute mobile Outpatient care provided by the public health sector: availability (2016).

Provider	Name	Main DESDE Code	Town / Suburb	Area of Coverage
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Mental Health Services	Mobile Intensive Treatment Team (MITT)- Northside	GX[F00-F99]-O5.1.2	Belconnen	City/ Belconnen MH regions
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Child and Adolescent Mental Health Services	Early Intervention Team 14-25.	AY[F2X]-O6.1	Woden	ACT
Total	2			
Rate per 100,000 residents (>17 years old)	0.7			

Table 17 Non-acute mobile Outpatient care provided by the public health sector: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT	Other
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Mental Health Services	Mobile Intensive Treatment Team (MITT)- Northside	14	0.1	1.0	8.0	1.0	1.0	3.0.0
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Mental Health Services	Early Intervention Team 14-25.	9.1	0.1	2.0	4.0	1.0	1.0	1.0
Total		23.1						
Rate per 100,000 residents (>17 years old)		8.34						

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker; OT: Occupational therapist.

NON-ACUTE NON-MOBILE OUTPATIENT CARE

We identified 15 BSICs in the public health sector providing non-acute, non-mobile, outpatient care. This includes the five Community Mental Health Teams (CMHT) providing high intensity care to their designated catchment areas within the region. The CMHT provide assessment, management and treatment of people with moderate to severe mental health conditions. The interventions include medication clinics, outpatient

psychiatric reviews, clinical management, individual therapeutic interventions and care coordination and linkages. Emergency care provided by CMHT during working hours is covered after hours by the Crisis Assessment and Treatment Team. It is important to note that BSICs are considered non-mobile unless greater than 50% of their care is to people's homes. We have used the "q" qualifier here to indicate non-mobile care that nevertheless provides between 20- 49% of care as mobile. There are 10 Health In Mind (formerly known as ATAPS) providers. Health In Mind is a free service targeting hard to reach groups with a mild-moderate mental health condition. ACT PHN receives referrals, triages and allocates participants to an appropriate Health In Mind provider. **There are 1.8 BSICs per 100,000 residents over the age of 17 years.** If we include the Health In Mind providers, there are 5.4 BSICs per 100, 000 residents over the age of 17 years.

Addendum. ACT MHJHADS- Rehabilitation and Specialty Mental Health Services provide the Adult Mental Health Day Service, currently located at Belconnen Health Centre, but due to relocate to the University of Canberra Public Hospital in July 2018. This service provides weekly group based activities to consumers who have been assigned to, or are clinically managed by, any of the five Community Mental Health teams. Referrals are internal. Groups include psychological therapy, creative art therapy, metabolic monitoring, medication clinics (e.g. clozapine), Activities of Daily Living groups such as cooking, walking, mindfulness, and sleep hygiene, and a Dialectical Behaviour Therapy group. The planned relocation to the originally intended site at the hospital may provide the potential to increase capacity of the service, including the possibility of operating as a Day Centre, where consumers would spend time at the centre apart from their scheduled attendance in group activities. The service is open from 8.30 a.m. to 4.51 p.m. on weekdays. Staff include 1 FTE Team Leader who is a clinical psychologist with a clinical role in addition to management role, 2 FTE psychologists, 1 FTE intern psychologist, 2 FTE nursing staff, 0.2 FTE consultant psychiatrist and 0.6 FTE registrar.

Table 18 Non-acute non-mobile Outpatient care provided by the public health sector: availability (2016).

Provider	Name	Main DESDE Code	Town/ Suburb	Area of Coverage
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - City	GX[F00-F99]-O8.1q	Canberra	All suburbs of City catchment area
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - Gungahlin	GX[F00-F99]-O8.1q	Gungahlin	All suburbs of Gungahlin catchment area
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - Tuggeranong	GX[F00-F99]-O8.1q	Greenway	All suburbs of Tuggeranong catchment

Community Mental Health Services				area
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - Woden at Phillip Health Centre	GX[F00-F99]-O8.1q	Phillip	All suburbs of Woden catchment area
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team- Belconnen	GX[F00-F99]-O8.1q	Belconnen	All suburbs of Belconnen catchment area
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	AX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Capital Health Network	Health In Mind	GX[F00-F99]-O9.1u	ACT	0
Total	15			
Rate per 100,000 residents (>17 years old)	5.4			

CMHT are staffed by a range of health and allied health professionals, predominantly nurses, but also medical and allied health staff, and recovery support workers. The panel of Health In Mind providers may include psychologists, mental health nurses or mental health credentialed social workers. **There are 73.88, or 26.67 FTE per 100,000 residents providing non-acute non-mobile care in the public health sector.**

Table 19 Non-acute non-mobile Outpatient care provided by the public health sector: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT	Other
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - City	17.74	3.0	4.0	5.74	2.0	1.0	2.0
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - Gungahlin	8.1	1.6	1.0	3.0	2.0		0.5
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - Tuggeranong	12.4	2.4	2.0	4.0	2.0	1.0	1.0
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - Woden at Phillip Health Centre	14.0	2.0	3.0	6.0	1.0	1.0	1.0
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Adult Community Mental Health Services	Community Mental Health Team - Belconnen	19.64	3.0	3.8	6.84	3.0	2.0	1.0
Capital Health Network	Health In Mind	0.2		0.2				
Capital Health Network	Health In Mind	0.2		0.2				
Capital Health Network	Health In Mind	0.2		0.2				
Capital Health Network	Health In Mind	0.2		0.2				
Capital Health Network	Health In Mind	0.2		0.2				
Capital Health Network	Health In Mind	0.2		0.2				
Capital Health Network	Health In Mind	0.2		0.2				

Capital Health Network	Health In Mind	0.2	0.2
Capital Health Network	Health In Mind	0.2	0.2
Capital Health Network	Health In Mind	0.2	0.2
Total		73.88	
Rate per 100,000 residents (>17 years old)		26.67	

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker; OT: Occupational therapist.

3.2.3.2 OUTPATIENT CARE PROVIDED BY THE NGO SECTOR

ACUTE MOBILE AND NON-MOBILE OUTPATIENT CARE

We were unable to identify any acute mobile or acute non- mobile BSICs provided by NGOs in the ACT PHN region.

NON-ACUTE MOBILE OUTPATIENT CARE

We identified eight BSIC/services in the NGO sector providing non- acute mobile outpatient care to adults.

One of these BSICs provides health related care. The Transition to Recovery (TRec) program provided by Woden Community Service provides step up/step down support from 9am to 9pm, seven days a week, for up to three months, for people discharged from hospital. It aims to assist people to transition to the community following an acute episode of mental illness and to prevent relapse and also to provide additional support for people with sub-acute symptoms to prevent hospitalisation. It is a partnership with ACT Health, providing individual programs and recovery plans. Support is commenced prior to discharge, with assistance related to the transfer from hospital to community: this second MTC is coded as Accessibility and is included later in the report in the relevant section.

Four BSICs are Personal Helpers and Mentors (PHAMs). PHAMs is a recovery based program which provides practical assistance to people over 16 years whose lives are severely affected by mental illness, to manage their daily activities, prevent social isolation, and to live independently in the community. Woden Community Service PHAMs has two programs, one of which is general PHAMs support, and the other employment related. The general program's coverage area is the southside of Canberra, while the employment program covers the whole of the ACT. Richmond Fellowship ACT provides a PHAMs program in Queanbeyan (NSW) and also in Goulburn/Crookwell (NSW), and therefore not mapped here. The PHAMs program is closing at the end of 2017, with funding decreasing and consumers being redirected into NDIS packages.

Woden Community Service Partners in Recovery program (PIR) includes two social workers who provide care co-ordination. In the ACT PHN region, a consortium of providers act as agencies for the provision of PIR support facilitators. Partners In Recovery is a program to assist individuals with severe and persistent mental health concerns to develop plans and access and integrate available supports. This suggests that all PIR BSICs will be coded as Accessibility services. Interestingly, though, some PIRs are providing more direct care provision, as we see here, and thus being coded accordingly, as Outpatient care.

Catholic Care provide a Home Care Support program providing daily psychosocial support with living skills. St. Vincent de Paul Family Services' Mental Health Services Team predominantly provides case co-ordination but also provides some direct support.

A Supportive Tenancy program provided jointly between Woden, Belconnen and YWCA is not specific to people with mental health needs and is therefore not coded here.

Five BSIC have been coded with the “v” qualifier as they do not have guaranteed funding for three years.

There are 8 BSICs, or 2.8 per 100,000 residents over the age of 17 years providing non- acute mobile care in the NGO sector.

Non- acute mobile outpatient care that is gender specific is described elsewhere.

Table 20 Non-acute mobile Outpatient care provided by NGOs: availability and capacity (2016).

Provider	Name	Main Desde Code	Other Desde Code(s)	Beds/Places	FT E	Town / Suburb	Area of Coverage
Catholic Care	Home care support	GX[F00-F99]-O6.2			1.0	0	0
Mental Health Foundation	PHAMS	AX[F00-F99]-O6.2v			3.7	Chifley	ACT
Richmond fellowship ACT	PHAMS - Belconnen/ Gunghalin	AX[F00-F99]-O6.2v			1.0	Pialligo	Belconnen/ Gunghalin
St Vincent De Paul Family Services ACT	Mental Health Services Team	AX[F00-F99]-O6.2m,v			8.0	Deakin	ACT
Well Ways - previously known as Mental Illness Fellowship	Detention Exit program	AX[F00-F99]-O5.2.1		16	3.0	O'Connor	ACT
Woden Community Service	PHAMS	AX[F00-F99]-O6.2m,g,v			6.1	Woden	Southside of Canberra

Woden Community Service	PIR	AX[F00-F99]-O6.2v		2.0	Woden	Woden area
Woden Community Service	Transition to recovery program (TRec)	AX[F00-F99]-O5.1.2g	AX[F00-F99]-A4.1h	6.8	Woden	ACT
Total	8					
Rate per 100,000 residents (>17 years old)	2.8					

The workforce in non-acute mobile care services provided by NGOs are mostly support workers, or other social care workers. There are 31.6 FTE, or 12.8 per 100,000 residents over the age of 17 years, providing non-acute mobile care in the NGO sector.

Table 21 Non-acute mobile Outpatient care provided by NGOs: workforce capacity (2016).

Provider	Name	Total FTE	SW	nCCM	SupW	Peer	Others
CatholicCare	Home care support	1.0			1.0		
Mental Health Foundation	PHAMS	3.7			3.5	0.2	
Richmond fellowship ACT	PHAMS - Belconnen/ Gunghalin	1.0					1.0
St Vincent De Paul Family Services ACT	Mental Health Services Team	8.0		3.0	5.0		
Well Ways - previously known as Mental Illness Fellowship	Detention Exit Program	3.0					3.0
Woden Community Service	PHAMS	6.1					6.1
Woden Community Service	PIR	2.0	2.0				
Woden Community Service	Transition to recovery program (TRec)	6.8			5.0		1.8
Total			31.6				
Rate per 100,000 residents (>17 years old)			12.8				

NON-ACUTE NON-MOBILE OUTPATIENT CARE

We identified six NGO funded BSICs/services, including seven MTCs, providing non-acute non-mobile outpatient care. All except one provide health related care. New Access is a guided self-help model service, originally marketed particularly towards men at increased risk of suicidality who would not usually access mental health services, but now more generally focused. It is a short term (six session) coaching based program, co-located at Headspace and ACT PHN, providing low intensity cognitive behavioural therapy (CBT). It was initially funded by Beyond Blue until October 2016, with interim funding then provided by the ACT PHN until the commissioning of services in early 2017.

Relationships Australia provides two BSICs in this category: the Gambling Counselling & Support Service, which has two arms: an intake and screening service operated from Relationships Australia (Queensland), which is included in the Information section of this report; and a service staffed by counsellors and psychologists or social workers operating from the Deakin office, providing follow up to calls made to the intake service, counselling, and case facilitation. It also provides an outreach service to the prison. The service is funded by the ACT government through the Racing and Gambling Commission. The second BSIC provided by Relationships Australia in this category is Coronial Counselling, which is a relatively new service, providing bereavement/grief counselling to people affected by suicide. Referrals come via the Magistrates' Court. While not a crisis service, it can provide support fairly immediately.

The Better Access and ATAPS team is provided by Catholic Care include a bulk-billing Better Access program to assist people to access no cost counselling, and access to ATAPS.

We identified one specialised BSIC providing counselling specifically to the deaf and deaf-blind community. Unique Psychological Services provides psychological support to people from the age of seven years up, who are deaf or deaf/blind. The service is based outside the ACT, but the practitioner travels to the ACT once a fortnight to work with ACT clients.

Social support to prevent or reduce isolation, and provide linkages to relevant support services where necessary, for gender diverse and intersex people, is provided by A Gender Agenda, who have also established a network of mental health service providers able to support other health professionals to understand issues related to intersex and gender diverse clients.

Three BSIC have been coded with the "v" qualifier as they do not have guaranteed funding for three years.

There are 6 BSICs, or 2.2 per 100,000 residents over 17 years of age providing non-acute non-mobile care in the NGO sector.

Table 22 Non-acute non-mobile outpatient care provided by NGOs: availability (2016).

Provider	Name	Main DESDE Code	Other DESDE code(s)	Town/Suburb	Area of Coverage
A Gender Agenda (AGA)	Social Support & Linkage	AX[F00-F99]-O10.2		Ainslie	ACT
Capital Health Network	NewAccess	AX[F3X]-O9.1v		Deakin	0
CatholicCare	Better Access and ATAPS Team	GX[F00-F99]-O8.1	GX[F00-F99]-O9.1	Woden	0
Relationships Australia ACT	ACT Coronial Counselling Service	AX[Z63.4][T14.91]-O9.1		Deakin	ACT
Relationships Australia ACT	ACT Gambling Counselling & Support Service	AX[F00-F99]-O8.1v		Deakin	ACT strictly only
Unique Psychological Services	Deaf and deaf/blind person Mental Health Counselling Service	AX[F00-F99]-O10.1uv		Civic	ACT
Total	6				
Rate per 100,000 residents (>17 years old)	2.2				

The workforce here is mixed, including psychologists, which reflects the counselling services largely available in this category, as well as other care workers. **There are 10.1 FTEs, or 3.6 per 100,000 residents over the age of 17 years, providing non-acute non-mobile care in the NGO sector.**

Table 23 Non-acute non-mobile outpatient care provided by NGOs: workforce capacity (2016).

Provider	Name	TotalFTE	Psych/Reg	Psychol	SW	Others
A Gender Agenda(AGA)	Social Support and Linkage	2.6				2.6
Capital Health Network	New Access	4.0	2.0			2.0
CatholicCare	Better Access and ATAPS Team	NA				

Relationships Australia ACT	ACT Coronial Counselling Service	1.2			1.2
Relationships Australia ACT	ACT Gambling Counselling and Support Service	2.1	1.0	1.0	0.1
Unique Psychological Services	Deaf and Deaf/Blind Person Mental Health Counselling Service	0.2	0.2		
Total		10.1			
Rate per 100,000 residents (>17 years old)		3.6			

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; SW: Social worker.NA: Not Available

3.2.4. ACCESSIBILITY SERVICES

3.2.4.1 ACCESSIBILITY SERVICES PROVIDED BY THE PUBLIC HEALTH SECTOR

We did not identify any BSICs providing accessibility support in the public health sector.

3.2.4.2. ACCESSIBILITY SERVICES PROVIDED BY THE NGO SECTOR

We identified 9 BSICs/services providing Accessibility support to people with lived experience of mental illness in the NGO sector. In addition, a 2nd MTC to the Day to Day Living program, (coded as Day care/programs) run by Sunflower Services (previously Schizophrenia Fellowship NSW) assists clients to link with other services and work at achievable goals, and is also now assisting with NDIS paperwork ; and a 2nd MTC to Transition to Recovery, (coded in Outpatients non- acute mobile) provided by Woden Community Service, also provides accessibility services, bringing to 11 the total number of MTC in the NGO sector assisting with accessibility.

The PIR teams at Richmond Fellowship, Catholic Care, ACT PHN and Northside Community Service provide mostly care co-ordination and accessibility to support. Roles played by support facilitators include assisting consumers with the process of transition to the NDIS, and in some cases, a level of direct care provision is also occurring, such as taking people to doctor's appointments. See separate PIR section for more information on PIR services. Referrals to ACT PHN PIR closed from July 2016, with funding for remaining clients until 2017.

Woden Community Service provide The Wayback Support Service, commencing in late 2016. Funded by ACT Health via Beyond Blue, and one of three trial sites (the others being the Hunter Valley and the Northern Territory), this is a time limited (up to three months) referral pathway for people newly discharged from hospital post suicide attempt, to connect with supports. Clinical referral is made prior to discharge, with the intensity of

care co-ordination provided according to individual need. Suicide as a coping mechanism is an exclusion criteria for access to this program. As mentioned above in the Outpatient section, Woden TRec service also provide a second MTC in Accessibility support prior to hospital discharge, with assistance related to the transfer from hospital to community.

Catholic Care provide a mental health social worker, as well as an Alcohol and other Drugs worker, to help people co-ordinate NDIS supports. The Trauma Support Service provided by Relationships Australia is to assist with information such as file searching for people who have suffered from past systemic abuse. Community Connections, while mostly serving people with other disability, such as intellectual disability, provides some case co-ordination, and occasional direct care if needed, for a small number of people with mental health issues such as schizophrenia and anxiety. They also provide a Homeshare service which matches and monitors volunteers to support a person to live independently in their home through sharing the home with them. We have not mapped this service as it is not specifically for people with mental health needs. Volunteering and Contact ACT provides a Connections service which matches people with mental health issues with a volunteer in order to establish a supportive relationship. It is hoped that relationships will last for at least 18 months, or even go on to develop into friendships.

Six BSIC have been coded with the “v” qualifier as they do not have guaranteed funding for three years.

There are 9 BSICs, or 3.2 per 100,000 residents over the age of 17 years, providing accessibility support in the NGO sector.

Table 24 Accessibility services provided by NGO: availability (2016).

Provider	Name	Main DESDE Code	Town/Suburb	Area of Coverage
Capital Health Network PIR	PIR	GX[F00-F99]-A4.2v	Deakin	0
CatholicCare	NDIS Program	GX[F00-F99]-A4.2	0	0
CatholicCare	PIR	AX[F00-F99]-A4.2.2	0	0
Community Connections - ACT	Community Connections	AX[F00-F99]-A4.2.2v	Kambah	ACT
Northside Community Service	PIR	GX[F00-F99]-A4.2.2v	Dickson	ACT
Relationships Australia ACT	Trauma SupportService	AX[F43]-A4.2	Deakin	ACT
Richmond fellowship ACT	PIR	AX[F00-F99]-A4.2v	Pialligo	ACT
Volunteering and Contact ACT	Connections	GX[F00-F99]-A4.2v	Canberra City	ACT

Woden Community Service	The Way Back Support Service	GX[Z63.4][T14.91]-A4.2.1v	ACT and surrounding region if geographically possible
Total	9		
Rate per 100,000 residents (>17 years old)	3.2		

The workforce capacity providing accessibility services funded by NGOs is 24.2 FTE, or 8.7 per 100,000 residents over the age of 17 years. As well as a range of care workers, there are also some social work and psychology staff employed by NGOs in this category of care. Please note PIR services are also coded in a separate PIR section.

Table 25 Accessibility services provided by NGO: workforce capacity (2016).

Provider	Name	Total FTE	Psychol	SW	MHW	Sup W	Others
Capital Health Network PIR	PIR-CHN	12.0		2.8	9.2		
CatholicCare	NDIS Program	1.0		1.0			
CatholicCare	PIR	3.5		1.8			1.7
Community Connections - ACT	Community Connections	1.0					1.0
Northside Community Service	PIR	1.0				1.0	
Relationships Australia ACT	Trauma Support Service	0.2					0.2
Richmond fellowship ACT	PIR	2.0					2.0
Volunteering and Contact ACT	Connections	1.0	1.0				
Woden Community Service	The Way Back Support Service	2.5					2.5
Total		24.2					

Rate per 100,000 residents (>17 years old)

8.7

FTE: Full Time Equivalents; Psychol: Psychologist; SW: Social worker; MHW: Mental health worker; SupW: Support worker/Community worker.

PARTNERS IN RECOVERY

In the ACT PHN region, Partners in Recovery is provided by a consortium of five providers: ACT PHN at Deakin, CatholicCare, Northside Community Service, Richmond Fellowship and Woden Community Service. Anglicare previously also provided PIR. The main objective of the PIR program is to increase accessibility to a different range of services for people with a lived experience of mental illness. Theoretically, the code of the PIR program should be an A4 (accessibility/care manager), but some organisations in other regions report that they are providing more intensive direct day care, so they received an outpatient code (O5.2). Unlike these other regions, in the ACT, with one exception, Partners in Recovery BSICs are providing accessibility through case management type activities, so have been coded as Accessibility services. **There are 5 PIR, or 1.8 per 100,000 residents over the age of 17 years.**

These BSIC have been coded with the “v” qualifier as they do not have guaranteed funding for three years.

Table 26 PIR programs: availability (2016).

Provider	Name	Main DESDE Code	Town / Suburb	Area of Coverage
Capital Health Network PIR	PIR-CHN	GX[F00-F99]-A4.2v	Deakin	0
CatholicCare	PIR	AX[F00-F99]-A4.2.2	0	0
Northside Community Service	PIR	GX[F00-F99]-A4.2.2v	Dickson	ACT
Richmond ACT fellowship	PIR	AX[F00-F99]-A4.2v	Pialligo	ACT
Woden Community Service	PIR	AX[F00-F99]-O6.2vm	Woden	Woden area
Total	5			
Rate per 100,000 residents (>17 years old)	1.8			

PIR services are also coded in the Outpatient and Accessibility sections.

The workforce capacity of PIR programs is 20.5, or 7.4 per 100,000 residents over the age of 17 years in the ACT PHN region, and is comprised of a range of care workers, as well as some social workers.

Table 27 PIR programs: workforce capacity (2016).

Provider	Name	Total FTE	MHW	SW	SupW	Others
Capital Health Network PIR	PIR-CHN	12.0	9.2	2.8		
CatholicCare	PIR	3.5		1.8		1.7
Northside Community Service	PIR	1.0			1.0	
Richmond fellowship ACT	PIR	2.0				2.0
Woden Community Service	PIR	2.0		2.0		
Total		20.5				
Rate per 100,000 residents (>17 years old)		7.4				

FTE: Full Time Equivalents; MHW: Mental health worker; SW: Social worker; SupW: Support worker/Community worker.

3.2.5. INFORMATION AND GUIDANCE SERVICES

3.2.5.1 INFORMATION AND GUIDANCE SERVICES PROVIDED BY THE PUBLIC HEALTH SECTOR

We identified two Information and Guidance BSICs/services provided by the public health sector. The Mental Health Neuropsychology service located at Woden Health Centre provides specialised neuropsychology assessment and consultation, and the Dual Diagnosis Service, also at Woden, liaises with health professionals and services about issues related to substance abuse and mental illness comorbidity. **There are 2 BSICs, or 0.7 per 100,000 residents over the age of 17 years, providing Information or Guidance in the public health sector, with a workforce capacity of four, or 1.4 per 100,000 residents.**

Table 28 Information and Guidance services provided by the public health sector: availability (2016).

Provider	Name	Main DESDE Code	Town / Suburb	Area Coverage	of
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	Mental Health Neuropsychology	GX[F00-F99]-II.1s	Phillip	ACT	
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	MH&ADS Comorbidity Worker (Dual Diagnosis Service)	GX[F10-F19]-II.1	Phillip	ACT	
Total	2				
Rate per 100,000 residents (>17 years old)	0.7				

Table 29 Information and Guidance services provided by the public health sector: workforce capacity (2016).

Provider	Name	Total FTE	Psychol	MHN
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	Mental Health Neuropsychology	3.0	3.0	
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	MH&ADS Comorbidity Worker (Dual Diagnosis Service)	1.0		1.0
Total		4.0		
Rate per 100,000 residents (>17 years old)		1.4		

FTE: Full Time Equivalents; Psychol: Psychologist; MHN: Mental health nurse.

3.2.5.2 INFORMATION AND GUIDANCE SERVICES PROVIDED BY THE NGO SECTOR.

We have identified 2 Information and Guidance BSICs/services provided by the NGO sector. Advocates with backgrounds in law, social work, or community services from the A.C.T. Disability, Aged and Carer Advocacy Service (ADACAS) work with the consumer to provide independent individual advocacy and supported decision making.

ADACAS provides support to a range of people with disabilities but has some specifically mental health funding. Relationships Australia provides an Information and assessment service as part of their Gambling Counselling & Support Service. A 24 hour telephone triage system provides information, assessment and therapeutic intake. Consumers can also at this time be booked into for an appointment with the service. The service is available both to the person with the issues themselves and to those affected.

One BSIC has been coded with the “v” qualifier as it does not have guaranteed funding for three years.

There are 2 BSICs, or 0.7 BSICs per 100,000 residents over the age of 17 years providing Information or Guidance in the NGO sector.

Table 30 Information and Guidance services provided by NGOs: availability (2016).

Provider	Name	Main DESDE Code	Town/Suburb	Area of Coverage
Relationships Australia ACT	ACT Gambling Counselling & Support Service: Information	AX[F00-F99]-11.1	0	0
The A.C.T. Disability, Aged and Carer Advocacy Service (ADACAS)	ADACAS	GX[F00-F99]-11v	Watson	ACT
Total	2			
Rate per 100,000 residents (>17 years old)	0.7			

Table 31 Information and Guidance services provided by NGOs: workforce capacity (2016).

Provider	Name	Total FTE
Relationships Australia ACT	ACT Gambling Counselling & Support Service: Information	NA
The A.C.T. Disability, Aged and Carer Advocacy Service (ADACAS)	ADACAS	1.5
Total		1.5
Rate per 100,000 residents (>17 years old)		0.5

FTE: Full Time Equivalents. NA: Not Available

3.2.6 SELF AND VOLUNTARY SUPPORT

3.2.6.1 SELF-HELP AND VOLUNTARY SUPPORT PROVIDED BY THE PUBLIC HEALTH SECTOR

We did not identify any BSICs providing Self-help and Voluntary support provided by the Public Health sector.

3.2.6.2 SELF AND VOLUNTARY SUPPORT PROVIDED BY THE NGO SECTOR

We have identified two Self-help and Voluntary BSICs/services provided by the NGO sector for people with a lived experience of mental illness in the ACT PHN region. GROW provide a once a week group program, focussing on personal growth, and self-support. Peer support is available. A field worker supports the group once a month and there is also access to a counsellor (a naturopath). The Compeer service run by St Vincent de Paul Society, aims to improve the quality of life of adults with a mental illness through one-to-one friendship with a caring volunteer. Applicants for the Compeer program must be receiving ongoing care from a health professional who actively supports their participation in the program. This service provides non clinical case management support. **There are 2 BSICs, or 0.7 per 100,000 residents over the age of 17 years providing self help or voluntary support in the NGO sector.**

Table 32 Self and Voluntary support provided by NGOs: availability (2016).

Provider	Name	Main DESDE Code	Town / Suburb	Area of Coverage
Grow - ACT	Group program workshops	AX[F00-F99]-S1.3g	Narrabundah	ACT
St Vincent De Paul Family Services ACT	Compeer	AX[F00-F99]-S1.3	Deakin	ACT
Total	2			
Rate per 100,000 residents (>17 years old)	0.7			

Table 33 Self and Voluntary support provided by NGOs: workforce capacity (2016).

Provider	Name	Total FTE	nCCM	SupW
Grow - ACT	Group program workshops	0.1		0.1
St Vincent De Paul Family Services ACT	Compeer	1.0	1.0	
Total		1.1		
Rate per 100,000 residents (>17 years old)		0.4		

FTE: Full Time Equivalents; nCCM: Non-clinical case manager; SupW: Support worker/Community worker.

3.3. AGE SPECIFIC POPULATIONS

3.3.1 CHILD AND ADOLESCENT SERVICES

3.3.1.1 CHILD AND ADOLESCENT SERVICES PROVIDED BY THE PUBLIC SECTOR

The public sector provides four BSICs for children and adolescents. Three of these are provided by Children and Adolescent Mental Health Service (CAMHS), and the fourth by Child and Youth Protection Services (CYPS). An Early Intervention Program for those aged 14-25 years is coded in the general services section above.

CAMHS provide care through the Woden and Belconnen Community Teams, and the Cottage Adolescent Day Program, which assists adolescents to reduce symptoms of moderate to severe mental health issues and improve functioning in education, and life and social skills. Melaleuca Place is a service provided by Child and Youth Protection Services (CYPS). It provides targeted interventions for children up to the age of 12 years presenting with a history of trauma, who are also involved with Child and Youth Protection Services. It is an outreach service working with the child's support system-schools, care placement or similar. It also runs groups for children on issues such as grief and loss, and groups working on children's ability for emotion control and sense of safety.

Melaleuca Place accepts referrals from CYPS. **There are 4 BSICs, or 5 per 100,000 residents under the age of 18 years, providing care to children and adolescents in the public health sector.**

Table 34 Services for children and adolescents provided by the public health sector: availability and capacity (2016).

Provider	Name	Main DESDE Code	Beds/Places	Town/Suburb	Area of Coverage
Child and Youth Protection Services	Melaleuca Place	CC[F00-F99]-O5.1.1g	40	Dickson	ACT

ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Child and Adolescent Mental Health Services	Cottage Adolescents Day program	CA[F00-F99]-D4.1	Bruce	ACT
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Child and Adolescent Mental Health Services	Northside Community Team - Belconnen	CX[F00-F99]-O8.1	Belconnen	Northside- City, Belconnen, Gungahlin areas
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services- Child and Adolescent Mental Health Services	Southside Community Team- Woden	CX[F00-F99]-O8.1	Woden	Southside- Woden, Tuggeranong, Weston Creek areas
Total	4			40
Rate per 100,000 residents (<17 years old)				50.3

The Melaleuca Place team includes a psychiatrist one day a week, clinical psychology, social workers, and occupational therapists. The Cottage Adolescents Day Program includes one Recovery Support Officer. This Workforce also covers CAMHS DBT Program. **There are 34.7 FTEs, or 37.9 per 100,000 residents under the age of 18 years, providing care for children and adolescents in the public health sector.**

Table 35 Services for children and adolescents provided by the public health sector: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT	Other
Child and Youth Protection Services	Melaleuca Place	4.1	0.2				0.2	3.7
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Child and Adolescent Mental Health Services	Cottage Adolescents Day program	7.1		5.1	1.0			1.0

ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Child and Adolescent Mental Health Services	Northside Community Team - Belconnen	11.0	0.6	4.4	2.0	4.0
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Child and Adolescent Mental Health Services	Southside Community Team- Woden	12.5	0.4	4.0	3.5	4.6
Total		34.7				
Rate per 100,000 residents (<17 years old)		37.9				

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; SW: Social worker; OT: Occupational therapist.

*FTE also covers CAMHS DBT program

3.3.1.2. CHILD AND ADOLESCENT SERVICES PROVIDED BY THE NGOSECTOR

We identified six BSICs, provided by NGOs, incorporating seven MTC, providing care to children and adolescents. Residential care for adolescents and young adults for up to three months is provided by Catholic Care - these services also include 0.8 support from a CAMHS mental health nurse. Catholic Care also provide Youth Wellbeing service, which provides outreach based case management.

New Horizons, provided by Marymead, is an early intervention, mostly outreach service providing care for children in Canberra and Queanbeyan from 0-18 years, within a family context. Waiting lists for care are supported by an “Active Hold” strategy which takes phonecalls, refers people when necessary, and by the provision of groups such as Circle of Security (intensive therapy), and anger management groups.

Barnardo’s Therapeutic Services Team works with foster families of children who are in respite, due to their own or their family member’s mental health issues, to provide children therapeutic specialist care, from professionals including psychologists, social workers or counsellors. Circles of Support, provided by the YWCA, is a counselling service, providing support for traumatised children and adolescents aged 8-15 years and their families. Circles of Support see children at the community centre at Lanyon, Kippax, and also via outreach. The Bungee Youth Resilience Program provided by the Belconnen Community Centre is a school based, activity based, arts based service supporting children aged 8-16 years, with mild to moderate mental health needs, or facing other challenges such as bullying, with one to one counselling, groups, and in school programs.

Two BSIC have been coded with the “v” qualifier as they do not have guaranteed funding for three years.

There are 6 BSICs, or 7.5 BSICs per 100,000 residents under the age of 17 years providing care for children and adolescents in the NGO sector, with a workforce capacity of 20.9, or 26.3 per 100,000 children and adolescents.

Table 36 Services for children and adolescents provided by NGO: availability and capacity (2016).

Provider	Name	Main Code	DESDE	Other DESDE Code(s)	Beds/Places	Town/Suburb	Area Coverage
Barnardos Australia - Canberra	Therapeutic Services Team	CC[F00-F99]-O6.2m		CC[F00-F99]-A4.2		Downer	ACT
Belconnen Community Service	Bungee	CX[F00-F99]-O9.2g				Belconnen	ACT
CatholicCare	Steps Residential Service	CA[F00-F99]-R8.2			5	Watson	0
Headspace	Headspace Canberra	TA[F00-F99]-O10.1v				Bruce	ACT
Marymead	New Horizons	CX[F00-F99]-O6.1				Narrabundah	ACT and southern and western regional areas of NSW
YWCA	Circles of Support	CX-[F00-F99]O9.1v				Canberra City	ACT
Total	6						
Rate per 100,000 Residents(<18 years old)	7.5						

Table 37 Services for children and adolescents provided by NGOs: workforce capacity (2016).

Provider	Name	Total FTE	Psychol	SW	OT	SupW	Other
Barnardos Australia Canberra	Therapeutic Services Team	6.0					6.0
Belconnen Community Service	Bungee	2.0					2.0

CatholicCare	Steps Residential Service	NA				
Headspace	Headspace Canberra	5.0	3.0		2.0	
Marymead	New Horizons	5.8	1.0	2.0	0.8	2.0
YWCA	Circles of Support	2.1				2.1
Total		20.9				
Rate per 100,000 residents (<18 years old)		26.3				

FTE: Full Time Equivalents; Psychol: Psychologist; SW: Social worker; OT: Occupational therapist; SupW: Support worker/Community worker; Edu: Educator.

3.3.2 TRANSITION TO ADULthood

3.3.2.1 TRANSITION TO ADULthood SERVICES PROVIDED BY THE PUBLIC HEALTH SECTOR

We did not identify any Transition to Adulthood Services provided by the public health sector. However, it is important to mention the CAMHS Early Intervention team for people aged 14-25 years, which is described above in the section on adult non-acute mobile care.

3.3.2.2 TRANSITION TO ADULthood SERVICES PROVIDED BY THE NGOSECTOR

We identified seven BSICs providing care to this population in the ACT PHN region.

Anglicare provides one outpatient, and two day support services aimed at the transition to adulthood age group. The Junction provides a multidisciplinary team including general practitioner, nursing and allied health. The service works closely with Headspace. The Youth Education Program supports young people unable to engage with mainstream education to gain life skills, and a Year 10 equivalent qualification. The Drop-In (Youth Engagement) daycare service provides “drop-in” food and internet access, emergency relief such as sleeping bags or brokerage for groceries, and may also refer to other services. Approximately 70-80% of clients have mental health issues.

Catholic Care provides a Youth and Wellbeing Outreach service which is wholly mobile, and Wellways provides the Youth Step and Step Down residential service, which is the only residential service specifically for this age group.

Headspace provides assessment and psychological interventions, mostly through

counselling, to adolescents aged 12-25 years. It also provides group work such as the Cognitive Behavioural Therapy based “Healthy Skills Workshop”. It also mitigates waiting list times through the provision of information and engagement sessions twice a month. Its area of coverage includes a small area outside the ACT as well as the whole of the ACT.

One BSIC, provided by Menslink, is gender specific. This service provides counselling and mentoring to young men, travelling to schools and other organisations to talk about young men’s issues, men’s mental health, mental fitness, suicide prevention, volunteering or about the work Menslink does in the community

Five of the seven BSICs are coded v” for lack of guaranteed funding for three years.

There are 7 BSICs, or 12.4 BSICs per 100,000 residents aged between 16 and 25 years, providing care for young people transitioning to adulthood, with a workforce capacity of 27.3, or 48.3 FTEs per 100,000 young people aged between 16 and 25 years of age.

Table 38 Services for transition to adulthood provided by NGOs: availability and capacity (2016).

Provider	Name	Main DESDE Code	Bed/Places	Town /Suburb	Area of Coverage
Anglicare ACT	Cyclops	CY[e310][F00-F99]-O6.1v	36	Canberra City	ACT
Anglicare ACT	The Junction	CY[F00-F99]-O9.2v		Canberra City	ACT
Anglicare ACT	Youth Education Program	CY[F00-F99]-D4.2v	25	Canberra City	ACT
Anglicare ACT	Youth Engagement Program	CY[F00-F99]-D5v		Canberra City	ACT
CatholicCare	Youth Wellbeing & Outreach Service	TA[F00-F99]-O6.2w	25	Watson	ACT
Menslink	Counselling Service	CY[M][F00-F99]-O9.1v		Holder	ACT plus Queanbeyan, have had people as far away as Goulburn and Cooma
Well Ways - (previously known as Mental Illness Fellowship)/Mental Health Services	Youth Step up and Step down	TA[F00-F99]-R8.2	6	Kambah	ACT
Total	7				

Rate per 100,000 residents (16-25 years old)	12.4
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Table 39 Services for transition to adulthood provided by NGOs: workforce capacity (2016).

Provider	Name	Total FTE	Psychol	GP	MHN	SW	Sup W	Edu	Others
Anglicare ACT	Cyclops	3.0	1.0				1.0		1.0
Anglicare ACT	The Junction	10.8	1.0	2.0	1.0		5.0		1.8
Anglicare ACT	Youth Education Program	3.0					2.0	1.0	
Anglicare ACT	Youth Engagement Program	3.0					3.0		
CatholicCare	Youth & Wellbeing Outreach Service	1.0				1.0			
Menslink	Counselling Service	2.5							2.5
Well Ways (previously known as Mental Illness Fellowship)/Mental Health Services	Youth Step up and Step down	4.0							4.0
Total		27.3							
Rate per 100,000 residents (16-25 years old)		48.3							

FTE: Full Time Equivalents; Psychol: Psychologist; GP: General practitioner; MHN: Mental health nurse; SW: Social worker; SupW: Support worker/Community worker; Edu: Educator.

3.3.3 SERVICES FOR OLDER ADULTS

We have identified two BSICs/services providing care to people aged 65 years and over with a lived experience of mental illness in the ACT PHN region. Both services are provided by the public health sector and located at Calvary Hospital, and are delivered by a range of health professionals. One BSIC is the inpatient unit for older persons, and the other is the Older Persons Mental Health Service (OPMHS) Community Team, which includes a Recovery Support Officer in addition to clinical staff. There is an additional

1.0 junior medical officer on rotation to the Older Persons Mental Health Inpatient Unit on rotation between Canberra and Calvary Hospitals.

There are 2 BSICs, or 5.2 BSICs per 100,000 adults over the age of 64 year providing care specifically for adults over the age of 64 years in the public health sector.

Table 40 Services providing care for older people in the public health sector: availability and capacity (2016).

Provider	Name	Main DESDE Code	Other DESDE Code(s)	Beds/ Places	Town/ Suburb	Area Of Coverage
Calvary Healthcare Mental Health Services-Calvary Hospital	Older Persons Mental Health Inpatient Unit	OX[F00-F99]-R2	OX[F00-F99]-R2	15	Bruce	ACT
Calvary Healthcare Mental Health Services-Calvary Hospital	Older Persons Mental Health Service (OPMHS) Community Team	OX[F00-F99]-O6.1			Bruce	ACT
Total	2			15		
Rate per 100,000 residents (>64 years old)	5.2			39.3		

Table 41 Services providing care for older people in public health: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT	Other
Calvary Healthcare Mental Health Services-Calvary Hospital	Older Persons Mental Health Inpatient Unit	NA	NA	0.6	23	0.5	1.5	
Calvary Healthcare Mental Health Services-Calvary Hospital	Older Persons Mental Health Service (OPMHS) Community team	20.5	2.5	4.0	9.0	3.0	1.0	1.0
Total		NA						
Rate per 100,000 residents (>64 years old)								

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker; OT: Occupational therapist.NA: Not Available or incomplete

3.4. NON AGE –RELATED SPECIFIC POPULATIONS

3.4.1 GENDER SPECIFIC SERVICES

We have identified a total of ten BSICs providing gender specific support in the ACT PHN region. An additional gender specific service for young men is described in the Transition to Adulthood section.

3.4.1.1 GENDER SPECIFIC SERVICES PROVIDED BY THE PUBLIC HEALTH SECTOR

The Perinatal Mental Health Consultation Liaison Service provides mental health assessment, treatment and other services including support, advice and referrals for women from conception to 12 months after giving birth. It does not provide crisis care. Clients in crisis are referred to the Mental Health Crisis Team. Referrals are triaged using the Mental Health Triage scale, and may proceed to full face to face assessment if indicated, either at their Woden offices or at the Centenary Hospital for Women and Children. Following the full assessment there are a number of pathways that may follow in discussion with the client. This may include referral to another service and +/- ongoing supportive contact from PMHCS. In some cases the client may be offered short term therapeutic intervention, individually or in a group setting. Also if indicated an appointment with the Consultant Psychiatrist or Psychiatric Registrar (in a one day a week clinic) may be offered. This service may often be the only service clients are connected with and it will provide support until they are linked in with an adult community team if clinical management is indicated.

There is 1 BSIC, or 2.6 BSICs per female residents over the age of 17 years in the ACT PHN region provided by the public health sector), with a workforce capacity of 4.2, or 10.9 per 100,000 women in the public health sector.

Table 42 Services providing gender specific care in the public health sector: availability (2016).

Provider	Name	Main DESDE Code	Town / Suburb	Area of Coverage
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Child and Adolescent Mental Health Services	Perinatal MH Consultation Liaison Service	GX[F][F53]-O8.11	Woden	ACT
Total	1			
Rate per 100,000 residents (female <18 years old)	2.6			

Table 43 Services providing gender specific care in the public health sector: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT
ACT Health, Justice and Services- Adolescent Mental Health Services	Mental Health, Perinatal MH Consultation Liaison Service	4.2	0.2	1.0	1.0	1.0	1.0
Total		4.2					
Rate per 100,000 residents (female <18 years old)		10.9					

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker; OT: Occupational therapist.

3.4.1.2 GENDER SPECIFIC SERVICES PROVIDED BY THE NGO SECTOR

We have identified nine gender specific BSICs provided by the NGO sector. Seven of these are for men, and two are for women.

Three organisations provide support for male mental health. Everyman (previously known as Canberra Men’s Centre) is a community provider which provides four services, including a counselling service for men, their partners and families; an outreach service, a Complex Needs Service, and supported accommodation (managed tenancy).

The OzHelp Foundation is a workplace based engagement program to identify men at risk of mental health issues and to provide early intervention and referral. Teams provide support, counselling and “tradies’ tune-ups”, which include physical and mental health assessments conducted through field visits to workplaces, with nursing staff support; and also training and information to improve awareness and understanding of mental health issues, health literacy, and resilience.

The Lodge Program at Ainslie Village, provided by Catholic Care, provides residential support for up to 19 men, and includes assistance with the gaining of life and social skills, referrals to other services, housing issues and other services. Men need an appropriate NDIS plan to fund their use of the service.

An additional service provided by Menslink for young men is described in the Transition to Adulthood section.

Post and Ante Natal Support and Information (PANDSI) provides telephone support, referral, information, activities and a playgroup for those affected by perinatal depression or anxiety. Although we have included this as a gender specific service, it is important to

note that the service is also available to partners and families.

Wellways' Womens' Respite and supported accommodation service provides recovery oriented psychosocial rehabilitation through case management and outreach support.

There are 7 gender specific BSICs, or 5.2 per 100,000 men over the age of 17 years provided by the NGO sector.

There are 2 gender specific services, or 1.4 per 100,000 women over the age of 17 years, provided by the NGO sector.

Table 44 Services providing gender specific care in the NGO sector: availability and capacity (2016).

Provider	Name	Main DESDE Code	Beds/Places	Town/Suburb	Area of Coverage
CatholicCare	The Lodge Program – Ainslie Village Complex	AX[M][F00-F99]-R12	19	Campbell	NA
EveryMan Australia (previously known as Canberra Men's Centre)	Supported Accommodation-Everyman	GX[M][F00-F99]-O6.2		0	
EveryMan Australia (previously known as Canberra Men's Centre)	Complex Needs Service	AX[M][F00-F99]-O6.2		Canberra	ACT
EveryMan Australia (previously known as Canberra Men's Centre)	Counselling Service	AX[M][F00-F99]-O9.1		Canberra	ACT
EveryMan Australia (previously known as Canberra Men's Centre)	Outreach	AX[M][F00-F99]-O6.2		Canberra	ACT
Oz Help Foundation	Training	AX[M][F00-F99]-I2.1		Fyshwick	ACT
Oz Help Foundation	Tune ups/Support/Counselling	AX[M][F00-F99]-O7.2		Fyshwick	ACT

Post and Ante Natal Depression Support and Information (PANDSI)	Playgroup	AX[F][F53]-O9.2		Holder	ACT
Well Ways - previously known as Mental Illness Fellowship	Women's Respite and Short Term Supported Accommodation	AX[F][F00-F99]-O5.2.1	8	O'Connor	ACT
Total:	7		19		
Male					
Rate per 100,000 residents (male >18 years old)	5.2				
Total :	2		8		
Female					
Rate per 100,000 residents (female >18 years old)	1.4				

Table 45 Services providing gender specific care in the NGO sector: workforce capacity (2016).

Providers	Name	Total FTE	MHN	SupW	Others
CatholicCare	The Lodge Program – Ainslie Village Complex	NA			
EveryMan Australia (previously known as Canberra Men's Centre)	Supported Accommodation-Everyman	5.0			5.0
EveryMan Australia (previously known as Canberra Men's Centre)	Complex needs service	0.3			0.3
EveryMan Australia (previously known as Canberra Men's Centre)	Counselling Service	3.0			3.0

EveryMan Australia (previously known as Canberra Men's Centre)	Outreach	5.0		5.0
Oz Help Foundation	Training	5.0		5.0
Oz Help Foundation	Tune ups/ Support/ counselling	0.4	0.4	
Post and Ante Natal Depression Support and Information (PANDSI)	Playgroup	2.6		2.6
Well Ways - previously known as Mental Illness Fellowship	Women's Respite and Short Term Supported Accommodation	2.0		2.0
Total: male		19.0		
Rate per 100,000 residents (male >18 years old)		14.0		
Total : female		8.0		
Rate per 100,000 residents (female >18 years old)		5.7		

FTE: Full Time Equivalents; MHN: Mental health nurse; SupW: Support worker/Community worker.NA:Not available or incomplete

3.4.2 SERVICES FOR CARERS

We have identified five BSICs/services, incorporating eight MTCs, providing support for carers of people with mental health needs in the ACT PHN region. Carers ACT provides several services to carers, including individual advocacy, information, counselling, programs such as suicide prevention training, and linking with and brokering respite. Additionally, they support carers to sit on policy advisory boards.

There is a service for young carers described in the Transition to Adulthood section. Warren I'Anson House, provided by the Mental Health Foundation, also includes carers as well as people with mental health needs in its target groups, and thus is counted as an additional MTC here. Warren I'Anson House is described in the Residential section. This BSIC provides care for 2 target populations, so the staff are coded in the Adult Residential section. Six of the 8 MTCs are coded with a "v" qualifier as they do not have guaranteed funding for three years.

There are 5 BSICs, or 1.8 BSCs services per 100,000 residents providing support

for carers of people with a lived experience of mental illness in ACT PHN region.

Table 46 Services for carers: availability (2016).

Provider	Name	Main DESDE Code	Other DESDE code(s)	Town / Suburb	Area of Coverage
Carers ACT	Advocacy Team	AX[e310][F00-F99] - A5v		Holt	ACT and Southern Highlands
Carers ACT	Counselling Team	AX[e310][F00-F99]- O10.2v		Holt	ACT and Southern Highlands
Carers ACT	Policy, Representation and Advice Team	AX[e310][F00-F99]- A5v	AX[e310][F00-F99]- 12.1.1	Holt	ACT and Southern Highlands
Carers ACT	Programs Team	AX[e310][F00-F99]- O10.2g,v		Holt	ACT and Southern Highlands
Carers ACT	Respite/ Replacement Care	AX[e310][F00-F99]- A4.1v		Holt	ACT and Southern Highlands
Total	5				
Rate per 100,000 residents (>18 years old)	1.8				

Table 47 Services for carers: workforce capacity (2016).

Provider	Name	Total FTE	Others
Carers ACT	Advocacy Team	1.0	1.0
Carers ACT	Counselling Team	3.0	3.0
Carers ACT	Policy, Representation and Advice Team	1.5	1.5
Carers ACT	Programs Team	2.0	2.0
Carers ACT	Respite/Replacement Care	5.0	5.0
Total		12.5	
Rate per 100,000 residents (>18 years old)		4.5	

FTE: Full Time Equivalents

3.4.3 SERVICES FOR PARENTS WITH A LIVED EXPERIENCE OF MENTAL ILLNESS

We have found two services providing support to parents with a lived experience of mental illness: these are coded in the Gender specific section. One of these is Post and Ante Natal Depression Support and Information Inc, and the second is the Perinatal Mental Health Consultation Liaison Service. Both services provide support to women in the perinatal period, but also to partners and families.

3.4.4 SERVICES FOR OFFENDERS

We have identified five BSICs/services providing support for offenders with mental health needs. A service for young adults is provided by Forensic Mental Health Services (FMHS), with care provided at Bimberi Youth Justice Centre. The Bimberi Youth Justice Centre Mental Health Services (BMHS) provides specialist mental health services to children and young people held in custody at the Bimberi Youth Justice Centre. Children and young people remanded in custody are screened for mental health and risk issues on entry to the Centre. Individuals with mental illness are provided ongoing care and support. There is a strong focus on early intervention activities. Clinicians are able to see individuals on a regular basis in the Health Services Building (facility within the centre). Clinicians are often involved in case conferences with key agencies, and families and carers. Release planning includes linking children and young people with community mental health teams for ongoing care. Each Wednesday, two clinicians are on-site and once a fortnight a consultant is located on-site. At all other times FMHS are available on-call for inductions, individual risk assessments and any mental health concerns.

Forensic Mental Health Services (FMHS) is a specialist service that provides mental health services to people at risk or involved in the criminal justice system. FMHS provides mental health services to adults held in custody at the Alexander Maconochie Centre. This team provides specialist mental health services to people held in custody (remand or sentenced) at the Alexander Maconochie Centre. People remanded in custody are screened for mental health or risk issues on entry to the prison. Individuals with mental illness are provided ongoing care and support by clinicians, who see individuals on a regular basis in the Hume Health Centre (a facility within the prison). A mental health clinic is held at the Hume Health Centre daily.

A Court Assessment and Liaison Service provides guidance and information, while the Forensic Community Outreach Service works with consumers of Mental Health Services whose behaviour leads to contact with law enforcement agencies.

The Dhulwa Mental Health Unit is a secure mental health facility opened in November 2016. It provides 24-hour treatment and care for adults with complex mental health needs

that are not met by existing mental health facilities in the Canberra region. It has a total capacity of 25 beds, with 10 acute beds currently open and with a planned Stage 2 opening (of another seven longer-term rehabilitation beds) in 2017.

There are 5 BSICs, or 1.8 per 100,000 residents over the age of 17 years providing forensic mental health care in the ACT PHN region.

Table 48 Services for offenders: availability (2016).

Provider	Name	Main DESDE Code	Town/Suburb	Area of Coverage
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Justice Health Services	Alexander Maconochie Centre Mental Health Services (AMC MHS)	AX[F00-F99]-O8.ji	Hume	ACT
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Justice Health Services	Bimberi Youth Justice Centre Mental Health Services (BMHS)	TA[F00-F99]-O8.1ji	Kenny	ACT
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Justice Health Services	Court Assessment and Liaison Service	AX[F00-F99]-I1.1j	Canberra	ACT
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Justice Health Services	Forensic Community Outreach Service	AX[F00-F99]-O8.1j	Canberra	ACT
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Justice Health Services	Dhulwa Mental Health Unit (DMHU)	AX-[F00-F99]-R5	Canberra	ACT
Total	5			
Rate per 100,000 residents (>18 years old)	1.8			

In the following table, the workforce provided for Forensic Community Outreach Service also covers the previous three Justice services. The Dhulwa Mental Health Unit workforce includes 3.5 Allied Health Assistants along with the other health professionals.

Table 49 Services for offenders: workforce capacity (2016).

Provider	Name	Total FTE	Psych/Reg	Psychol	MHN	SW	OT	Others
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Justice Health Services	Alexander Maconochie Centre Mental Health Services (AMC MHS)							
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Justice Health Services	Bimberi Youth Justice Centre Mental Health Services (BMHS)							
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Justice Health Services	Court Assessment and Liaison Service							
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Justice Health Services	Forensic Community Outreach Service	20.0*	1.0	8.0	8.0	2.0	1.0	
ACT Health-Mental Health, Justice Health, Alcohol and Drug Services-Justice Health Services	Dhulwa Mental Health Unit (DMHU)	51.26	3.0	2.0	40.76	1.0	1.0	3.5
Total		71.26						
Rate per 100,000 residents (>18 years old)		28.5						

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; Psychol: Psychologist; MHN: Mental health nurse; SW: Social worker.

*FTE shared across the first 4 services on the table

3.4.5 MULTICULTURAL SERVICES (CALD)

We did not identify any services providing care to people from Culturally and Linguistically Diverse (CALD) backgrounds in the ACT PHN region.

3.4.6 SERVICES FOR ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES

We identified one BSIC/service providing support to Aboriginal and Torres Strait Islander peoples in the ACT PHN region. ACT Health has a senior Registered Nurse and a Psychiatry Registrar, co-located at the Winnunga Nimmityjah Aboriginal Health Service, which provides specialist mental health assessment and interventions for this population.

Addendum: MHJHADS also has three Aboriginal Liaison Officers who specifically assist clinicians with regard to culturally sensitive approaches in working with this population. Winnunga also has a Social Health Team which we have been unable to interview at the time of data collection.

Table 50 Services for Aboriginal and Torres Strait Islander Peoples: availability (2016).

Provider	Name	Main DESDE Code	Town/ Suburb	Area of Coverage
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	Aboriginal and Torres Strait Islander Mental Health Service	AX[IN][F00-F99]-O10.1s	Narrabundah	ACT
Total	1			
Rate per 100,000 residents (>18 years old)	0.4			

Table 51 Services for Aboriginal and Torres Strait Islander Peoples: workforce capacity (2016).

Provider	Name	Total FTE	Psych/ Reg	MHN	Aboriginal Liaison Officer
ACT Health- Mental Health, Justice Health, Alcohol and Drug Services- Rehabilitation and Specialty MHS	Aboriginal and Torres Strait Islander Mental Health Service	5.0	1.0	1.0	3.0
Total		5.0			
Rate per 100,000 residents (>18 years old)		1.8			

FTE: Full Time Equivalents; Psych/reg: Psychiatrist-registrar; MHN: Mental health nurse.

3.4.7 SERVICES FOR VETERANS

We identified one BSIC, incorporating three MTC, providing support to past and present members of the Defence Forces, and their families. The Veterans and Veterans’ Families Counselling Service provides case management, group and counselling services for people with any type of service experience for any length of time, and their families, including children over the age of six. As well as providing staff onsite, they can use the services of a large number of local psychologists. They also provide a crisis assistance program, which brokers short term (up to five days) crisis accommodation, most frequently accessed for domestic violence, and for which mental health issues are related more than 20% of the time.

Table 52 Services for veterans and families: availability (2016).

Provider	Name	Main DESDE Code	Other DESDE Codes	Town/ Suburb	Area of Coverage
Veterans and Veterans Families' Counselling Service	Veterans and Veterans Families Counselling Service	GX[F00-F99]-O9.1gm	GX[F00-F99]-A4.1 GX[z63]-A5	0	0
Total	1				
Rate per 100,000 residents (>18 years old)	0.4				

Table 53 Services for veterans and families: workforce capacity (2016).

Provider	Name	Total FTE	Psychol
Veterans and Veterans Families Counselling Service	Veterans and Veterans Families Counselling Service	4.0	4.0
Total		4.0	
Rate per 100,000 residents (>18 years old)		1.4	

FTE: Full Time Equivalents; Psychol: Psychologist.

3.4.8 HOMELESSNESS SERVICES

The complexity of homelessness requires a detailed analysis. We acknowledge that most people who experience homelessness also have an additional mental health issue. However, the main objective of this Atlas is to describe the services which target mental

illness/mental health. If we were to include the services for people experiencing homelessness in general in the analysis, we would bias the picture.

3.4.9 ALCOHOL AND OTHER DRUG SERVICES

Alcohol and Other Drugs (AOD) services have not been mapped in this atlas. A separated coding and mapping of these services is required to fully understand the mental health delivery system of the region.

4. MAPPING THE MENTAL HEALTH SERVICES

In this section we present a series of maps illustrating data on the supply of mental health services in relation to selected demand-related indicators and the spatial accessibility metric. Separate maps are shown for: (i) Adult Residential; (ii) Adult Outpatient Care (non-mobile); (iii) Adult Outpatient Care (mobile); and (iv) Adult Day Care..

The background of the maps represents rate of psychological distress and population density.

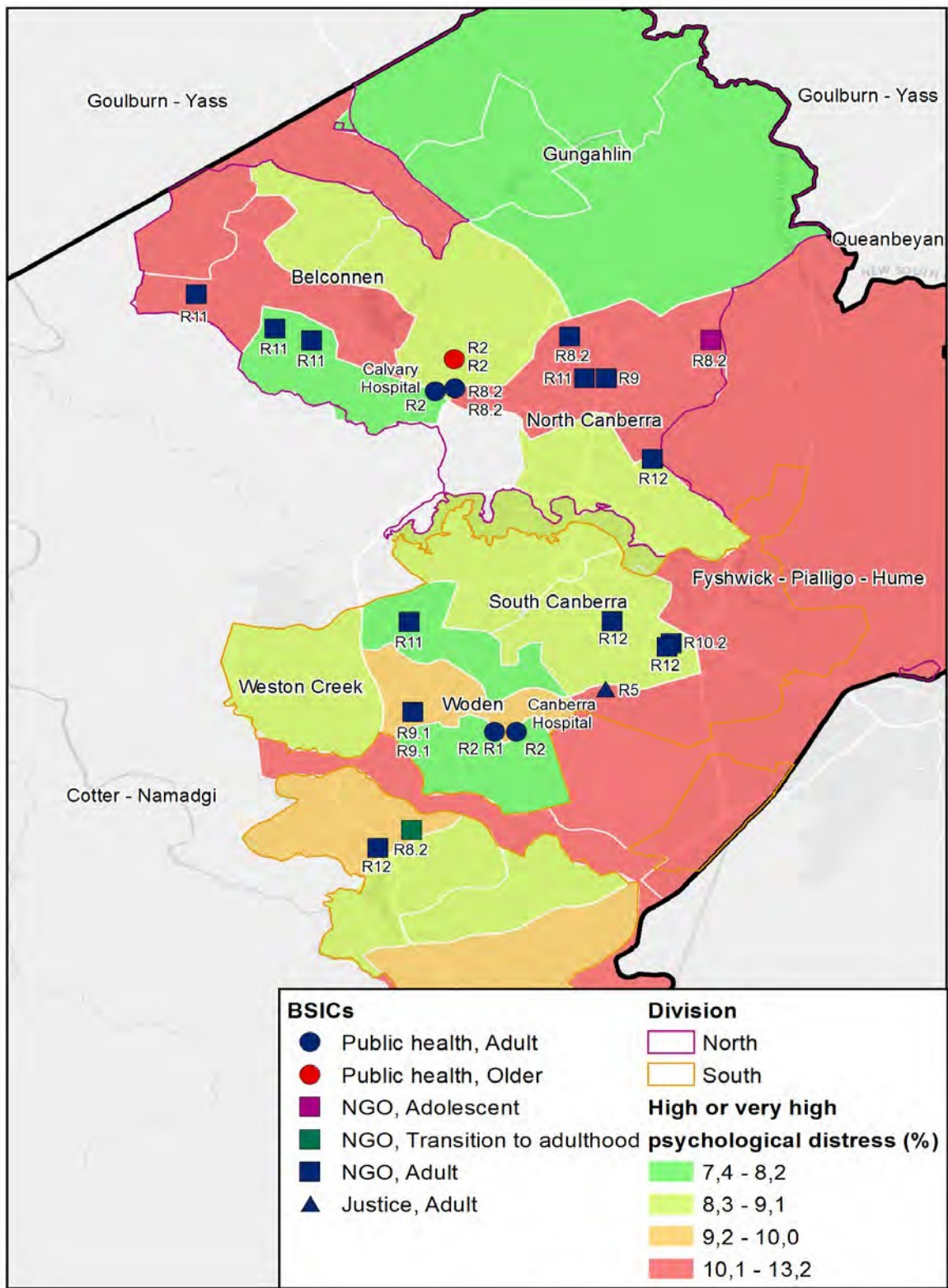


Figure 31 Psychological distress and Residential services.

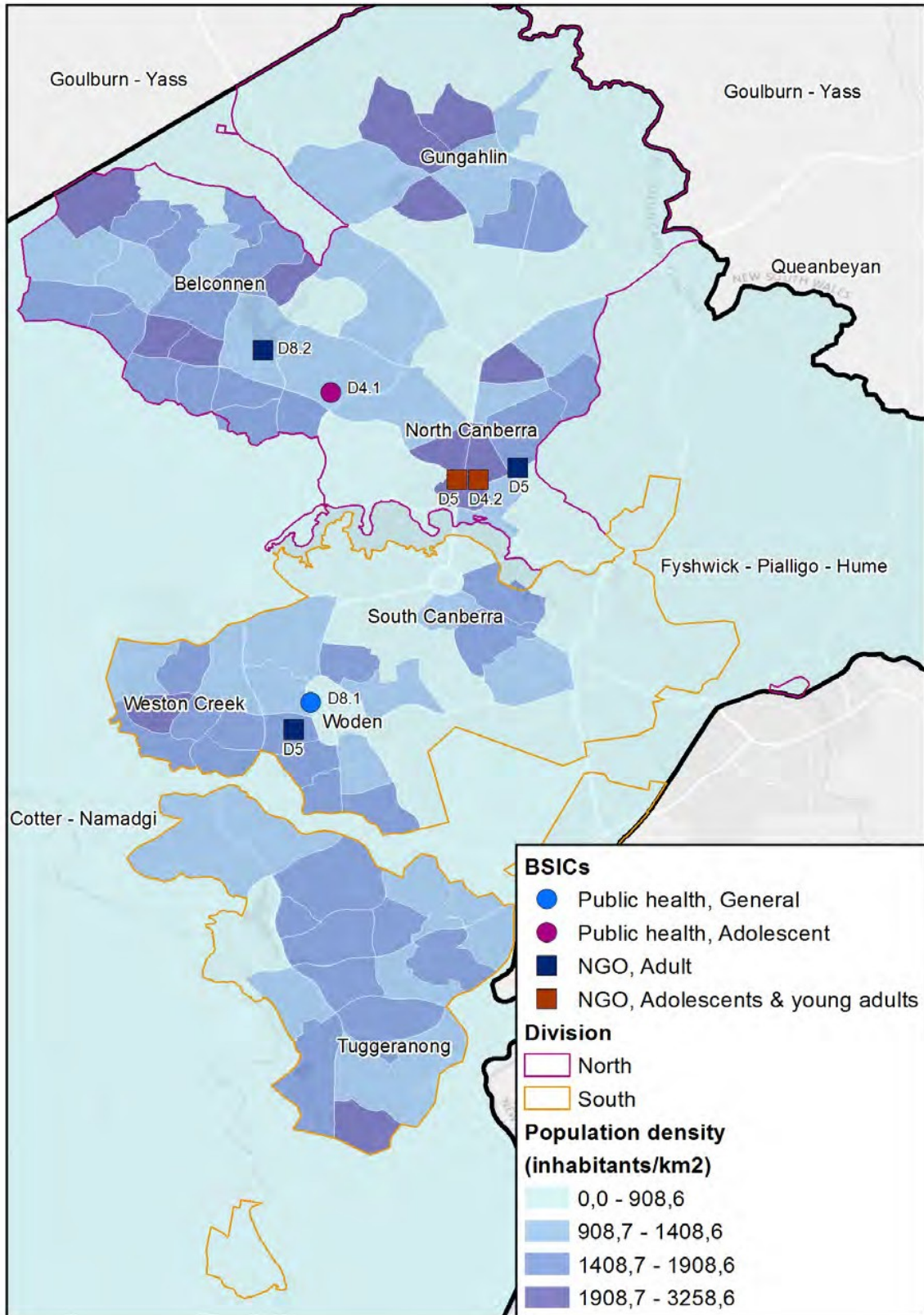


Figure 32 Population density with Day program services.

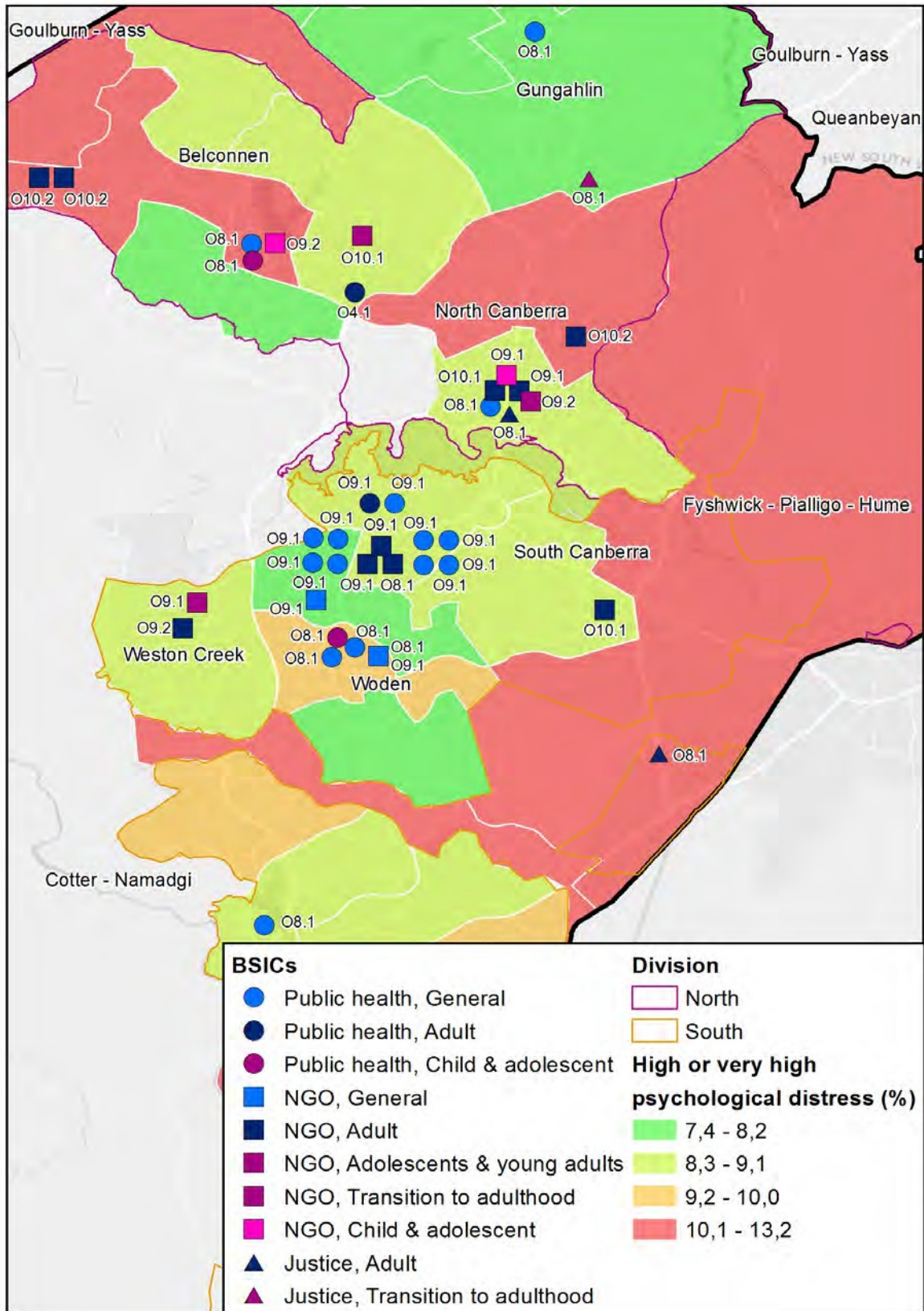


Figure 33 Psychological distress with Outpatient non-mobile services

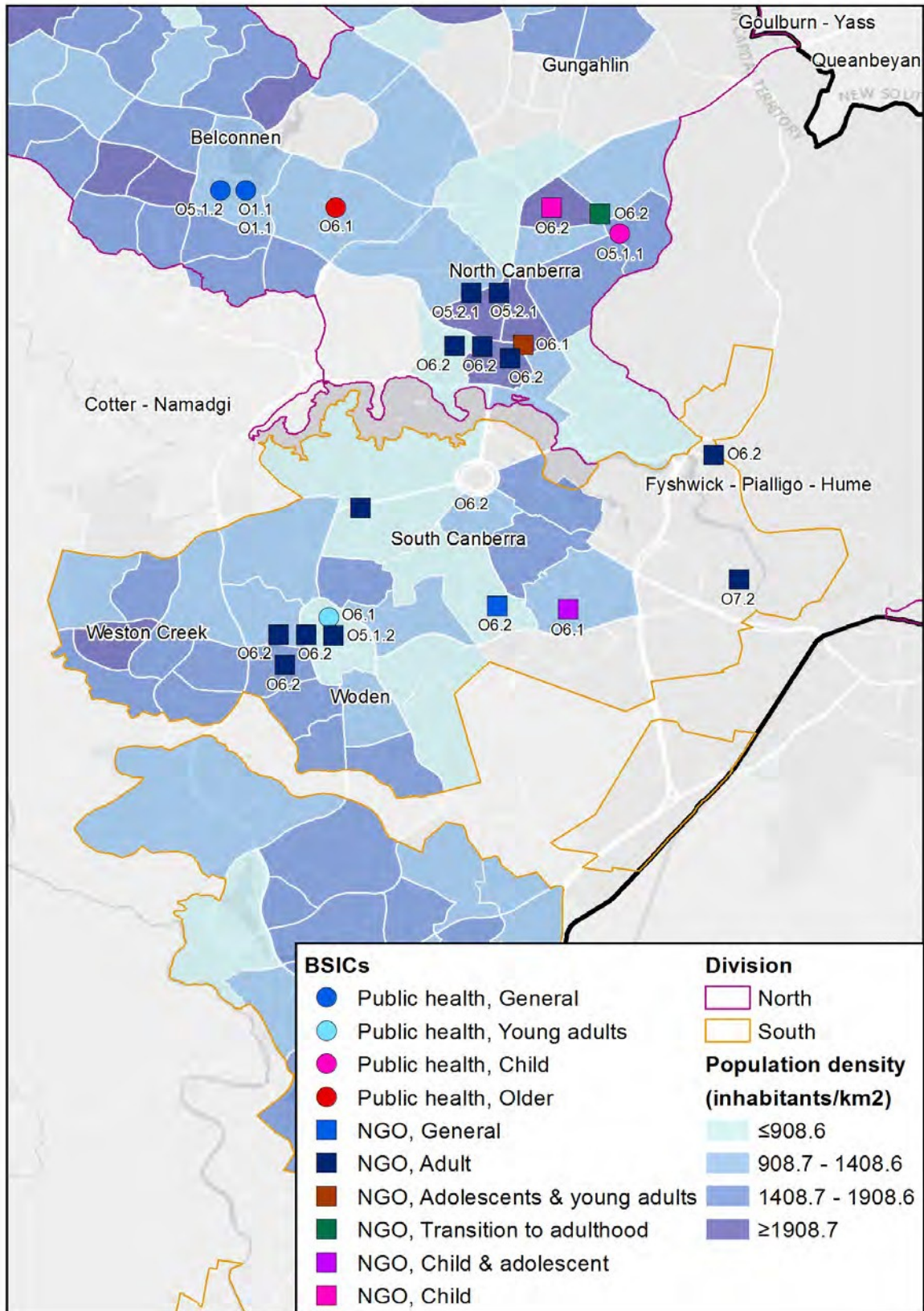


Figure 34 Population density with Outpatient mobile services.

5. DESCRIPTION OF THE PATTERN OF CARE

The figure below depicts the pattern of adult mental health care in the ACT PHN region. For this analysis, and to facilitate comparisons across jurisdictions, we focus on services for adults with a lived experience of mental illness (18-64 years old), excluding services for specific groups, i.e carers, CALD, IN, forensic, gender specific, parents, or veterans.

The blue area refers to residential care, the orange area to day care, the green to outpatient care and the yellow one to accessibility.

The main gaps identified are:

- a lack of acute and non-acute alternatives to hospitalisation;
- a lack of acute and non-acute health related day programs;
- a lack of employment related services: and
- a lack of CALD services.

Alternatives to hospitalisation are services staffed by mental health professionals which provide care for people with a lived experience of mental illness who are experiencing a crisis. They provide the same type of care as the hospital (in an inpatient unit) but are embedded into the community. These are small units, with a strong focus on recovery (e.g. crisis homes).

There is a lack of day care related to mental health. Acute mental health related day care services also provide an alternative to hospitalisation. People experiencing a mental health crisis are not admitted to a hospital, but treated in the community. They spend all day at the facility, but they sleep at home. Non-acute health related day care includes day care centres staffed with at least 20% of highly skilled mental health professionals, where people with lived experience of mental illness can spend the day, socialising and participating in structured activities related to mental health, such as cognitive training. There is also a lack of day programs related to cultural and leisure activities.

We found no employment related services. Employment alternatives for people with mental illness include supported employment for those who are unable to work on competitive employment, and services which assist people with severe mental illness transition to ordinary employment.

On the other hand, we found a good availability of residential care in the community, and a good availability of accessibility services. There is a higher provision of high intensity non-hospital accommodation, such as residential recovery and step up/step down MTCs, and long term accommodation, in comparison to other areas we have mapped. Most of these MTCs are provided by the NGO sector. There are four NGOs providing this type of care. The provision of accessibility services in the ACT PHN region is higher than in other areas we have mapped. This is partly due to PIR services being more likely in the

ACT PHN region to be coded as accessibility services than they have been in other areas, where they have more frequently been providing more direct care, and so have been coded as outpatient.

We also found a wide range of services for specialised groups, such as young carers, gender specific care, and veterans.

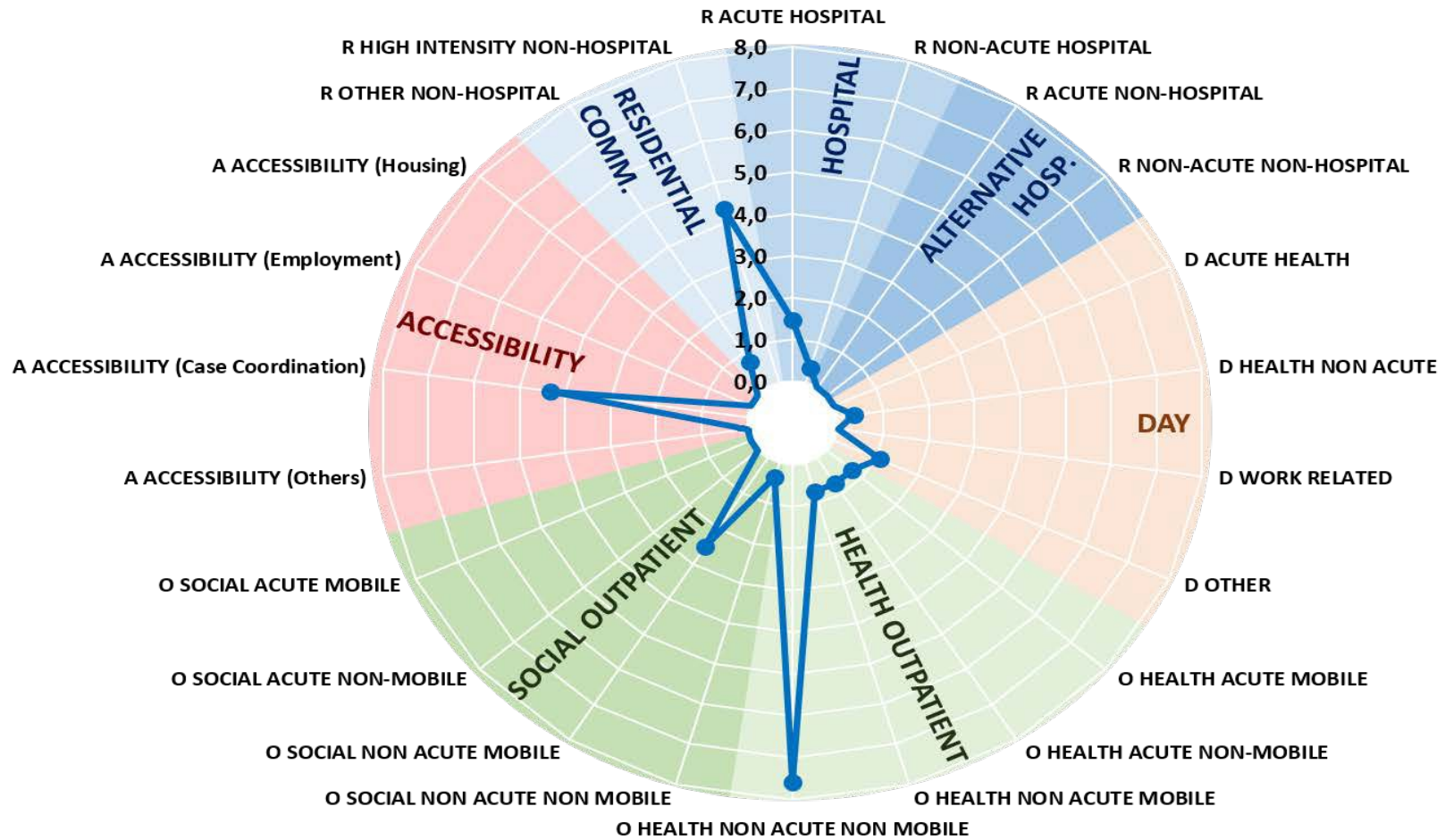


Figure 35 Pattern of availability of MTCs in ACT for adult population with lived experience of mental illness. Availability of MTCs per 100,000 population (2016)

In this section we present an overview of the workforce capacity in the ACT PHN region. This data has to be interpreted with caution as we did not get any response from some service providers. In addition, the different terminology used by the providers complicates the analysis (e.g. support facilitator, non-clinical care manager, linker facilitator, community worker). More research is needed in order to understand what the main differences between these positions are. This has to be seen as a first approximation of the data.

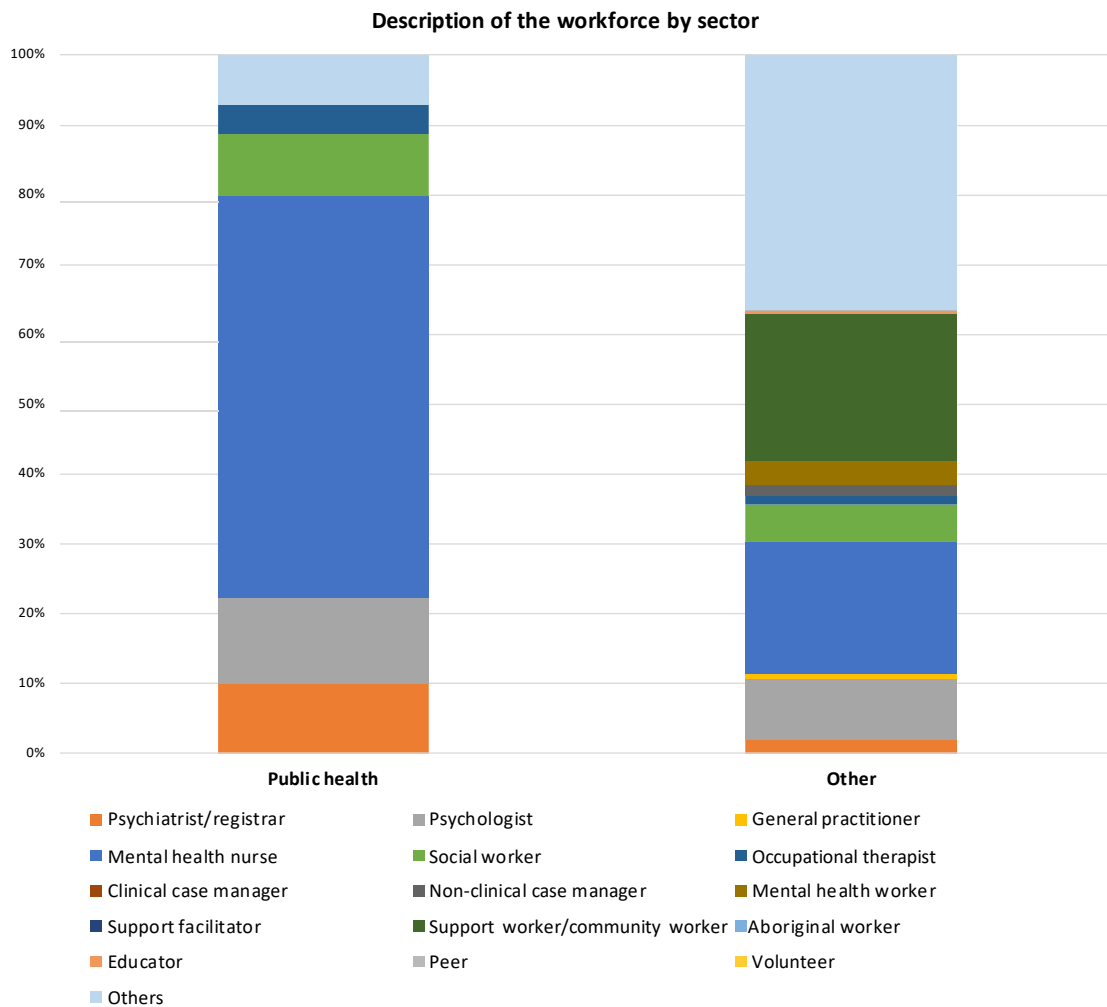


Figure 36 Description of the mental health workforce in ACT by sector (2016)

The rate of professionals in the public mental health sector providing care for people with a lived experience of mental illness per 100,000 residents in the ACT PHN region in 2016 is around 97.7 per 100,000 residents (excluding private providers under Health In Mind or the Better Access Program). The rate of professionals working in NGOs providing care for people with a lived experience of mental illness per 100,000 residents of the ACT PHN region amounts to 77.6. This can be compared to Central and Eastern Sydney Primary Health Network (CESPHN), where the rate of public health sector professionals is 83.71, and that of NGOs is 41.68, and to South West Sydney(SWS), where the ratio of the public health to the NGO workforce is similarly approximately 2:1

As can be observed in the previous figure, the profile of professionals in the health sector and the NGO sector is very different. In the health sector the most common professionals are mental health nurses followed by psychiatrists and social workers. In the NGO sector, there are fewer clinical professionals which may reduce their capacity to provide more intensive care, although some organisations may hire them on a casual position, according to need.

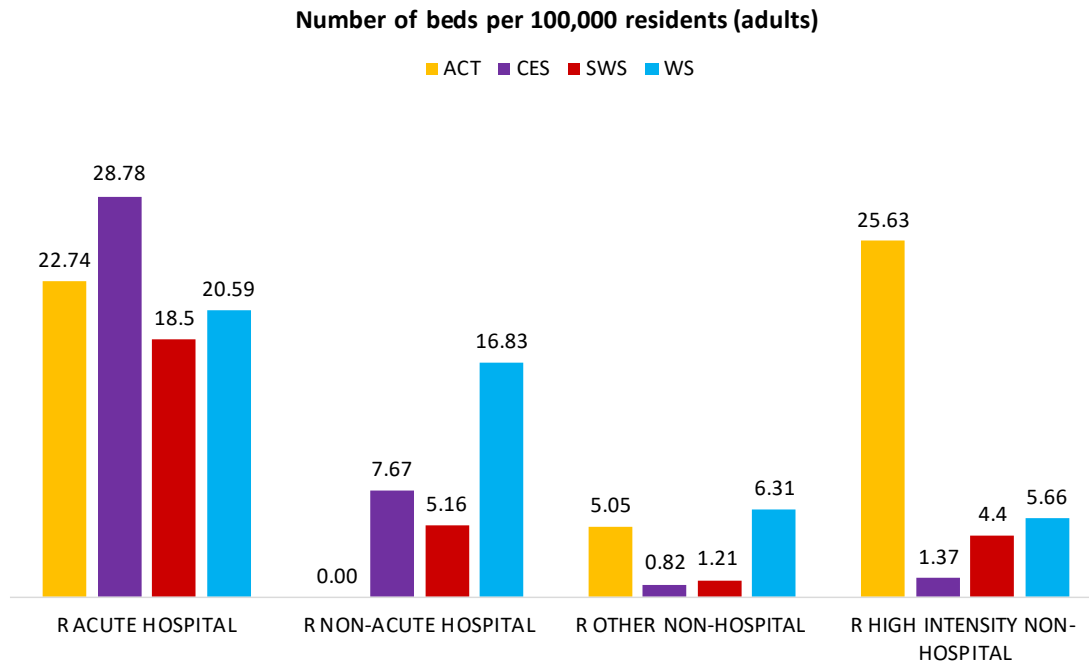
The next figures compare the mental health pattern of care between the ACT PHN region and South Western Sydney Local Health District (SWS), between the ACT PHN region and Western Sydney LHD (WS), and between the ACT PHN region and CESP HN. The main differences to be found are in the provision of non-hospital residential care, and accessibility services. The ACT PHN region has a higher availability in both these categories of care than either WS, SWS, or CESP HN. In the ACT PHN region, the rate of NGO funded residential care is higher than in WS and CESP HN. However, it should be noted that in the DESDE-LTC codification system, a distinction is made between services providing both accommodation and support,(coded as residential) and those providing support only to people living in community housing (which are coded as outpatient). The ACT PHN region also has a higher availability of acute inpatient hospital care than SWS or WS, but lower than CESP HN. It may be, however, that the CESP HN also has a higher number of people from outside the area using their services.

The ACT PHN region, like other regions we have mapped, has few day care programs/services. Unlike the other regions, the ACT PHN region has no employment related day services. The benefits of this type of service are discussed elsewhere in this report. One PHAMS currently provides a staff member assisting with accessibility to employment, however the PHAMS service does not have ongoing funding.

With regard to accessibility-related services, the main difference is related to coding issues: in the ACT PHN region, Partners in Recovery (PIR), was coded primarily as an Accessibility-related service, while in Western Sydney and South Western Sydney it was coded as an outpatient/community service. In South Eastern Sydney Local Health District, all PIR teams are coded as outpatient related and in Sydney Local Health District, only one of the PIR teams is coded as accessibility while the remaining were coded as outpatient. The difference in how the different organisations (and even inside the organisation) conceptualise the main activities of PIR requires further analysis. Additionally, the ACT PHN region provides two accessibility services for specific groups: the Trauma Support Service, specifically for people who have suffered past systemic abuse, and The WayBack Support Service for people who have been hospitalised for attempted suicide.

With regard to services for children and adolescents, we can see that the distribution follows a broadly similar pattern to that in SWS, SES, and WS. That is, most services provided are health related outpatient care, particularly non-acute, non-mobile care. Only SES provides more health related outpatient care than the ACT PHN region. The ACT

PHN region also has a higher rate of social outpatient care, non-hospital residential care, and daycare, particularly health related day care, while it is the only one of these areas to have no acute inpatient hospital care. If we compare child and adolescent services to adult services in the ACT PHN region, there is more health related day care, and more non-acute mobile health related care provided for children and adolescents, and a lower rate of social related outpatient care.



Acute Hospital: R1,R2,R3; Non-Acute Hospital: R4-R6; Other Non-Hospital: R 9,R10,R12, R13,R14; High Intensity Non-Hospital: R8,R11

Figure 37 Number of adult mental health beds in the ACT region vs. Central Eastern, South Western and Western Sydney

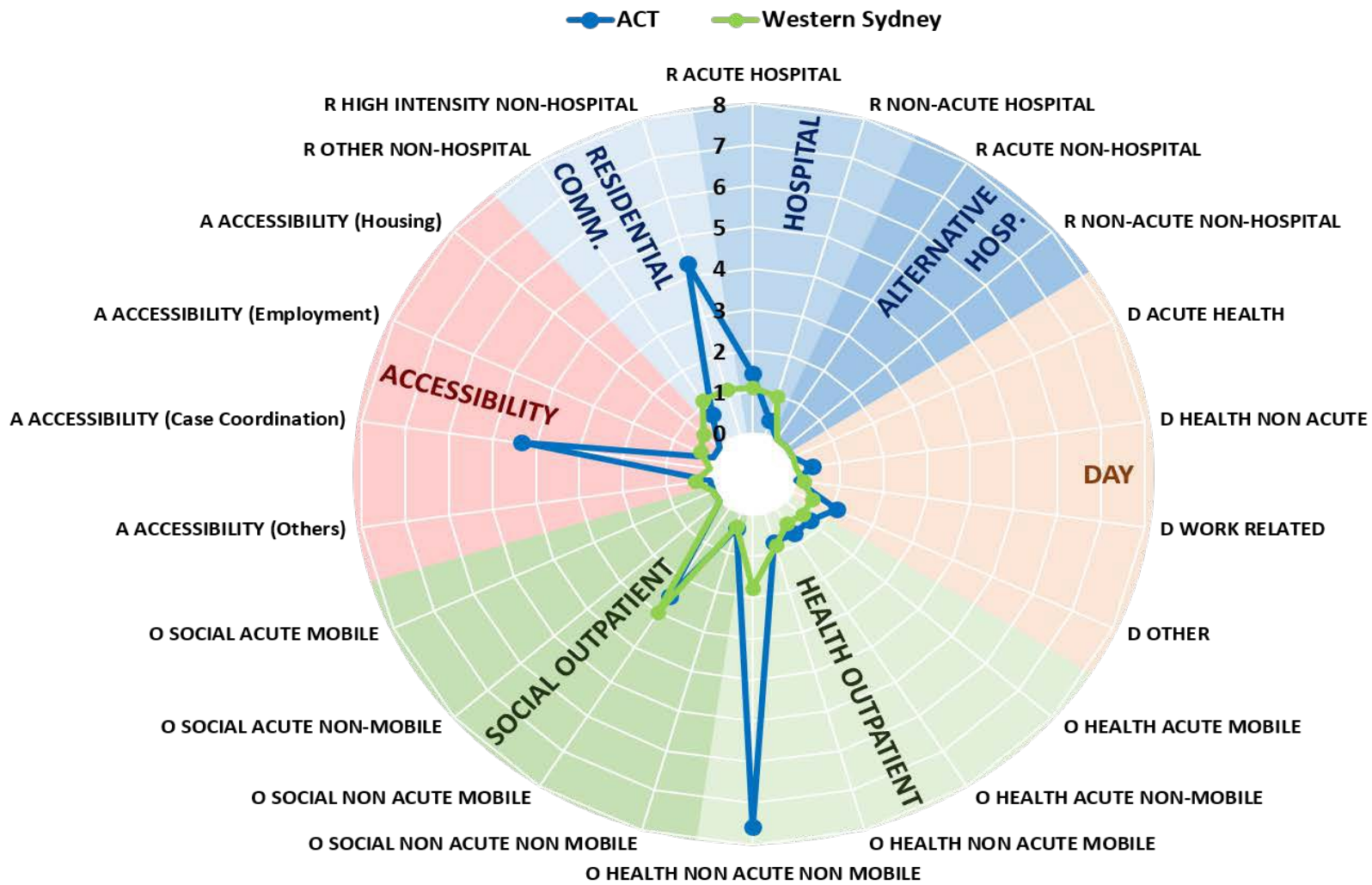


Figure 38 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and Western Sydney LHD.

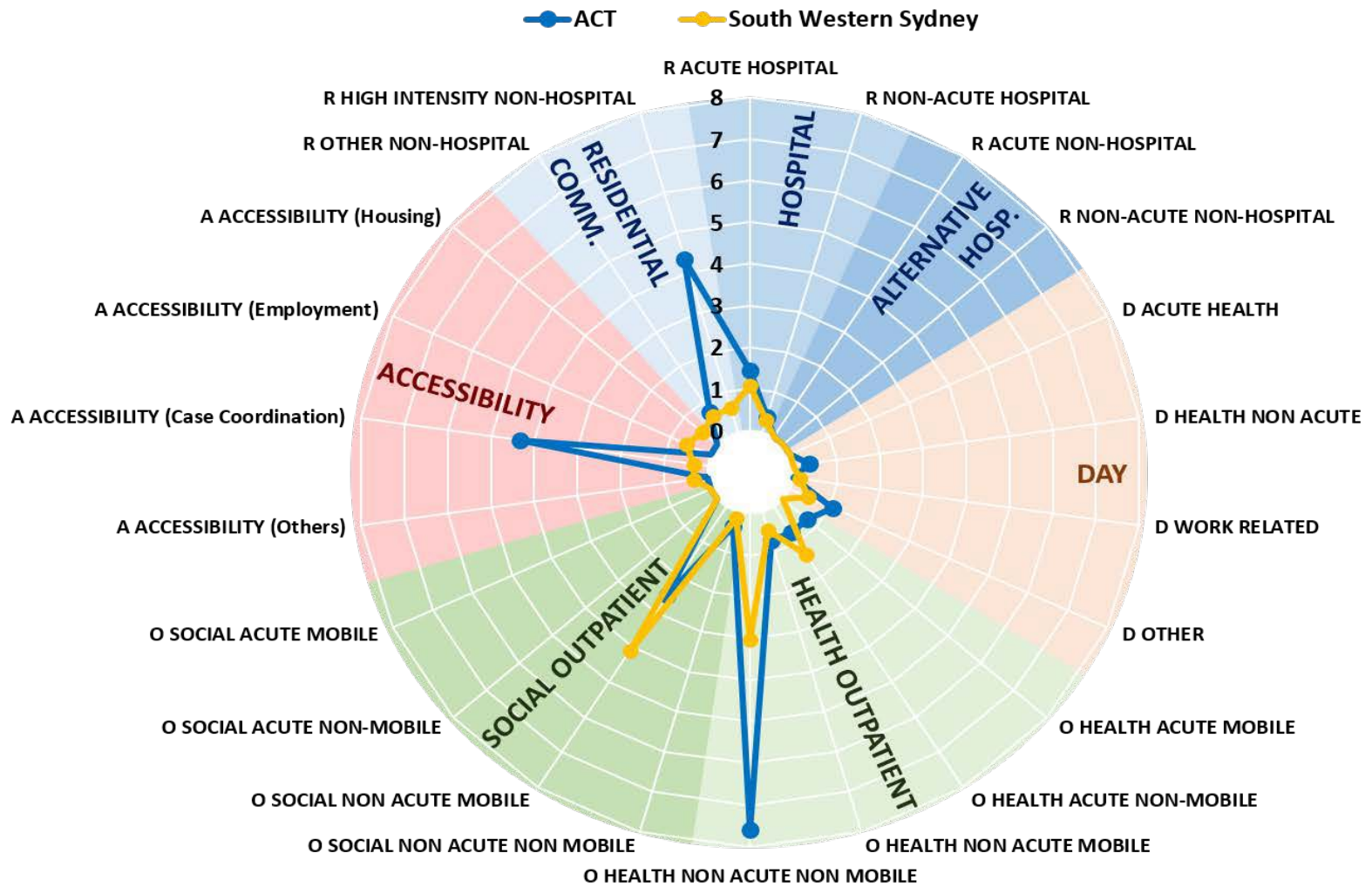


Figure 39 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and South Western Sydney LHD.

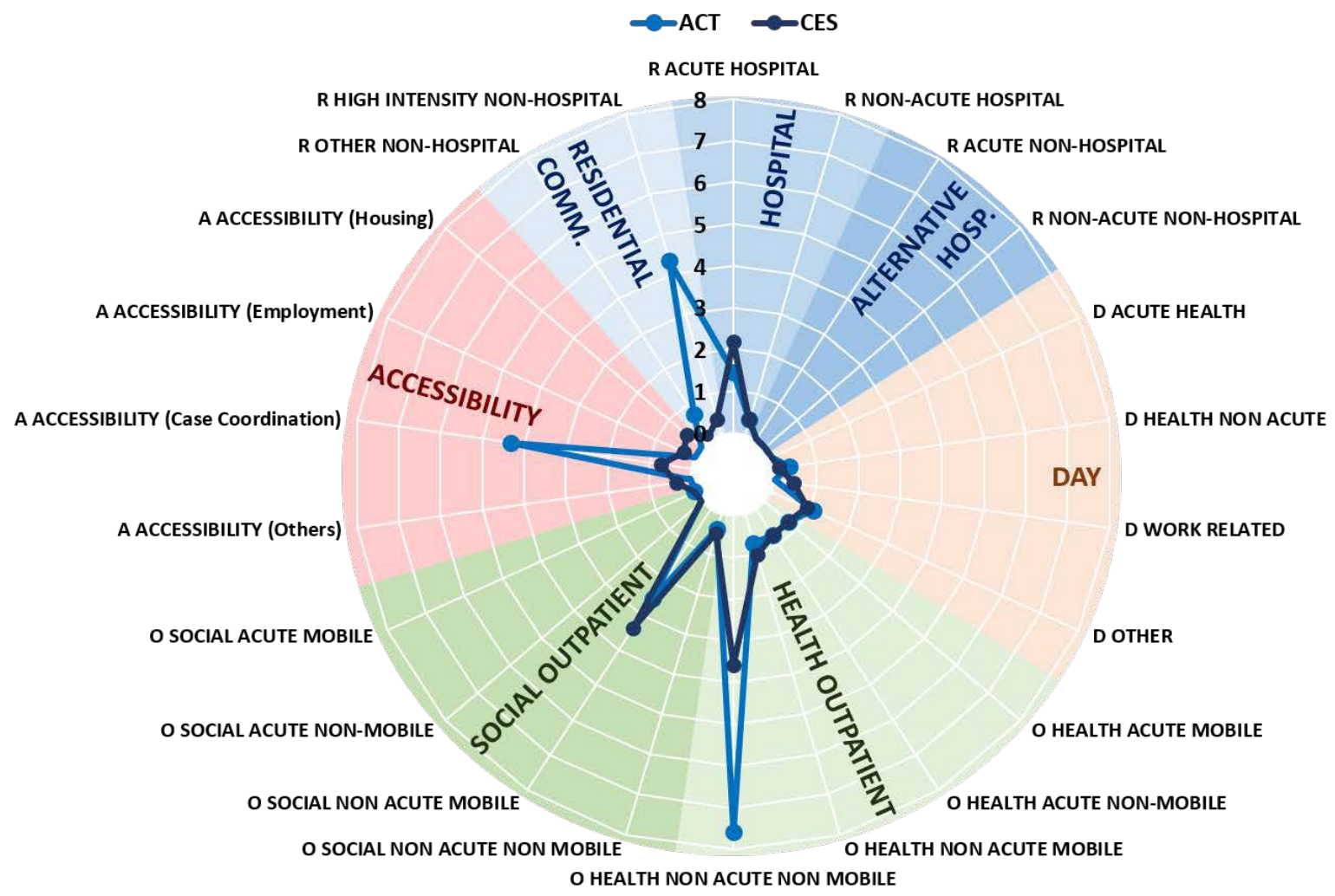


Figure 40 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and Central and Eastern Sydney.

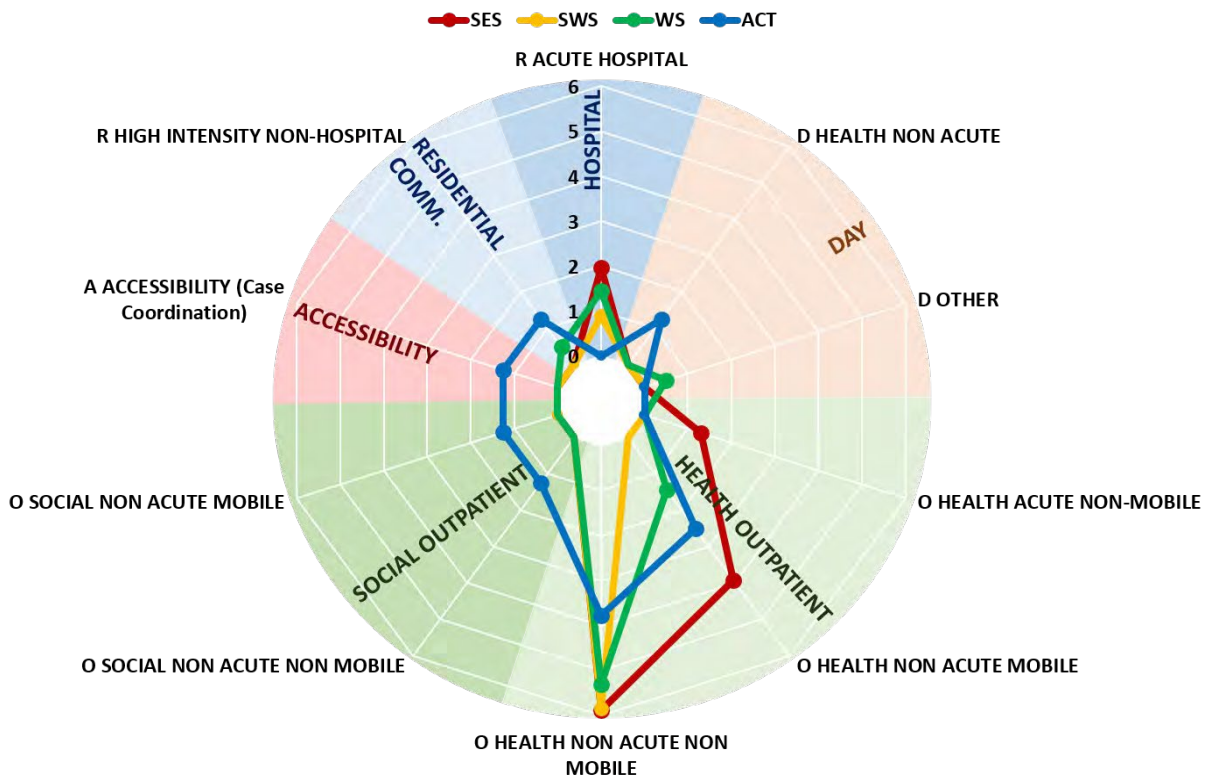


Figure 41 Pattern of availability for Child and Adolescent population with lived experience of mental illness. Comparison between SES, SWS, WS and ACT. Availability of MTCs per 100,000 population < 18 years

6. INTERNATIONAL COMPARISONS

International comparisons are useful for: 1) learning about national systems and policies; 2) learning why those systems take the forms they do; and 3) learning lessons from other countries for application elsewhere. In the absence of a gold standard for planning the provision of mental health services, international comparisons may also be useful for asking questions that are taken for granted.

To conduct meaningful comparisons, it is important to use a standardised tool that goes beyond terminological variability. We have mapped the pattern of mental health in different European areas using the DESDE-LTC. The use of a common language allows us to compare the CESPHE region with different community care models in Europe. The information on the different European countries has been presented as part of the REFINEMENT research project funded by the European Commission (The Refinement Project Research Consortium, 2013).

Table 54 Socio-demographic indicators in 5 local areas of mental health care in countries with different models of care.

	Sør-Trøndelag (Norway)	Helsinki Uusimaa District (Finland)	and ULSS20 - Hospital Verona (Italy)	Girona (Spain)	Hampshire ¹ (England)
Population (>18 years old)	225,081 (2010)	1,206,446 (2010)	393,402 (2010)	599,473 (2010)	1,364,799 (2010)
Land area (km²)	18,856	8,751	1,061	5,585	3,769
Population density (inh./km²)	15.60 (2011)	176.56 (2011-12)	416.85 (2001)	132.61 (2010)	459.45 (2010)
Ageing index (>65/<15x100)	81.42 (2012)	82.17 (2010)	144.10 (2010)	98.29 (2010)	100.66 (2011)
Dependency ratio (<15 & >65/15-4x100)	49.55 (2012)	44.82 (2010)	53.51 (2010)	46.20 (2010)	52.43 (2011)
People living alone (%)	40.78 (2011)	41.37 (2011)	29.16 (2001)	17.94 (2007)	27.73 (2001)
Average of people per household	2.21 (2011)	2.07 (2011)	2.44 (2001)	2.62 (2007)	2.37 (2011)
Immigrants (%)	6.64 (2012)	6.14 (2011)	12.24 (2010)	21.60 (2010)	-
Unemployment rate (%)	2.79 (2010)	7.35 (2010)	4.21 (2001)	18.28 (2010)	5.8 (2011)

Total health care expenditure per capita Purchasing Power Parity (in Euros) (2010)	€4156	€ 2504	€ 2282	€ 2345	€2626
Total health care expenditure as a share of GDP	9.4%	8.9%	9.3%	9.6%	9.6%

1 Including Portsmouth and Southampton Unitary Authorities.

6.1. NORTHERN EUROPEAN COMMUNITY MENTAL HEALTH CARE MODEL

The figures below compare the ACT PHN region with an area in Norway (Sør-Trøndelag) and with an area in Finland (Helsinki and Uusimaa).

The main characteristic of the Northern Europe Community Mental Care Model is the high availability of different types of services. Indeed, Norway has one of the highest per capita health care expenditures. Both Finland and Norway raise funds for mental health mainly from general taxes.

The provision of mental health services in Norway is organised within Health Authorities (HF), each one including several institutions/hospitals. The area in Norway (Sør-Trøndelag) covers 25 municipalities and it is the catchment area of the St Olavs Hospital HF. The municipalities are obliged to offer primary health care and long term care to all people in need of municipal services, regardless of diagnosis. The GP is responsible for planning and coordinating preventive work, evaluation and treatment and provides an important link between primary health care and the specialised health services.

With regard to socio and economic characteristics, Sør-Trøndelag has a low population density (15.60 inh/km²). It also has a very low unemployment index.

The main difference with the ACT PHN region is related to the high availability of non-acute care at the hospital, day programs related to employment and social and cultural issues, and outpatient non-acute care, both mobile and non-mobile. The addition of the Health In Mind providers, however, would reduce the difference related to the non-mobile non-acute outpatient care.

The Finnish area (Helsinki and Uusimaa Hospital District) is owned and governed by 26 municipalities. Each municipality is free to provide the universal accessible services as a municipal activity, or to purchase the services from an external provider. Primary care is organised by the municipalities, and represents the main access point for people with mental illness while specialised care is organised by the hospital districts.

More than 40% of the households of the area of Helsinki and Uusimaa are occupied by just one person.

When comparing the ACT PHN region and the Finnish area the main contrast is the high number of day care/programs in Finland, as well as the high availability of non-acute inpatient care.

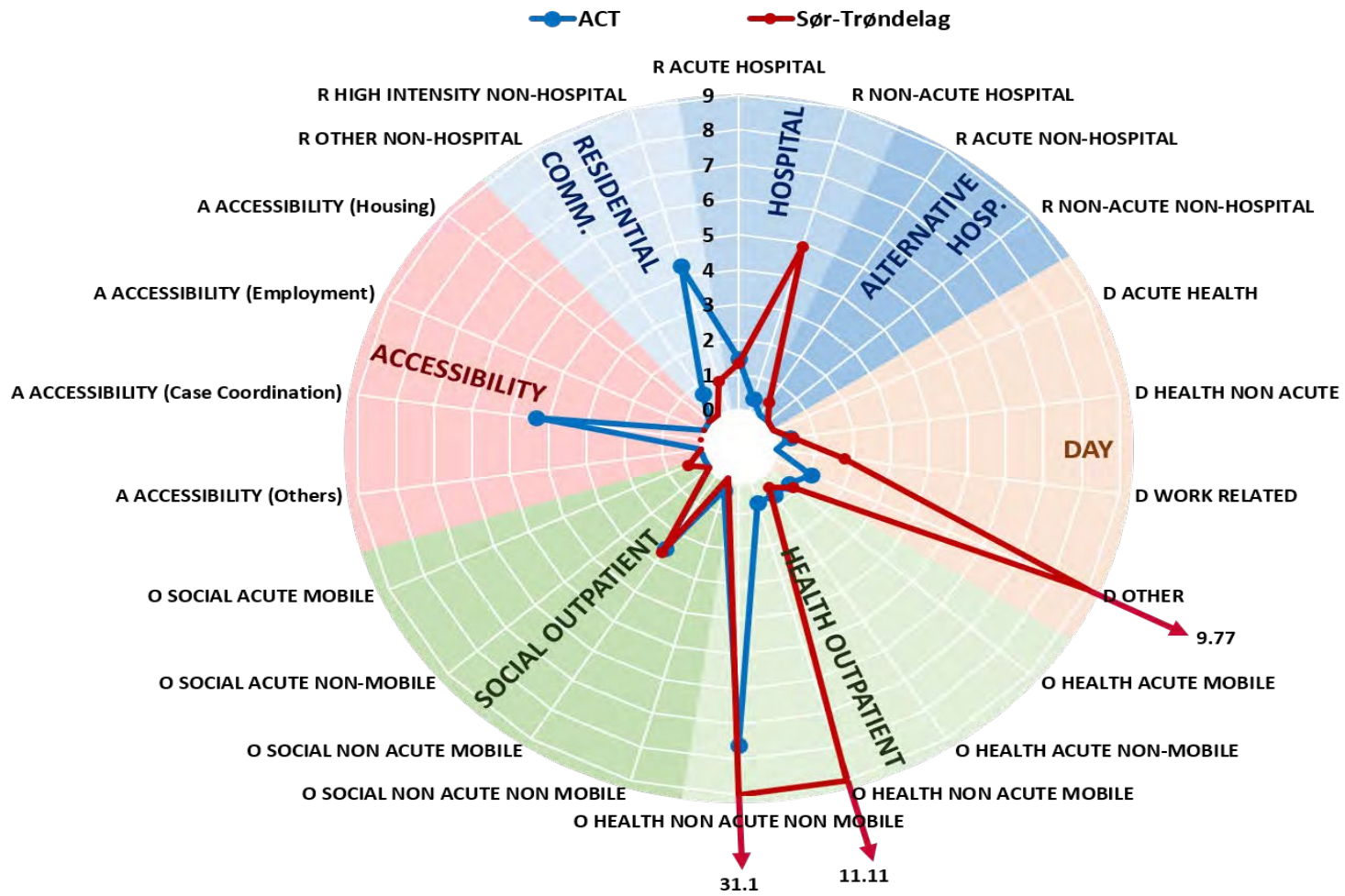


Figure 42 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and Sor-Trøndelag.

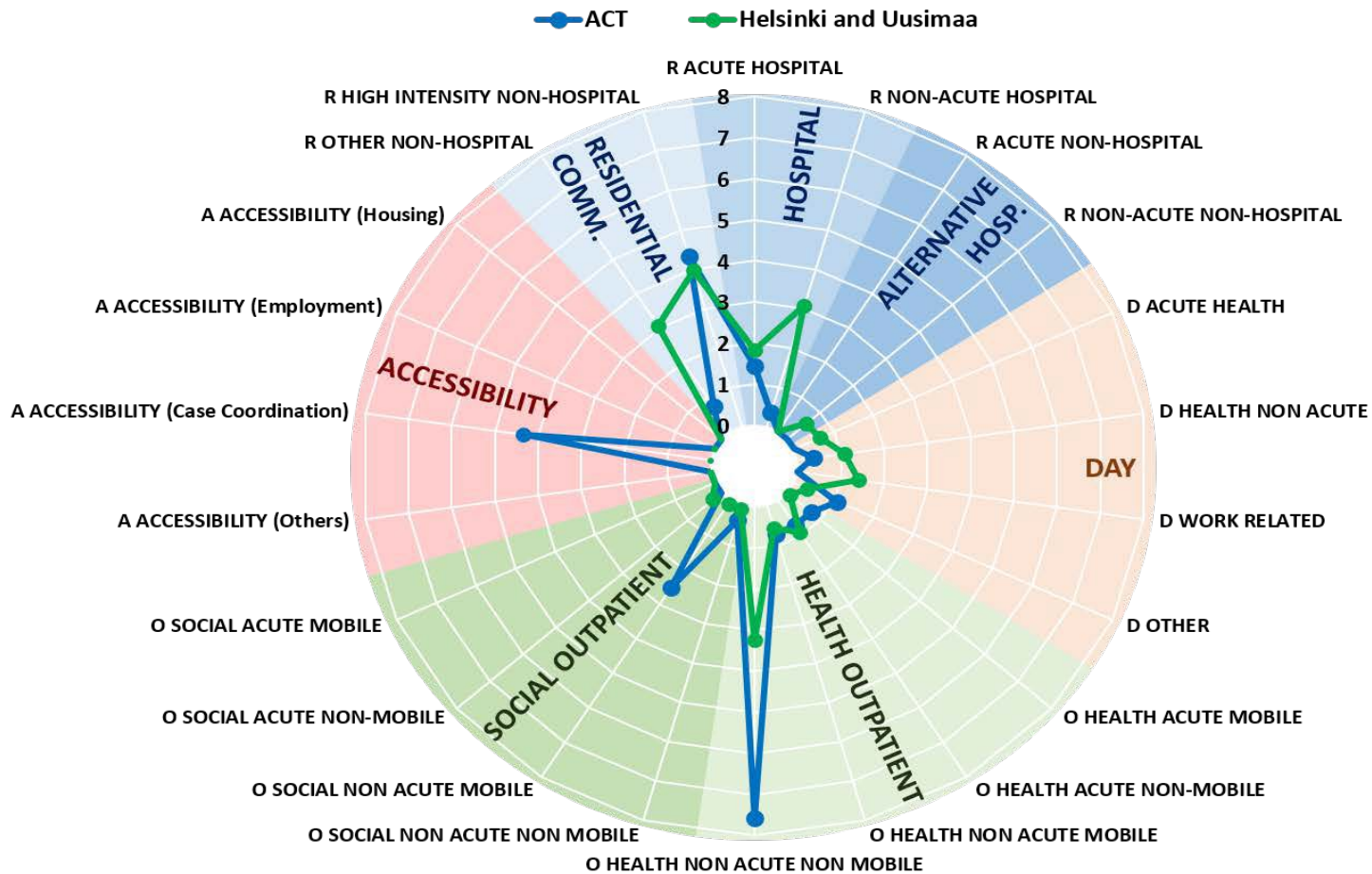


Figure 43 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and Helsinki and Uusimaa.

6.2. SOUTHERN EUROPEAN MODEL OF COMMUNITY MENTAL HEALTH CARE

The figures below compare the ACT PHN region with Italy (Veneto Region), and the ACT PHN region with Spain (Girona). The mental health system in Southern Europe is characterised by a strong emphasis on community care, and low availability of psychiatric hospitals. As in the case of Northern Europe, the public health sector is funded from general taxes.

In Italy, the Local Health Authorities, which are the local branches of the Regional National Health System, are the purchasers of health care services. They also finance social care services together with the municipalities. There are 21 Local Health Authorities in the Veneto Region. Each Local Health Authority has assigned a Mental Health Department, which is in charge of the planning and management of all medical and social resources related to prevention, treatment, and rehabilitation in mental health within the area.

Socio and economic indicators from the area are derived from data from 2001, which would have changed. However, this area registers a high ageing index and population density.

In Spain, most of the Mental Health Services are funded by the Regional Health Authorities. Social services are paid for by the social and employment authority. In the area of Girona the mental health system is organised according to two different levels, Hospitalisation and Community Care. Hospitalisation is located in the “Marti i Julia Hospital Park” in Salt that belongs to Institut d’Assistència Sanitària (IAS). The Community Mental Health care is organised in seven areas that include an Adult Mental Health Centre and other specific services. Mental health patients enter the system through primary care (PC) that fulfils a gatekeeping function.

The main points of difference between these countries and the ACT PHN region are: higher acute hospital inpatient availability, and high intensity non- hospital residential support in the ACT PHN region than in Italy or Spain, but lower non- acute hospital availability, and other community residential care. There is also a greater availability of day care/ programs in both Italy and Spain than in ACT PHN region.

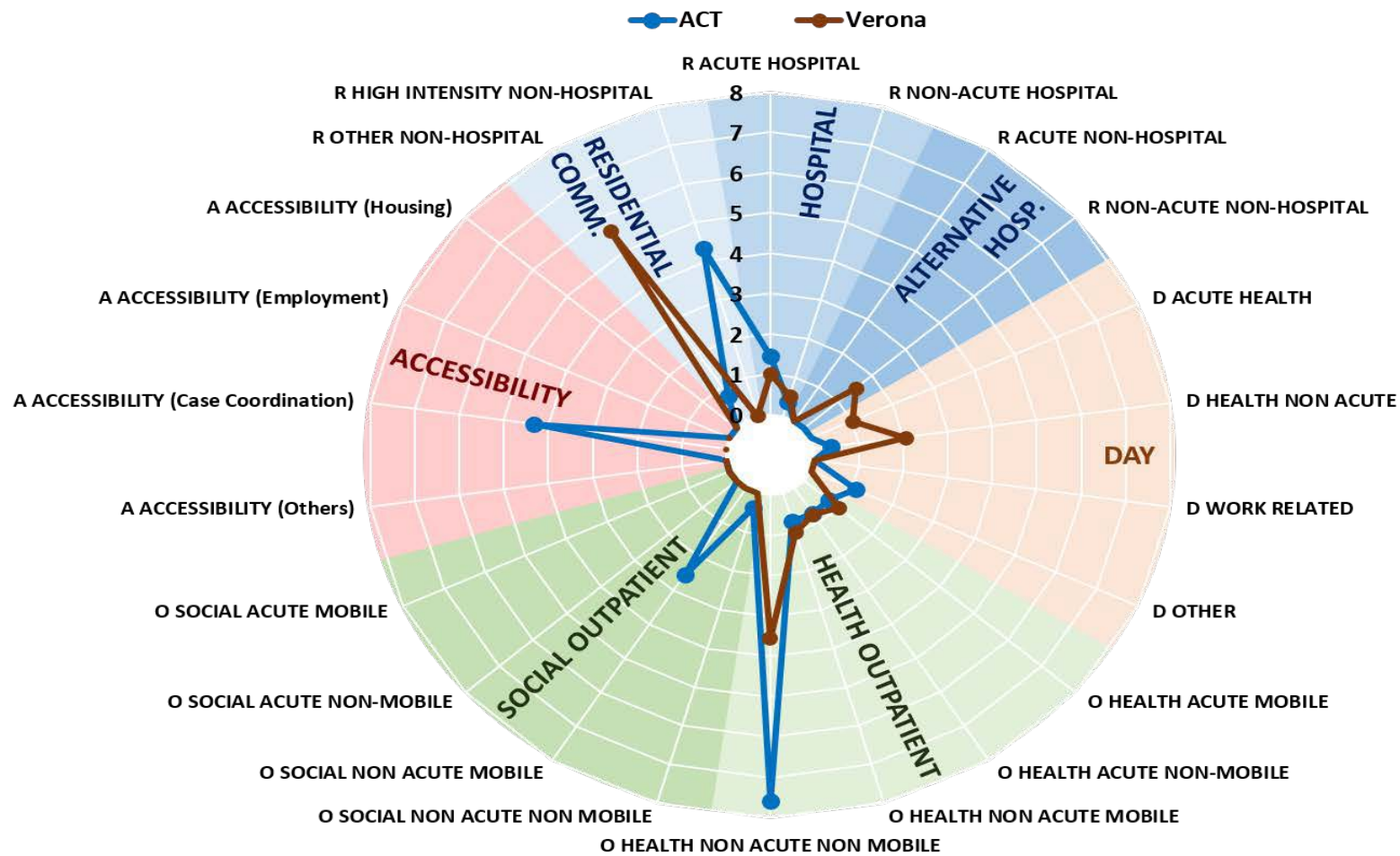


Figure 44 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and Verona

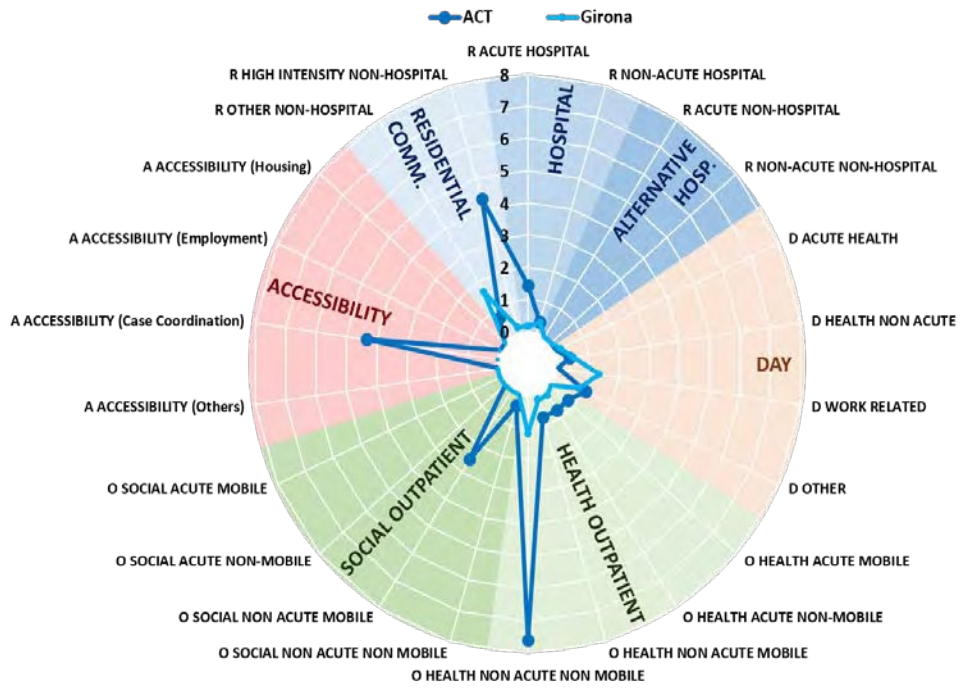


Figure 45 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and Girona

6.3. ENGLISH SYSTEM

Figure 46 compares the ACT PHN region with an area in England (Hampshire). England raises funds mainly from general taxes. There is one purchaser organisation for most health care services. Since 2013 this function is held by the Clinical Commission Groups (CCGs). Local Health authorities are involved in funding social care services, in addition to local authorities and the state. CCGs tend to contract one local Mental Health Trust, an organisation that will be responsible for providing most mental health services for a locality. These Trusts may also subcontract to others.

With regard to the socio-economic characteristics, Hampshire shows a high population density with relatively low unemployment figures. It is also an aged population

One of the main characteristics of the English model is the lack of day care/programs related to health and non-acute care in the hospital, which is similar to our findings in ACT PHN region.

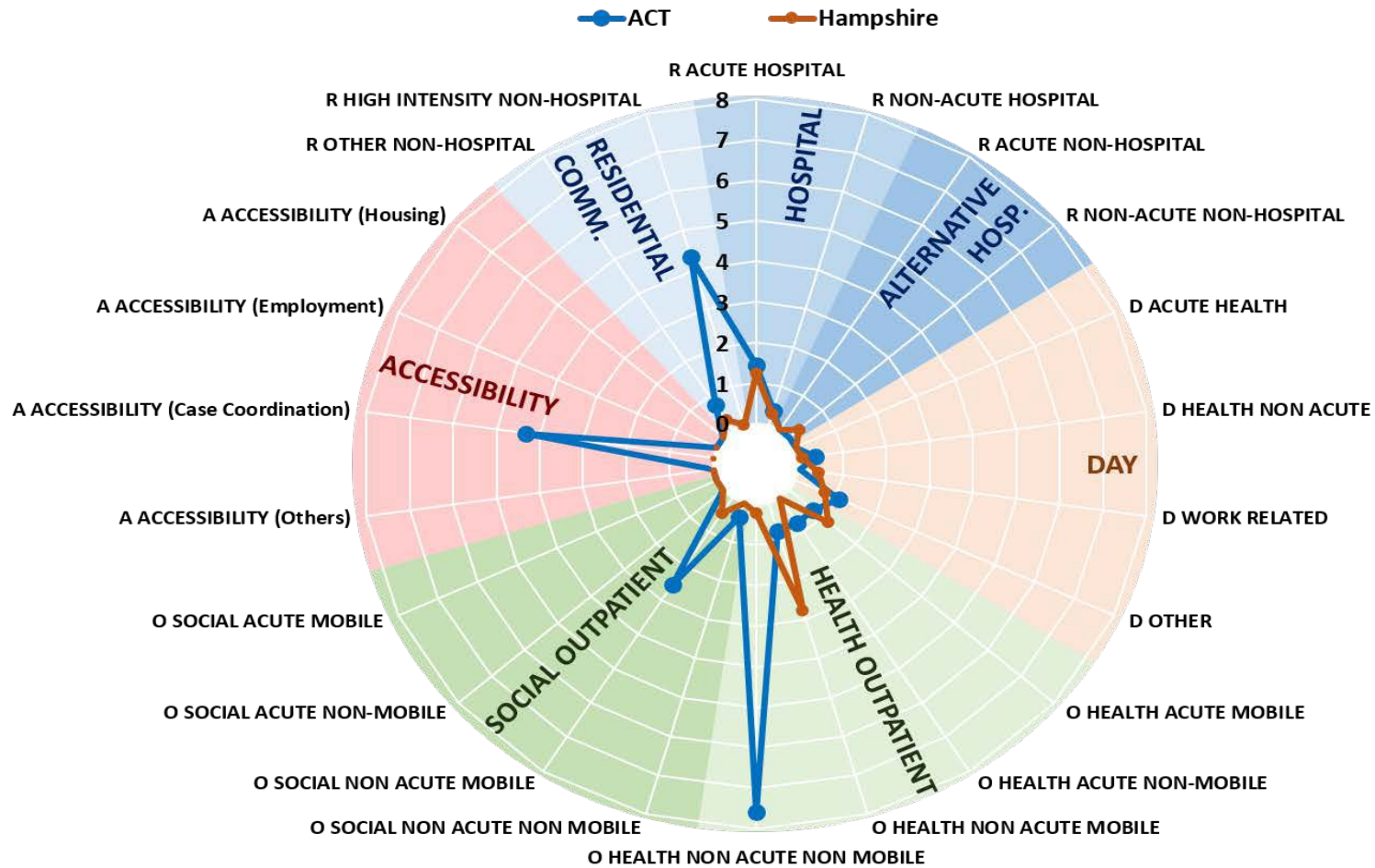


Figure 46 Pattern of availability of MTCs for adults with lived experience of mental illness. Comparison between ACT and Hampshire.

6.4. PLACEMENT CAPACITY: CROSS-NATIONAL COMPARISONS

6.4.1 PLACEMENT CAPACITY-RESIDENTIAL CARE

Table 55 Cross national comparisons-placement capacity, Residential care.

Groups	ACT	Sør-Trøndelag (Norway)	Helsinki and Uusimaa (Finland)	Verona (Italy)	Girona (Spain)	Hampshire (England)
Rate of beds per 100,000 residents in inpatient care (hospital)						
R Acute Hospital Care: R1 - R2 - R3.0	22.0	28.4	26.9	14.0	7.0	26.4
R Non-acute hospital: R4 - R6	0.0	75.1	52.2	12.0	15.4	4.8
Rate of beds per 100,000 residents in the community						
R Acute non-hospital: R0 R3.1.1	0.0	64.4	0.0	0.0	0.0	0.0
R Non acute non-hospital: R5 - R7	0.0	0.0	12.3	16.5	0.0	2.5
R other R9,R10,R12,R13,R14	5.1	0.0	58.6	35.8	12.0	7.5
R non-hospital high intensity R8 R11	25.6	8.9	113.6	0.0	9.7	0.0

6.4.2 PLACEMENT CAPACITY-DAY CARE/PROGRAMS

Some of the most advanced models, such as the Finnish one, are characterised by a good balance between beds at the hospital, and places at day health acute and day health non-acute centres. It is also important to develop work related centres, where people with a lived experience of mental illness can develop work related skills and be paid for their work. The day care sector is progressively disappearing from ACT and New South Wales. This scenario is very similar to the English one, where day care has been substituted by individual care. Day care/programs are important as they provide structured activities related to a range of life areas. It is important to note that in NSW, the lack of structured activities is an important unmet need perceived by PIR consumers. It may be a similar situation in the ACT. Additionally, day care centres providing care for health related needs may work as step down facilities, easing the transition from the hospital to the community and promoting recovery and rehabilitation.

Table 56 Cross country comparisons-placement capacity, Day programs.

Groups	ACT	Sør-Trøndelag (Norway)	Helsinki and Uusimaa (Finland)	Verona (Italy)	Girona (Spain)	Hampshire (England)
D Health acute	0.0	0.0	9.62	3.05	4.17	0.0
D Health non-acute	1.4	n.a.	17.99	40.67	12.51	n.a.
D Work-related	0.0	8* (a)	18.15	0.0	32.53	n.a.
D Other	0.0	0.0	12.35	0.0	27.52	n.a.

*(a)One group not available in Norway. Placement capacity per 100, 000 adults

6.5 WORKFORCE CAPACITY

In addition to placement capacity, workforce capacity (Full Time Equivalent-FTEs) for the ACT PHN region was collected for the Integrated Atlas of Mental Health. Data was collected from 103 of the 107 teams identified, or 96.3 % of BSICs. Again, it is important to note that this data was collected during a period of significant change in the system, and thus for many services, workforce capacity and composition had either recently undergone, or were about to undergo, a period of instability.

Team sizes have been classified as either Extra small, Small, Medium or Large, according to the figures in Table 57 below. As can be seen, the vast majority of teams fall into the “Small” category, with between one and five FTEs. Of significance is the 18, or 17.5% of teams who provided FTEs, that have less than one FTE. However, it should be noted that 10 of these services are the individual psychologists in the Health In Mind program, for each of whom their FTE in relation to this program has been estimated at 0.2%.

Table 57 Mental Health Team Size (ACT, 2016).

Teams	X-Small (<1 FTE)	Small (1-5FTE)	Med (6-20 FTE)	Large (>20 FTE)	Not stated
Total	18	58	20	7	7
Percent*	17.5%	56.3	19.4	6.8	-

*(Percentage is of the teams providing FTEs)

This can be compared to Perth North PHN, which has a similar proportion of very small teams, but a much lower rate of small teams and much higher rate of medium teams. However, it should be noted that 99 of the 224 teams in Perth North did not provide FTE, and thus should be considered with caution.

Table 58 Mental Health Team Size (Perth North, 2015)

Teams	X-Small (<1 FTE)	Small (1-5FTE)	Med (6-20 FTE)	Large (>20 FTE)	Not stated
Total	16	44	48	17	99
Percent*	12.8%	35.2%	38.4%	13.6%	-

Terminology around job description varies considerably in the workforce, particularly around staff without health professional qualifications, with a lack of clear distinction between some titles such as “Support Worker”, “Mental Health Worker”, and “Support Facilitator”.

7. DISCUSSION

7.1. GEOGRAPHIC AND SOCIO-ECONOMIC INDICATORS IN THE ACT PHN REGION.

The ACT PHN region comprises two different remoteness area classifications: RA1 (major cities) and RA2 (inner regional Australia). Population density in the ACT is lower than Sydney and Melbourne, and similar to Brisbane, Adelaide and Perth (Australian Bureau of Statistics (ABS), 2010). Population is concentrated in the urban area in the north east. The eastern section of this area has a risk of psychological distress equal to or greater than the national average (Australian Bureau of Statistics (ABS), 2008). The importance of urban design, including walkability and green spaces on psychological distress has been emphasised (Astell-Burt, Mitchell, & Hartig, 2014; Hartig & Kahn, 2016). Research into the health impacts of urban design, has found associated increased rates of death by cardiac arrest (Drennan et al., 2016), and of suicide by jumping from a high place (Panczak, Galobardes, Spoerri, Zwahlen, & Egger, 2013).

Social and demographic indicators vary across the region. At the SA2 level, the lowest incomes, lowest levels of education attainment, and highest unemployment rates are found in the north and east of the urban area, while the areas of North Canberra and South Canberra have the highest incomes, highest rates of people with Year 12 equivalent and above, and the lowest rates of lone parents. In all areas, unemployment is lower than the national average (Australian Bureau of Statistics, 2017a). Although social and demographic diversity within the ACT is not as great as in, for example, the CESP HN, nevertheless, the diversity within the region requires focussed localised planning.

7.2. HEALTH CARE PROVISION IN THE ACT PHN REGION

The ACT Blueprint describes a vision of person-centred and integrated care embraced and adopted by all parts of the health and social system, with a focus on system integration, the enabling of health pathways and inter professional collaboration (Capital Health Network, 2015). Goals of the ACT PHN strategic plan include collaboration for aligned, collective results, and channeling and leveraging resources for maximum benefit.

The social and economic diversity of the region is reflected in the use of health services. In 2014-15, life expectancy and rates of childhood immunization were higher than the national average, and rates of smoking and of potentially preventable hospitalisations lower. The ACT PHN region had the equal fourth highest rate of people stating they had excellent, very good, or good health, and age standardised GP attendances in the ACT PHN, at 4.7 %, were lower than the national average of 5.7%. However, the ACT PHN region also had the equal third highest rate in the nation of people who delayed or did not see a GP in the previous 12 months due to cost (7%), and equal sixth highest of people unable to fill a prescription due to cost (7%); 25% of people felt the waiting time to see a

GP was unacceptable, and 57.9% of GP attendances were bulk billed, compared to the national average of 84.3%. The rate of specialist attendance was equal second highest in the country at 39% of adults, and the rate of hospital admission in the previous 12 months was equal third highest of all PHNs (MyHealthyCommunities, 2017).

7.3. MENTAL HEALTH CARE PROVISION IN THE ACT PHN REGION, 2016

The ACT has the highest percentage of population with mental health problems of all states and territories (15.5%, compared to 13.4% for Australia) (ACT Health, 2014). The ACT PHN is one of the ten PHN lead sites chosen to take a lead role in developing and delivering new models of primary mental health care, and new approaches to regional planning, integration and stepped care.

Key functions of lead sites will be:

- “Establishing models for the development of regional community mental health and suicide prevention plans in collaboration with Local Hospital Networks, non-government organisations, National Disability Insurance Scheme providers, and other related services and organisations.
- Demonstrating models of stepped care, including coordinated clinical care for people with severe mental illness who are managed in primary care; and models of early intervention low intensity mental health care, such as ‘coaching’ services” (Mental Health PHN Consultative Forum, 2016)

In 2011-12, the proportion of expenditure on community mental health services, in relation to public mental health services, in the ACT was the highest of the states and territories, and the proportion of expenditure on grants to NGOs was also the highest. The ACT had the highest rate of community mental health care contacts, the third lowest rate of residential mental health care episodes, the lowest rate of mental health nurses, but the highest rate of registered psychologists. Expenditure on public hospitals was the lowest in the nation, with the number of public sector specialised mental health beds per 100,000 population also the lowest, and the rate of overnight hospitalisations for mental health needs lower than the national average (MyHealthyCommunities, 2017). The rate of people followed up by community mental health care in the seven days following hospital discharge was the highest in Australia. In addition, expenditure on PBS subsidised mental health medications was the second lowest in the nation (National Mental Health Commission, 2014) (vol 4, paper 3). Taken together, these figures suggest that in the ACT, there may be a greater availability of mental health care in the community than in other states and territories.

However, the ACT PHN Baseline Needs Assessment (Capital Health Network, 2016b) identified key priority issues as including: early intervention care; services for moderate to severe illness presentations; better management of physical issues; the need for a systems approach to suicide prevention; issues surrounding the NDIS transition; and

service provision for vulnerable populations such as transgender population and refugees. Transitions of care between acute/sub-acute/primary health care, and preventable hospitalisations were also identified as areas of concern, indicating “lack of knowledge and awareness of community based support services; need for better access to outpatient services; lack of consistency in discharge planning processes and poor communication between different parts of health system”. In addition, limited services are reported as being available during the after-hours period for people with mental health and behavioural problems (Capital Health Network, 2016b; Government-Health, 2017), and the number of hospital separations for ACT residents with a primary diagnosis of mental or behavioural disorder has also continued to increase, from 2009-10 to 2011-12 (2,935 to 2,970 respectively).

The Integrated Mental Health Atlas of the ACT PHN Region has revealed some important systemic gaps and differences between the ACT and other locations in the world regarding the main components of the secondary care subsystem of mental health. These gaps are mainly related to:

- a lack of acute and sub-acute community residential care;
- a comparative lack of services providing acute day care and non-acute day care/programs (i.e. day centres providing structured activities to promote health and social inclusion);
- a lack of employment related services; and
- a lack of Culturally and Linguistically Diverse(CALD) services.

Other differences include:

- more highly specialised services for specific groups –particularly gender specific, and youth carers and gender specific;
- relatively high rate of supported residential services; and
- relatively high rate of accessibility services.

The first two gaps identified are similar to those found in some areas in metropolitan Sydney (i.e. Western Sydney and South Western Sydney), suggesting systemic structural gaps in the organisation of mental health care delivery system in NSW and ACT. These findings support the main recommendations pointed out by *National Review of Mental Health Programmes and Services* by the National Mental Health Commission (National Mental Health Commission, 2014), namely the lack of alternatives to hospitalisations, and the need for strengthening the community mental health care subsystem.

The following sections of the Atlas provide discussion on areas of commonality and difference in the ACT PHN, when compared to local and international jurisdictions. The discussion is framed within the stepped care model, concentrating on secondary and tertiary care services. The section concludes by considering the implications of these commonalities and differences to mental health care planning in the ACT.

Although the stepped care model has been used to structure the Atlas discussion, ascription of non-health services into this model may cause some confusion. In the stepped care model adopted by the Fifth Mental Health Plan, a clear distinction is made between psychological services for those with mild mental illness; clinical services in primary care backed by psychiatrists for those with moderate mental illness; and clinical care for those who experience severe mental illness provided by GP care, psychiatrists, mental health nurses and allied health. This distinction, in the absence of a fully implemented integrated care system, could produce further fragmentation instead of preventing it. Social support services such as education and employment supports are included in the 2016 PHN guidelines for the broader primary care of child and adolescent services (Department of Health, 2016b). From these guidelines it is not clear, however, to what extent, for example, Headspace should be considered a primary care service (according to the population assisted) or a secondary care service (with regards to its staff capacity). A further example of blurred delineation within the stepped care model is that of Health In Mind mental health nurses and individual practices of psychologists, which are counted as part of the primary care network in some reports.

7.3.1 NON-RESIDENTIAL MENTAL HEALTH CARE

HEALTH IN MIND (FORMERLY KNOWN AS ATAPS)

Health in Mind (formerly ATAPS) is funded by the Commonwealth Department of Health through the ACT PHN. This program provides access to effective treatment for people with diagnosed mild to moderate mental health conditions, with financial barriers to gaining treatment, and who can respond well to focussed psychological strategies (Capital Health Network, 2016a). Health in Mind is a free initiative, which provides services for ‘hard to reach’ groups such as culturally and linguistically diverse communities, and people who are homeless or at risk of homelessness. Like ATAPS, it could be conceptualised as a primary care or secondary care service. To determine whether there is an equitable access to Health In Mind services in the ACT PHN region it may be important to conduct a spatial analysis of Health In Mind referrals, and a corresponding analysis of the distribution of professionals. Such an analysis is important to determine if Health In Mind reflects the findings of recent analyses of the Medicare ‘*Better Access*’ initiative that found major disparities in the use of mental health services across Australia, with greater use among more advantaged communities (Meadows, Enticott, Inder, Russell, & Gurr, 2015). This finding points out the need to also revise the access and use of the Better Access program in this region, as well as other programs included in the Medicare Benefits Schedule (MBS), and the Mental Health Nurse Incentive Program (MHNIP).

OUTPATIENT SERVICES

The pattern of Outpatient health related care in the ACT PHN region is broadly similar to that in the areas in NSW we have mapped, as well as those in both northern and southern European countries, in that there is generally a higher availability of non-acute services, particularly non-acute, non-mobile care

ACUTE HEALTH RELATED OUTPATIENT SERVICES

In ACT, as in CES and WS and SWS, acute health related Outpatient care is provided exclusively by the public health sector. Acute mobile health related Outpatient care, such as that provided by Crisis and Assessment Teams, is more available in the ACT than in SWS, but less available than in CES and WS. Acute non-mobile health related Outpatient care is less available in the ACT than in CES and SWS. Consultation Liaison services were the only service of this type available in the ACT PHN region. While in other regions, Emergency Departments have included specialised teams providing this type of care, in ACT specialised acute mental health care in the Emergency Department is available at Canberra Hospital in the Mental Health Short Stay Unit which provides short term (up to 48 hour accommodation for assessment) and so has been coded in Residential care.

In international comparisons, the ACT PHN region's rate of acute health related mobile Outpatient care is similar to Norway, and higher than Finland, while it has lower availability of acute non-mobile health care than either Finland or Norway. Finland also provides more health related daycare and more alternatives to hospitalisation. In comparison to southern European countries, ACT has slightly less acute health related Outpatient care than Italy, but slightly more than Spain. However, in both these countries, other community based healthcare such as health related daycare, or alternatives to hospitalisation, are more available.

NON-ACUTE HEALTH RELATED OUTPATIENT SERVICES

Non-acute Outpatient care is coded in DESDE-LTC as low-mobile (O8-O10) or mobile care (O5-O7), depending on the frequency of care provided outside the service premises (if less than 50% of the care is provided outside the centre is coded as low-mobile).

The ACT PHN region has slightly higher availability of non-acute mobile health care (such as the Mobile Intensive Treatment Team and the Woden Transition to Recovery service) than WS, SWS and the CESP HN. This is even though community mental health teams, which in CESP HN were coded as non-acute mobile, are not included in the ACT PHN atlas as mobile: rather, they have been coded as non-mobile, as they do not reach the 50% threshold required, but with a “q” qualifier to indicate that nevertheless, a substantial amount (20-49%) of care is provided as mobile. It is important to note that one of the teams coded as non-acute mobile health care in the ACT PHN region is the

CAMHS Early Intervention Team (14-25 years). It has been included in the adults section, but only includes young adults. Notably, in the ACT, CAMHS provides services to adults, albeit young adults in this case, but also to a general population in the case of the Eating Disorders program. This raises questions as to the best use of resources, and to whether CAMHS is stepping in to provide services in areas of unmet need for adults. The Mobile Intensive Treatment Team is based in the Northside of the ACT, with no equivalent service on the Southside. So, while the availability appears to be higher, it is also more limited in its scope. Additionally, the individual Health In Mind providers are included in this analysis: while numerous, these ten individual practitioners provide an average of just 0.2 FTE care each.

Nevertheless, the rate of availability of non-acute Outpatient health care is relatively high in the ACT PHN region, This can be considered in relation to the use of mental health services cited above, showing that the ACT has the highest rate of community mental health contacts in the nation, and a lower than average rate of overnight mental health related hospitalisations.

SOCIAL/CULTURAL RELATED OUTPATIENT SERVICES

The pattern of social Outpatient care is similar in the ACT to that in WS, SWS, and CES. The greatest availability is in the area of non-acute, mobile social Outpatient care, such as PHAMS. Unlike the other atlases in NSW, which have frequently coded PIR services as Outpatient, in the ACT PHN atlas they are, with one exception, coded as Accessibility. This might lead one to expect that the ACT PHN region would have a lower availability of Outpatient care than in NSW, particularly as there are also more Outpatient services such as HASI in NSW, coded as such because they provide support to people in their homes. However, except in SWS, this is not the case. This may be because the ACT PHN region has a wider range of teams providing care in this classification, including PHAMS, the Detention Exit program provided by Wellways, CatholicCare's Home Care Support, and St. Vincent de Paul's Mental Health Services Team. However, it should be noted that the four PHAMS teams have been given the "v" qualifier, indicating that they do not have ongoing funding.

DAY SERVICES

Day care for people with a lived experience of mental illness has been considered a key component of psychiatric reform since the early 60s (Marshall, Crowther, Sledge, Rathbone, & Soares-Weiser, 2011; Vazquez-Bourgon et al., 2012). "Day Care" (including partial hospitalisation) refers to all services where the consumer stays for part of the day but not overnight, or just for a single face-to-face contact. There is a whole array of different types of day care services according to the phase and the severity of the mental illness: from acute care (i.e. day hospitals/partial hospitalisation), to non-acute care (i.e. day programs/centres) and recovery oriented programs (i.e. peer support, respite, social clubs, or work-related approaches), just to mention a few. These services should

be integrated in a local acute care subsystem that also incorporates mobile care alternatives for crisis intervention at home (crisis resolution teams, medical homes), together with non-mobile emergency services and high-intensity co-ordination/case-management as in Assertive Community Treatment (Vazquez-Bourgon et al., 2012).

ACUTE HEALTH RELATED DAY CARE

There are no acute health related Day services in the ACT. Acute Day services can provide a less restrictive alternative to admission to an acute ward admission for people in crisis. High intensity acute day care or day hospitals can be a cost effective alternative to hospitalisation. They provide the same high level of care by specialised mental health professionals as inpatient wards, while allowing people to maintain their contacts and relationships in the community, and reducing the risk of institutionalization and the stigma associated with it. They comprise part of the Thornicroft and Tansella balanced care model as alternatives to acute inpatient care. Acute day care has been included in NICE recommendations for the prevention and management of psychosis and schizophrenia (NICE, 2014). However, research into the efficiency and effectiveness of acute day care alternatives is limited and inconclusive, one study suggesting that they may be more effective for female, educated patients with moderate to severe symptoms than the most severely unwell people who benefit from acute inpatient admission (Priebe, Watzke, Hansson, & Burns, 2008), and another that while they are suitable options in situations where demand for inpatient care is high and facilities exist that can be converted to these uses, they are a less attractive option in situations where the demand for inpatient care is low and can be covered by other options (Marshall et al., 2011).

NON-ACUTE HEALTH RELATED DAYCARE

Non-acute high-intensity Day care (“day centres”) is a key component of a community mental health system missing in the ACT PHN region. Day programs staffed with at least 20% highly skilled mental health professionals, such as psychologists, neuropsychologists or mental health nurses (D4.1 and D8.1), can provide more intensive rehabilitation and recovery oriented program activities in a highly specialised environment than day centres staffed with non-health professionals (D2 to D10 services). This workforce capacity allows these centres to provide a better focus on tertiary prevention and clinical improvement (e.g. by better training in daily living, problem solving, stress management, social skills or cognitive rehabilitation). This type of centre can improve socialisation and assist individuals to learn new skills according to their needs. They also include occupational therapy tailored to the patient’s needs. They should be provided in a recovery oriented format that promotes peer-support. Day centres allow people with mental illness to have structured, more intensive rehabilitation programs including educational, vocational and health activities provided in the same location. These type of centres can provide recovery-oriented practices for community living, one of the key components of care, according to the THAMSS report (Department of Health and

Ageing, 2013).

In the ACT we have identified only one non-acute health related Day centre with high intensity (equivalent to day hospitals): an eating disorders program. It is important to note that non-acute high intensity Day services were lacking in all other PHN regions previously mapped in metropolitan Sydney. The eating disorders program we identified is a specialised service which we have also found in two other regions. These three regions share close proximity to universities, and a high concentration of population, which may facilitate the delivery of highly specialised care. Of note, the eating disorder program is another service for other age groups besides children and adolescents provided by CAMHS.

The lack of day care in the local system may be attributed to several reasons. First, mental health funding has moved from services provided in the public sector - including the more institutional modes provided by the LHDs - to community-based services provided by the NGO sector. This shift has been a significant aspect of de-institutionalisation, emerging hand in hand with the closure of psychiatric hospitals across the system. Day Hospitals and health-staffed day centres have been unintended victims of this necessary shift in the model of care. NGO-run services have been focused on the less clinical (and less expensive) end of day care, focusing on cultural or respite services. Reduced budgets mean the staff that can be contracted are lower skilled, or lack the specific skills needed for more intensive services. Although these types of services (D2-D10) are absolutely necessary, we must not neglect more intensive health related day services (D1, D4.1 and D8.1). Indeed, at least in Greater Sydney, health-related day centres for mental health can be found in the private health sector, suggesting that there may be equity problems in access to this type of care, adding to findings on inequity of the operation of the “Better Access Program” in Australia (Meadowsetal.,2015):

The disappearance of day hospitals and day centres in the public sector could also be attributed to the shift to individualisation of care and tailored programs of daily activities. Individual care, based on individual preferences and choices, tends to prioritise face-to-face programs and home-based treatments, rather than day care interventions. Crisis resolution or home treatment teams are an effective community intervention to manage psychiatric crises, but they should not be seen as the only alternative to acute inpatient care. A recent systematic review (Wheeler et al., 2015) did not find a significant effect in hospitalisation rates for the implementation of crisis resolution services; and observational studies have shown disparate effects in Norway (Has elberg, Grawe, Johnson, & Ruud,2011) and in England (Johnson& Bindman,2008). It has been suggested that a strategy that combines “crisis resolution/ home treatment” and “day hospitals” is a good option to treat patients in the community (Vazquez-Bourgon et al., 2012).

We may also keep in mind that models which prioritise individual care may have unintended adverse effects if critical services in a community care model are missing from the local system. Likewise, and although this requires further evaluation, the value

of choice in recovery oriented systems may be limited by the availability of core services in the system. In order to make useful choices to meet an individual's needs, a whole array of service alternatives should be available in the local care system. Strikingly, the lack of high-intensity Day care (eg Day Hospitals and Day Centres related to health) has not been mentioned as a critical system gap in previous policy documents. Other authors have documented the dismantling of the Australian community mental health system in recent years, but without specific mention of the disappearance of day care (Rosen, Gurr, & Fanning, 2010; Rosen, Gurr, Fanning, & Owen, 2012).

The reduction or disappearance of day care staffed with health professionals has also been observed in other health systems in the process of shifting to a competitive market based on personalisation, such as that in the United Kingdom. Although this shift has been described in the disability sector (Barnes, 2011; Duffy, 2011; Ferguson, 2012), an understanding of the impact of this reform in the overall efficiency of the care system is still missing. Therefore, there is an urgent need to assess the effects of this silent reform on key performance indicators of the system, and on the outcomes. This need is made particularly urgent in the context of the transition to the National Disability Insurance Scheme (NDIS), which has a strong emphasis on individualisation and care planning driven by demand.

SOCIAL/CULTURAL RELATED DAY CARE/PROGRAMS

Three Day care BSICs were identified, offering participants opportunities to develop skills across a range of areas including computer skills, arts based skills, practical skills such as furniture restoration, and work related skills such as computer skills or barista training. However, two of these do not have guaranteed funding for three years. This means that the ongoing availability of the already limited day centre options which does exist in the ACT is precarious.

EMPLOYMENT RELATED DAY CARE/PROGRAMS

While the above services provide some work related skills training, we found no service in the ACT providing employment alternatives for people with mental health needs. ACT is the only area in Australia we have mapped in which we found no services of this type.

Services providing employment can play a critical role in promoting recovery (Walsh & Tickle, 2013). Supported employment and supported education are key rehabilitation interventions for people with psycho-social disability (WARP, 2016). An example is Individual Placement and Support in particular, found by one systematic review to be relatively effective in leading to competitive employment when compared with traditional vocational rehabilitation services (Modini et al., 2016). While Richmond Fellowship has a worker engaged as an Employment Support Worker, this is part of the PHAMS program, which is being phased out with the introduction of the NDIS. Competitive employment must be the final goal of any employment intervention in mental health.

However, it is necessary to have a broad availability of different employment alternatives for people with mental illness in addition to supported employment. These alternatives can be relevant to people transitioning to competitive employment, as well as for those for whom competitive employment is not an option. Some of these alternative services may be classified as ‘social firms’ which are market-oriented businesses that employ people with disabilities; or ‘social enterprises’ which are primarily focused on training and rehabilitation (Grove, 1999). The recently published NICE clinical guideline for Psychosis and Schizophrenia in adults recommends to: “Offer supported employment programmes to people with psychosis or schizophrenia who wish to find or return to work (but also to...) consider other occupational or educational activities, including pre-vocational training, for people who are unable to work or unsuccessful in finding employment” (NICE, 2014). Specialised services for increasing access to employment, such as the Individual Placement and Support model, in addition to vocational rehabilitation are a part of the Thornicroft and Tansella model for balanced care (Thornicroft & Tansella, 2013).

ACCESSIBILITY SERVICES

The ACT has a significantly higher rate of Accessibility services than the other areas we have mapped. A significant contributing factor is that PIR in the ACT is coded most commonly as Accessibility, whereas in other areas, PIR teams have provided more of an Outpatient service. The main objective of the PIR program is to increase accessibility to a range of services for people with a lived experience of mental illness. However, in other mapped areas, many PIR are in fact providing more intensive direct care, meaning that they have been coded as O (Outpatient) rather than A (Accessibility). This could indicate that in these other areas, a gap in availability of community outpatient care is being filled by PIR, and that this gap in community outpatient care is not present in the ACT. The higher contact with community mental health services noted above, as well as the highest rate of registered psychologists in the ACT (MyHealthyCommunities, 2017) could suggest that this is the case. On the other hand, it may be that there is a greater need for assistance with system navigation in the ACT, due to the high number of NGO services available, a pattern of care which increases the complexity of the system. As this atlas was being collated at a time of transition to the NDIS, it may also be that a lack of clarity over service availability and eligibility has contributed to a need for the higher use of PIR as Accessibility services.

In other areas we have mapped, most Accessibility services are employment related, assisting people to access employment skills and opportunities, however, this type of accessibility and case co-ordination was not identified in the ACT. One service in this category provides care co-ordination for people discharged from acute care following a suicide attempt. This speaks to key areas in the Fifth Mental Health Plan and to the ACT PHN Baseline Needs Assessment (Capital Health Network, 2016b) identifying suicide prevention in the community as a priority, including more support post discharge following a suicide attempt.

Care co-ordination is a key component of integrated care and personalised care, as well as of the stepped care approach, assisting vulnerable people to access available supports according to their needs. However, the majority of services in this category, including the PIRs, do not have definite funding for three years.

7.3.2 RESIDENTIAL SERVICES

In the stepped care approach, inpatient hospital care provides support primarily for those at the severe end of the spectrum, estimated to be 3.2% of the population, while services provided in the community should cater for the majority of people experiencing mild and moderate to severe mental illness. Availability of acute care is an important component of an integrated system. However, alternatives to acute hospitalisation, and alternative forms of long-stay community residential care, are also components of the balanced care model. Currently in Australia, the system is still skewed towards hospital care, a “downstream” focus on care for people once they have reached crisis point, with expenditure on psychiatric wards the only area of a significant increase in funding (Australian Institute of & Welfare, 2016). Additionally, the ACT PHN Baseline Needs Assessment has identified the need for more prevention and early intervention services to reduce the need for hospitalisation and inpatient facilities (Capital Health Network, 2016b). Although the National Mental Health Commission Review recommended the reallocation of a minimum of \$1 billion in Commonwealth acute hospital funding into more community-based psychosocial, primary and community mental health services, the governmental response did not question the current unbalance to hospital provision. There is an on-going debate in the Australian literature on the need to invest in community beds at the expense of hospital beds (Allison, Bastiampillai, & Goldney, 2014).

Although acute beds within hospitals are a key component of an integrated care system, it is also important to implement residential alternatives in the community. Step Up care, including supervised respite and CATT team home management, is one alternative, and is additional to Step Down care, which appears more developed in the ACT. The existing alternatives and structure of home and community care in the ACT are outlined below. However, more studies are needed on the efficiency of these type of services. Some authors suggest that acute residential care in the community may be more cost-effective than hospital admission (Thorncroft & Tansella, 2013). In the French setting, a negative correlation was found between length of stay in fulltime hospitalisation for patients with mental illness, and the development of alternatives to fulltime hospitalisation in the local context (Gandré et al., 2017). A recent quasi-experimental study carried out in Brisbane evaluating “crisis houses” showed that this community alternative provides a cost-saving for mental health services (Siskind et al., 2013). A similar study completed in Canada demonstrated that scattered housing with intensive case management support increased housing stability for people with a lived experience of mental illness who had been experiencing homelessness (Stergiopoulos et al., 2015). Other initiatives in Australia that fit in this model is the Prevention and Recovery Care Model (PARC) in Victoria

(Department of Health, 2010). These services can also function as a ‘step-down’ from a period of acute psychiatric hospitalisation, to facilitate transition from hospital. The key characteristic of these services is that they are staffed with highly-skilled mental health professionals.

The pattern of residential care in the ACT PHN region has some interesting differences with those of the NSW regions we have mapped, which show greater availability of acute hospital beds than non-acute hospital and community accommodation. The availability of acute care in the ACT PHN is similar to all areas in NSW, Finland and Norway, but lower than that in Spain and Italy. However, the high availability of non-hospital residential care, and of this type of service in relation to acute hospital inpatient services, is in inverse proportion to the NSW regions, and closer to that of Finland, which has a high availability across a range of types of services, and to Spain and Italy, where care delivery is characterised by a strong emphasis on community care. Italy, however, and to a lesser extent Finland and Norway, also have services which provide residential alternatives to hospitalisation. Residential alternatives to acute hospitalisation, such as crisis houses, are not present in the ACT but are more closely aligned with the philosophy of care in the community, as well as being a key part of the balanced care model.

While residential acute care is provided exclusively in a public hospital setting, and is broadly similar in availability to other mapped areas in NSW, availability of medium to long term residential care is higher in the ACT PHN region than in NSW, with the balance between these types of care and acute hospital care availability being closer to that of Finland. However, European countries have a greater range and availability of residential alternatives. Norway and Finland have similar acute hospital availability to the ACT but more non-acute beds. Finland has a higher availability of non-acute hospital residential care, and a more diverse range of non-hospital residential care; and Spain and Italy, while having lower availability of acute hospital care, have more alternatives to acute hospitalization.

The ACT PHN region has a higher proportion of NGOs to public sector services than other mapped areas in NSW, except SWS. This is reflected in the balance of hospital to community care, with significantly more residential care in the community in the ACT than in other areas. This aligns with a balanced care model, and with the prevailing philosophy of care provided mostly in the community. However, the lack of guaranteed funding for several NGO provided services means that the higher number of NGOs in the ACT leads to greater system instability.

The ACT PHN region also provides a higher proportion of residential rehabilitation care. While there is no evidence for the best model of care, supported housing may provide greater cost effectiveness than other models. Studies in Canada on “Housing First”, a rehabilitative model which provides supported housing to people with a lived experience of mental illness who are homeless, suggest that the immediate provision of short to medium term- one to three years-housing, along with appropriate, and if needed,

intensive, clinical and social support, assists in promoting recovery, and housing stability (Tim Aubry et al., 2016). The higher rate of residential services in ACT means that initiatives in residential care for people with a mental illness could be implemented in the territory, as the necessary infrastructure would be better developed than in other areas.

7.3.3 SERVICES FOR SPECIFIC POPULATIONS

SERVICES FOR CHILDREN AND ADOLESCENTS

Services for children and adolescents are a key part of the provision of preventative and early intervention care. The six priority areas highlighted for primary mental health commissioning includes youth mental health. The ACT PHN region has a higher rate of services for young people than other areas we have mapped, including specific preventative and early intervention services, such as a service specifically for children at risk due to exposure to trauma. However, as previously mentioned, CAMHS also provides services outside this specific age group, the implications of which may require further examination. Services for children are mostly health related, although there is no acute Residential care for children and adolescents.

The National Review (National Mental Health Commission, 2014) found that at a national level, there are high rates of 16-25 year olds with mental health issues not in education or employment. This may be better addressed in the ACT PHN region, which provides a broader range of types of support for those in the transition to adulthood age group than we have found in other areas. This includes services targeting young carers of people with mental illness, and young males, both populations with particular vulnerability. However, the services providing social and educational related care also have the least stability of funding. Additionally, there is no employment related service.

SERVICES FOR OLDER ADULTS

The ACT PHN region, like the other areas we have mapped, provides some support specifically for older people with mental illness, with an acute inpatient ward and a community care team. The physical health of people with mental health issues has been highlighted as a concern, and this becomes more pressing as people age, due to the effects of long term use of psychotropic medications and/or of other lifestyle factors, such as lower rates of physical exercise, higher rates of drug and alcohol problems, and homelessness. Although the life expectancy of people with mental illness is lower than the general population, with the continuing development of medications with fewer side effects, and potentially better preventative health care for this population, the need for services to support older people with mental illness may increase, including the need for more long term, as well as acute, care.

GENDER SPECIFIC SERVICES

The provision of gender specific care mental health care in the ACT is notable for its high availability, particularly gender specific services for males. This is the only atlas in which we have identified gender specific services for males. The reason for this difference is unclear. One of these services, through its outreach to workplaces, is particularly focussed on identification of, and early intervention for, mental health problems. Two of the three gender specific services for women are related to the perinatal period.

OTHER SPECIFIC POPULATIONS

Other specific groups targeted by mental health services include Aboriginal and Torres Strait Islander peoples, veterans, parents with mental illness, offenders, and carers, as well as a service providing psychological care specifically to the deaf and deaf/blind population. The importance of mental health services for Aboriginal and Torres Strait Islander people is documented in the ACT PHN Work Activity Plan (ACT PHN, 2016), and is also one of the six key areas for primary mental health commissioning. The rate of availability of services for this population is better than in other areas we have mapped, although it is provided by just one organisation. In 2015-2016, 96,000 ACT residents, or approximately 25% of the population, were born overseas, of whom approximately 40,000 were born in non- English speaking countries (Australian Bureau of Statistics, 2017b). However, we were unable to identify any mental health services for the CALD population.

7.4. MAIN SERVICE GAPS AND UNMET NEEDS

In other regions, PIR consumers have identified daytime activities, employment and volunteering opportunities, social life, psychological distress, physical health and accommodation as top unmet needs (South Eastern Sydney Partners in Recovery, 2015). The main gaps identified in this atlas relate to: (i) daycare and support to provide opportunities for social activities, and educational opportunities; (ii) alternatives to acute hospitalisation; and (iii) employment related services, and suggest that there may be similar unmet needs in these areas in the ACT.

The ACT PHN Baseline Needs Assessment identified the following: (i) need for more appropriate, evidence-based early intervention and prevention based services for people experiencing mental ill health; (ii) need to increase services focusing on psychological interventions for people with moderate to severe presentations; and (iii) need to improve integration between primary mental health care services and tertiary services and increase community based support services for people discharged from hospital following a suicide attempt

We have identified that ACT has a relatively good availability of non-acute residential care and accessibility services when compared to other areas. Accommodation in the

community is an integral part of a balanced system, important in aiding recovery and reducing the need for acute and crisis care by identifying and supporting people before crises are reached. An important caveat here is that several of these services do not have guaranteed funding for a period of three years, so their continued presence in the system is not guaranteed. The high rate of accessibility services is largely due to PIR services, which face similar funding issues. This is particularly relevant in view of the ACT PHN Needs Assessment which identified care co-ordination for those who do not transition to the NDIS as an area of need.

IMPLICATIONS OF THE MAIN GAPS FOR THE LOCAL MENTAL HEALTH SYSTEM

Fragility of the system: “v” qualifiers.

An additional issue that emerged in this study was related to the lack of robustness, or the fragility of the system, brought about by short term programs lacking recurrent funding bases. We found that around a third of services did not have stability of funding. In other atlases, we have not included these services due to their instability, but we have included them here as they represent a significant proportion of care. We have used the “v” qualifier to indicate these services. It is important to note that data was collected for this atlas during a period of acute transition, particularly in relation to the transition to the NDIS, adding to uncertainty for immediate planning for many services, and changes in service delivery in some cases during, and since, the period of our data collection. The higher rates of NGOs in ACT PHN region increases the balance of community care in the ACT, but also the system fragility, as it is this sector that is most affected by funding instability. This is particularly so in those areas specifically highlighted by territory and national planning, and in which the ACT PHN region has at present relatively good availability: such as non-acute residential, youth social and educational support, suicide prevention, and accessibility services, but also in general adult outpatient social support, such as the PHAMS program. The “v” qualifier was assigned to services in all branches, particularly Outpatient care. At the time of data collection, two of the three Day services had a “v” qualifier, indicating that this branch of care, already fragile, is threatened. Indeed, since that time, the Mental Health Foundation has been unable to continue funding The Rainbow Psychosocial Rehabilitation program, and it closed in December 2016. As mentioned previously, the good availability of residential care in the community is potentially also at risk, as seven of these services do not have funding stability. It is important to also note that while most services with a “v “ qualifier are NGOs, Brian Hennessy Rehabilitation Centre provided by ACT Health is also shortly to close, with the introduction in 2018 of the University of Canberra Public Hospital, a purpose built hospital for people rehabilitating from surgery, injury or mental health issues.

Additionally, even the common three year time frame is an insufficient period to test the benefits of new services. This type of problem is typical of high income countries where decision makers/policy planners (the advocates for a new service) take a ‘component view’ rather than a public health orientation, which takes a ‘system thinking perspective’

of the whole pattern of care at the local level and how the different components are related (Thornicroft & Tansella, 2013). The problem with the component approach is that it results in a highly inefficient use of scarce resources, as investment is made in new services, whilst the core services are absent, or not appropriately resourced. This leads to a “reactive”, rather than a “proactive” system, based on long term planning informed by local evidence. In addition, all of these programs are community based, which means that the community mental health system in ACT PHN region is very fragile. This lack of robustness is particularly relevant in the current situation, where major changes are occurring due to the transition of many mental health services to the NDIS, and to the current changes in organisation and governance related to the commissioning role of the PHNs, and their relationship with other components of the system, such as LHDs and the hospital networks.

Integration of the mental health care system

According to the government response to the mental health commission report, “regional integration” is a systems-based approach that seeks to better coordinate and plan regional services to improve system and health outcomes (Australian Government Department of Health, 2015). Regional integration works to integrate pathways and services around the needs of consumers, while also striving for the best possible use and targeting of available resources to address individual and community needs. The emphasis on a system-based approach is critical to generate new informed evidence for policy and planning. As previously stated, the specific priorities for regional service integration and delivery led by PHNs include: “development of evidence-based regional mental health plans based on comprehensive needs assessment, and service mapping designed to identify gaps and opportunities for better use of services to reduce duplication and remove inefficiencies”. The Government has committed itself to build the capacity of PHNs to lead mental health planning and integration at a regional level in partnership with LHDs, non-government organisations, local NDIS providers, alcohol and other drug services, Indigenous organisations, general practices and other regional stakeholders.

This mapping has provided a description of the service availability and capacity but it has not analysed the level of integration of the mental health care system. However, analysis of the integration of care cannot be carried out without a prior knowledge of what services are available in the local area; therefore the information provided here is a necessary precursor to understanding the integration of the care system. In addition, the lack of major components of a fully developed community mental health care system identified in the gap analysis has clear implications for the integration of care, as a system cannot be fully integrated when major components of the system are missing. This has implications for the stepped care model, which assumes an integrated system, without major gaps in health pathways. The large number of NGOs and their independence of each other in the ACT PHN region increases the complexity of the system, and the ability to provide system co-ordination. Additionally, Calvary Hospital, operated by the Sisters of the Little Company of Mary, but within the public health system, could be seen as a

“nested subsystem”, similar to St. Vincent’s in Central and Eastern Sydney (Salvador-Carulla et al, 2016). The difficulties for informed public policy and planning of geographic and substantive boundaries of subsystems nested in broader systems have been pointed out previously (Weible & Sabatier, 2007). Problems may arise in such systems in relation to the territorial scope, the substantive scope (e.g. local mental health policy), the agents or participant organisations operating in the general systems and in the nested system, and the population perspectives with regards to social, demographic and epidemiological indicators. On the other hand, and from a systems thinking perspective, a nested subsystem can increase flexibility and capacity of self-adaptation to changes in the environment of the broader system.

While this atlas is aimed at planners, a map of the system designed to aid consumers and clinicians in navigating the system, may be particularly relevant in the ACT. In any case, the need and the number of co-ordination services, whose activities are not part of the routine activities of direct care, may indicate the lack of continuity of care in the system. The transition to NDIS of many non-health services may potentially increase the level of fragmentation. So too, the reliance of the system on NGOS could increase fragmentation, make co-ordination of the balance of care more difficult, and decrease the stability of the system.

We have found that one characteristic of the mental health care system in the ACT PHN region is the fragmentation of funding across functional teams, so that different professionals working within the same team may have different funding. An example of this is the part time provision of a CAMHS funded mental health nurse to a NGO funded residential service. This indicates a need for a complementary mapping of the financing flows in the system.

The ACT PHN region has a higher rate of service availability than other areas and a greater range of specialist services. The complexity of the system created by the number and variety of services and by the high rate of NGOs, suggests that more service integration is a greater need than more services. However, despite a high number of services, concerns were expressed by many services about their ability to meet need. Some services found they needed to implement strategies to address this demand for service, such as the “Active Hold” strategy employed by the New Horizons service operated by Marymead; or by running groups to maintain contact with people waiting for more intensive support. However, when comparing the ACT to areas such as those in Greater Sydney, the relative isolation of the ACT should be remembered: that is, while in Sydney, a service not provided in one LHD may be provided in an adjacent region, in the ACT, this is of course not the case. This should be taken into account when comparing number and range of services available.

An additional finding was a discrepancy in some cases between the service description described on services’ websites, and their current availability at time of interview. Some services were providing more care than that described on their websites, while some

services which were no longer available remained on others' websites. The ability of other service providers, health professionals and service users themselves to understand and navigate the system is reduced if publicly available information lacks currency.

Implications for moderate to severe patients

All of the problems described in this discussion are related to the concept of the “missing middle” of care, which has been also highlighted in the review made by the National Mental Health Commission (National Mental Health Commission, 2014). In its response to the National Review, the government has committed to giving “priority to resolving the fragmentation of service delivery for people with severe and complex mental illness who are being managed in primary care” (Australian Government Department of Health, 2015), however the lack of Day care and Residential alternatives in the community (despite the ACT's greater availability of Residential care) makes this difficult to achieve. When analysing the information, the type of services provided in the ACT PHN region may cover the needs of the two extremes of the lived experience of mental illness: on the one hand, those people with mental health problems who are relatively well, have good support, and only need low-level support, and on the other hand, those who are in a severe crisis situation who require acute care in a hospital setting. In the middle, we have a significant proportion of people with a lived experience of chronic and moderate to severe mental illness who need more community-based options. In this sense, a balanced care system requires the active implication of the health sector in the provision of community care, together with the social sector.

It is important to note that gaps in the care provision for moderate disorders have been identified as a major problem in other countries with highly advanced community care systems such as Norway (OECD, 2014). However the gap in other OECD countries is mainly related to the mild-moderate target group treated in primary care and by community nurses, and not to clients experiencing moderate- severe mental illness treated in specialised care, as identified in this analysis. Models of care such as those in the UK, featuring specialist rehabilitation services and care pathways which include inpatient and supported accommodation services have been shown to reduce the need for acute care in people with complex psychosis (Killaspy et al., 2016). The care pattern for mild-moderate mental ill-health in primary care in ACT PHN region is an area that requires further investigation. The gap in high intensity Day care, including in employment related services, may hinder tertiary prevention or rehabilitation.

7.5. STUDY LIMITATIONS

There are several limitations that need to be acknowledged.

First, some services may be missing because we did not reach them. However, we presented and discussed services included and coded in the study to the Steering

Committee of the Atlas project and, after different iterative reviews, it was agreed that the majority of the services have been included and coded. A small number of services did not provide information on FTEs. Additionally, the generic services that are not specific to mental health, but that are used by people with mental illness, have not been coded and registered in this atlas.

Some services providing care for people with disabilities and homelessness expressed their interest in the Atlas, but they did not want to be included as their target population was not mental health. This is an issue which has also been identified in other PHN regions. The focus on individual care based on a person's level of functioning, without any consideration for the target population group may have implications in the care delivery system, which should be explored in the future. Questions arise as to whether a service which does not provide a mental health component in its provision system can adequately attend to and meet the specific needs of this population group.

Second, we have not included private providers, as this atlas is focused on services with a minimum level of universal accessibility. The inclusion of private providers in the mapping of publicly available services may increase noise, hamper the interpretation of the results and misrepresents the universality of access to services. Private services should be included as an additional map in future analysis.

Third, we have included services that have time-limited funding of less than three years. The inclusion of care programs that are time-limited could distort the analysis.

Fourth, the assessment of the services was made through interviews with the managers of the services. Some information may not be accurate and should be objectively confirmed (e.g. the percentage of activities made outside the office in order to be classified as a mobile service).

Finally, we have only included services within the boundaries of the ACT PHN region. We acknowledge that some services outside the area, such as in Goulburn and Queanbeyan, may also be used by people in the ACT PHN region. However, we did not include these, as they did not include any services with explicit service agreements to serve the population of the ACT PHN region.

Integrated Atlases of Mental Health are considered key tools for evidence-informed policy and planning. In this Atlas we have mapped in a comprehensive way the stable services providing care for people with lived experience of mental illness. However, to have a complete picture of the situation, the results of this Atlas should be completed by mapping the:

- **Needs of the primary care physicians related to the provision of mental health:**
General practitioners or family physicians are usually the first contact with the

health system and they can play a key role in the prevention of mental illness and the treatment of common mental illness. It is therefore crucial to understand and meet the needs of these professionals.

- **Analysis of professional profiles by main types of care.** Substantial differences have been identified in the professional profiles of the workforce in comparison with similar main types of care in Europe, particularly in the non-health / NGO sector. This would require a detailed analysis in the future.
- **Rates of utilisation of the services,** by MTC, using the information provided in the administrative databases: the analysis of service utilisation will detect hot and cold spots and areas of improvement. The information collected in the local Integrated Atlas of Mental Health Care can be combined with utilisation and outcome data to produce decision support tools that may help with the analysis of benchmarking and relative efficiency, as well as to redesign and improve available services. The DESDE-LTC system has been previously used for this purpose in other countries (Torres-Jiménez, García-Alonso, Salvador-Carulla, & Vicente Fernández-Rodríguez, 2015).
- **Care Packages:** The information presented in this Atlas may be complemented with an analysis on care packages: set of services and interventions that are provided to a consumer at a single time period (complex or collaborative interventions).
- **Pathways to care:** understanding how people with a lived experience of mental illness navigate the system is a key area of knowledge needed for creating systems which increase accessibility and efficiency. This will allow a continuity of care analysis.
- **Financing mechanisms and financing flows:** This will allow us to delve into important areas such as the *Better Access Program* and housing, as well as service complexity issues.
- **Level of integration of the services providing mental health care and the philosophy of care of the services:** a collateral finding that emerges, but that should be included, related to integration is the different philosophy of care of the services. It is important to know the view of the different providers on the public mental health system and their role in it.
- **Analysis of services for specific target population groups,** mainly: child and adolescent care, homelessness services, fully private services not accessible through public funding, and alcohol and other drug services, with a particular focus on care for comorbid patients.

The information provided in this Atlas is particularly useful for the following areas of navigation, management and planning:

- **Case and care coordinators:** The data in this Atlas could facilitate a better understanding of the landscape in which they work and the services that are available to their consumers.

- **Managers and Planners:** The information gathered in this Atlas is useful for the development of bottom up system indicators that can be used to monitor the evolution of the system. The production of different Atlases based on the DESDE system every 4 or 5 years can assist in the monitoring of the changes and the evaluation of policies (Fernandez et al., 2014). This can be easily done by introducing the classification system (DESDE) into an on-line program that automatizes the codification of the services. The Department of Social Welfare of Andalusia, in the South of Spain, has incorporated the DESDE into their web page, so services receive the code after answering some questions. It will be also important to evaluate the impact of this Atlas, as a visual tool to increase the capacity and efficacy of managers and planners in evidence-informed decision making and in system thinking.
- **Consumers:** A user-friendly version of the Atlas may support consumers' to navigate the system, location of services and increase their local knowledge on service availability and capacity. For instance, the results of the Integrated Mental Health Atlas of Western Sydney have been used by Carers NSW in a submission to a NSW Parliament Inquiry into service co-ordination in communities with high social needs.

8. CONCLUSION

This Atlas contributes to the development of evidence-based regional mental health plans. It provides a service mapping to assist in identifying gaps and opportunities for better use of services to reduce duplication and remove inefficiencies. This type of information has been prioritised by the Federal Government to the PHNs to implement the mental health reform (Mental Health PHN Consultative Forum., 2016). Our observations are in line with the report in the National Mental Health Commission's National Review of Mental Health Programmes and Services. This review recommended, amongst others: 1) the development of more community-based psychosocial, primary and community mental health services, as alternatives to acute hospital care; and 2) boosting of the role and capacity of NGOs and other service providers to provide more comprehensive, integrated and higher-level mental health services.

Mapping the service landscape is a vital prerequisite for understanding the components within it and for providing system co-ordination. Accountability in mental health should incorporate assessment of not just health, but also other sectors, such as housing and employment (Rosenberg & Salvador-Carulla, 2017). Over time, service mapping can enable monitoring of the behaviour of the system and how system components interact with, and affect, each other and the system as a whole. The mental health system of the ACT PHN region is characterised by a high level of complexity, due to the relatively high availability of services, the number of NGO providers, the range of types of care, the presence of a nested subsystem in Calvary Hospital, and the funding instability of around one third of services. This is reflected in the high rate of Accessibility services needed to navigate the system. Yet features of the existing system structure, such as the relatively high number of community residential services, lend themselves to the ACT PHN region becoming an appropriate place for the development of new models of care. This is a unique moment for ACT PHN to creatively develop new partnerships and services that are community based, promote recovery and empower consumers. We firmly believe that the use of this Atlas may assist in the planning and improvement of the care provided for people with a lived experience of mental illness.

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Appendix 3

Related publications or projects not forming part of the thesis

Related publications or projects not forming part of the thesis

Additional papers and projects related to my research on the Integrated Atlas of Mental Health co-authored or contributed to during my candidature. In addition, I coordinated an Atlas for Youth in the ACT in 2020 as part of the Youth Navigation Portal Project currently under development by the ACT Office for Mental Health and Wellbeing.

1. van Spijker BA, Salinas-Perez JA, Mendoza J, Bell T, Bagheri N, Furst MA, et al. Service availability and capacity in rural mental health in Australia: Analysing gaps using an Integrated Mental Health Atlas. *Aust N Z J Psychiatry*. 2019 Oct;53(10):1000–12.
2. Tabatabaei-Jafari H, Salinas-Perez JA, Furst MA, Bagheri N, Mendoza J, Burke D, et al. Patterns of Service Provision in Older People's Mental Health Care in Australia. *Int J Environ Res Public Health*. 2020 Nov 17;17(22).
3. Salinas-Perez JA, Gutierrez-Colosia MR, Furst MA, Suontausta P, Bertrand J, Almeda N, et al. Patterns of Mental Health Care in Remote Areas: Kimberley (Australia), Nunavik (Canada), and Lapland (Finland). *Can J Psychiatry* [Internet]. 2020 Jul 28 [cited 2021 Feb 8]; Available from: <https://openresearch-repository.anu.edu.au/handle/1885/217407>
4. Chung Y, Bagheri N, Salinas-Perez JA, Smurthwaite K, Walsh E, Furst M, et al. Role of visual analytics in supporting mental healthcare systems research and policy: A systematic scoping review. *Int J Inf Manag*. 2020 Feb 1;50:17–27.
5. Azimi A, Bagheri N, Mostafavi S, Furst M, Hashtarkhani S, Amin F, et al. Spatial-time analysis of cardiovascular emergency medical requests: enlightening policy and practice. *BMC Public Health*. 2021 Jan 4;21.
6. Hashtarkhani S, Tabatabaei-Jafari H, Kiani B, Furst M, Salvador Carulla, L. Use of geographical information systems in multiple sclerosis research: A systematic scoping review. 2021 Feb 12 [cited 2021 Feb 15]; Available from: <https://www.researchsquare.com/article/rs-236908/v1>
7. Salvador Carulla, L, Rosenberg S. Bupa Foundation Use of Simulation Modelling to Guide Mental Health Planning – A pilot study in the ACT Phase 1: Proof-of-Concept Final

Report. The Australian National University, Research School of Population Health, College of Health and Medicine;

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12. Furst,M, Reynolds J, Salinas-Pérez, J.A., Tsou C, Rock D, Hopkins J, et al. Atlas of Mental Health Care of the Kimberley Region (Western Australia). The Australian National University and Western Australia Primary Health Alliance (WAPHA); 2018.*

13. Furst, M.C., Salinas J.A., Hopman, K., Fernandez A., Xu, T., Alvarez-Galvez, J., et al. The Integrated Mental Health Atlas of the Central and Eastern Sydney PHN Region. Annex 1: Sydney Local Health District. Mental Health Policy Unit. Mental Health Policy Unit. Brain and Mind Centre. Faculty of Health Sciences. University of Sydney, Sydney; 2016. *

14 Furst,M, Salinas-Pérez, J.A., Bagheri, N., Salvador Carulla, L. 2020 Integrated Atlas of Mental Health Care of the Australian Capital Territory-Consultation draft. Centre for Mental Health Research, Australian National University; 2021.*

15 Furst,M, Salinas-Pérez, J.A., Bagheri, Riordan D, Salvador-Carulla L. 2020 Integrated Atlas of Youth Mental Health Care in the Australian Capital Territory-Consultation draft. Centre for Mental Health Research, Australian National University; 2020.

*Integrated Atlases available at <https://rsph.anu.edu.au/research/projects/glocal-global-and-local-observation-and-mapping-care-levels/metadata-repository>

Scholarships awarded during candidature

1. Recipient of Australian Government Research Training Program Scholarship
2. Recipient of Grace Groom Memorial Scholarship 2019: awarded by Mental Health Australia

. Additionally, research carried out by the Centre for mental Health Research, which included this research, was awarded ACT Government Department of Health Mental Health Award for Research, Evaluation and Quality Improvement”.

Appendix 4

Characteristics of international benchmark areas

INTERNATIONAL BENCHMARK AREAS

This demonstration study provides comparisons of the reference area and their comparators in Australia with areas that have been identified as benchmark areas in Europe and the Americas. I have used the term “benchmark” according to the definition provided by the Cambridge English Dictionary, which defines it as a word “ used when comparing other things” (<https://dictionary.cambridge.org/dictionary/english/benchmark>). This definition does not imply a level of quality or “gold standard” but simply a reference point against which others can be measured to provide a comparison. The following areas are benchmark areas as they are representative of regions in different countries where the mental health system have been assessed using DESDE-LTC in the same way: that is to assess the availability of services across all sectors according to the same inclusion criteria-(specialist mental health services, universally accessible without significant out of pocket costs, providing care to people within the defined geographical region).

Guipuzkoa (Basque Country, Spain)

The Basque Country has been identified as a benchmark system in Europe by its system-wide transformation towards integrated chronic care. the use of mapping for mental health planning[1] and the development of advanced decision support tools for planning[2].The relative technical efficiency and benchmarking has been carried out in primary care[3]. and in mental health[4]

Verona (Italy)

The Verona mental health care system has been extensively studied since the 1970s. The provision of MH services was compared using the previous version of DESDE called ESMS in 2002 and compared to other four cities in Europe [5], and with other 6 areas in Europe using DESDE-LTC in 2013[6,7].

Helsinki-Uusimaa (Finland)

Helsinki-Uusimaa has been regarded as a benchmark area of health service provision in nursing[8] digital and urban care. The Refinement project identified Helsinki Uusimaa as a benchmark area in mental healthcare in Europe[6,7,9]

Talcahuano (Chile)

Talcahuano is considered a benchmark area of MH care delivery in Chile, which in turn is one of the models of health care in the Americas. The previous research using DESDE-LTC revealed the better availability of provision and a more community oriented system in Talcahuano than in other areas in Central Chile[10,11].

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3. Cordero JM, Nuño-Solinís R, Orueta JF, Polo C, del Río-Cámara M, Alonso-Morán E. Evaluación de la eficiencia técnica de la atención primaria pública en el País Vasco, 2010-2013. *Gac Sanit.* 2016 Mar 1;30(2):104–9.
4. García-Alonso CR, Almeda N, Salinas-Pérez JA, Gutiérrez-Colosía MR, Uriarte-Uriarte JJ, Salvador-Carulla L. A decision support system for assessing management interventions in a mental health ecosystem: The case of Bizkaia (Basque Country, Spain). *PLOS ONE.* 2019 Feb 14;14(2):e0212179.
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9. Sadeniemi M, Almeda N, Salinas-Pérez JA, Gutiérrez-Colosía MR, García-Alonso C, Ala-Nikkola T, et al. A Comparison of Mental Health Care Systems in Northern and Southern Europe: A Service Mapping Study. *Int J Environ Res Public Health.* 2018 Jun;15(6):1133.

10. Salinas-Perez JA, Salvador-Carulla L, Saldivia, S, Grandon,P, Minoletti,A, Lopez-Alberca,C. Integrated mapping of local mental health systems in Central Chile. *Pan Am J Public Health.* 2018;42(144).

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Appendix 5

- a. DESDE Code descriptions and examples
- b. Glossary of terms used in thesis in relation to mental health service mapping.

a. DESDE code descriptions and examples

The following table lists the DESDE Main Types of Care shown according to main and sub branches of care, and includes description and example of each type of service. Mental health services vary significantly across and even within countries with regard to nomenclature and type of services; thus the examples of services provided here may vary geographically. Part (b) is a glossary of mental health and mapping terms used in the thesis.

DESDE main branch and sub-branch of care name	Description of code	Example of service
RESIDENTIAL	Facilities which provide beds overnight for clients for a purpose related to the clinical and social management of their health condition.	
Acute residential	Facilities where (i) users are admitted because of a crisis, a deterioration of their physical or mental state, behaviour or social functioning which is related to their health condition,; (ii)admissions usually available within 24 hours; (iii) users usually retain their own accommodation during the admission. At least 20% of the users in the last twelve months do meet the criteria for residential acute care for crisis.	
Acute hospital	Acute care as described above provided in a hospital setting. Hospitals are meso-organisations with a legal recognition in most countries. In those countries where there is no legal basis for deciding what are hospital care teams and in those cases where doubt exists, care teams should be classified as hospital if they have more than 20 beds and 24 hour resident physician cover.	High Dependency Inpatient; Acute Care Unit; Intensive Care Unit; Psychiatric Assessment and Planning Unit
Acute non hospital	Acute care as described above in facilities with 24-hour medical cover that are NOT officially registered as 'hospitals' at national, regional or local level.	Hospital in the Home; Crisis homes
Non acute residential	Residential facilities that do not satisfy the criteria for acute care. Crisis admissions are sent to other facilities routinely.	
Non acute hospital	Non acute care as described above provided in a hospital setting.	Sub-acute; Community Care Units; Extended Care Mental Health Rehabilitation

		Unit; Extended Treatment
Non acute non hospital	Non acute care as described above in facilities with 24-hour medical cover that are NOT officially registered as 'hospitals' at national, regional or local level	Step Up-Step Down services with 24 hour physician cover
High intensity non hospital (community)	Residential services provided in a community setting with 24 hour support	Supported accommodation/group Homes with 24 hour support
Other non hospital (community)	Residential services provided in a community setting with lower than 24 hour support	Psychiatric Hostel; Supported Accommodation/group homes with less than 24 hour support
DAY CARE	These are facilities which (i) are normally available to several users at a time (rather than delivering care teams to individuals one at a time); (ii) provide some combination of treatment for problems related to long-term care needs: e.g. providing a structured activity, or social contact and/or support; (iii) have regular opening hours during which they are normally available: and (iv) expect care team users to stay at the facilities beyond the periods during which they have face-to-face contact with staff (i.e. the care team is not simply based on individuals coming for appointments with staff and then leaving immediately after their appointments). The care delivery is usually planned in advance.	
Acute day care	Facilities where (i) users are regularly admitted because of a crisis or a deterioration in physical or mental state, behaviour or social functioning related to their health condition; (ii) alleviating this crisis/deterioration is the main purpose of the facility. At least 20% of the users in the last twelve months do meet the criteria for acute care for crisis.	
Acute day care-health related		Day hospital services
Non acute day care	All day care facilities that do not meet the criteria for acute care for crisis.	
Non acute day care - health related	Non acute as above, support provided by registered health professionals	Day health centre

Non acute day care-work	Work facilities which provide users with the opportunity to work for pay. These are usually either supported or in the open labour market.	Ordinary employment; supported employment where workers are paid at least 50% of that expected in the open labour market
Non acute day care-work related	These are facilities where users carry out an activity which closely resembles work for which payment would be expected in the open market, but where users are not paid or are paid less than 50% of the usual local expected wage for this form of work. Where there is no minimum wage, we suggest calculating an expected level based on starting salaries for similar jobs advertised in the local press over the past month.	Supported employment where workers are paid at least 50% of that expected in the open labour market; disability support enterprises
Non-acute day care-other	Facilities which satisfy the criteria for non-acute day care teams, but where work or other structured activities are not available for individual users or are only available less than 25% of the opening hours, so that the main functions of the care team are the provision of social contact, practical advice and/or support. For example the user is not in the centre for a minimum period of time; there is not an individual plan for their day activities; the centre cannot provide a number of places available for specific clients as registered consumers may attend spontaneously at any time and perform the structured activities that are available on that day in the centre.	Social clubs
OUTPATIENT CARE	These are facilities which (i) involve contact between staff and users for some purpose related to management of their condition and its associated clinical and social difficulties and (ii) are not provided as a part of delivery of residential or day and structured activity care teams, as defined below. Two major characteristics define these type of services: Acuity (acute and non-acute) and Mobility (low and high mobile).	
Acute Outpatient care	These emergency facilities (i) provide assessment and initial treatment in response to a crisis, deterioration in physical or mental state, behaviour or social functioning which is related to the condition; and (ii) can usually provide a same day response during working hours or at least within 72 hours after the care demand. At least 20% of the users in the last twelve months do meet the criteria for acute outpatient care for crisis	

Non Acute Outpatient Care	These facilities provide care team users with continuing care including regular contact with a health professional, which may be long term if required. Continuing care care teams may also provide acute/emergency care on a regular basis.	
Mobile Outpatient care	In high mobility or home & mobile facilities contact with users occurs in a range of settings including users' homes, as judged most appropriate by professionals and users. For a care team to be classified as high mobility (home & mobile), at least 50% of contacts should take place away from the premises at which the care team is based.	
Low/non mobile outpatient care	Care teams which do not meet the criteria for high mobility ('home & mobile'). Low mobile teams include facilities whose main purpose is non-mobile care but that also could provide different levels of mobile care always below 50% of their overall activity.	
Acute mobile outpatient care-health related	Services providing acute mobile care as described above, where the care is delivered by qualified health professionals (at least 3 years' tertiary training)	Mobile Crisis Assessment and Treatment Team; Assertive Community Treatment
Acute mobile outpatient care-non health related	Services providing acute mobile care as described above, where the care is not delivered by qualified health professionals	Police crisis response team
Acute low/non mobile outpatient care-health related	Services providing acute low or non mobile care as described above, where the care is delivered by qualified health professionals (at least 3 years' tertiary training)	Psychiatric emergency department teams, acute psychiatric liaison services
Acute low/non mobile outpatient care- non health related	Services providing acute low or non mobile care as described above, where the care is not delivered by qualified health professionals	Social services providing acute support for example acute counselling for trauma
Non acute mobile outpatient care-health related	Services providing non acute mobile care as described above, where the care is delivered by qualified health professionals (at least 3 years' tertiary training)	Community mental health outreach teams
Non acute mobile outpatient care-social related	Services providing non acute mobile care as described above, where the care is not delivered by qualified health professionals (at least 3 years' tertiary training)but by a social care workforce	Social outreach services

Non acute low/non mobile outpatient care-health related	Services providing non acute non mobile care as described above, where the care is delivered by qualified health professionals (at least 3 years' tertiary training)	Centre based therapeutic services such as psychological counselling
Non acute non mobile outpatient social care related	Services providing non acute non mobile care as described above, where the care is not delivered by qualified health professionals (at least 3 years' tertiary training)but by a social care workforce	Social counselling services; skills development if centre based and not as part of a day centre
ACCESSIBILITY CARE	Facilities whose main aim is to facilitate accessibility to care for users with long term care needs. These care teams do not entail direct care provision.	
Accessibility to services providing physical or communication needs support, or personal accompaniment	Facilities whose main aim is to facilitate physical mobility or access to information by the user, or whose main aim is to facilitate the paid personal accompaniment by non-care professionals of users with long term care needs.	Transportation care teams; teams providing access to information through sign language
Case finding	Care teams which main aim is to proactively identify or re-engage with previous users with a certain condition or exposure.	For example access cascade screening, assessment and review of their condition or other health-related purposes. This code does not refer to assertive outreach teams.
Accessibility care co-ordination	Services whose main aim is to navigate and facilitate the access, management and cohesion of care and supports for the client. It includes coordination, planning and accessibility to different types of care teams, professionals and tests by users with long term care needs. Care coordination does not include any type of direct care provision	Includes case management but not counselling and assertive community care in the mental health area
INFORMATION FOR CARE	Facilities whose main aim is to provide users from the defined target group with information and/or an assessment of their needs. This care team does not entail subsequent monitoring/follow-up or direct care provision.	

information for care: guidance and assessment	Professional assessment, intake and guidance are offered to the user in this care team.	Telephone triag services; centres for assessment and guidance where professional intervention includes evaluation and design of an individual plan for the user
information for care: information	Intended exclusively to provide information to users with long term care needs.	Includes both interactive and non interactive information services, such as a phone service, or a web based information service that is regularly updated
SELF-HELP and VOLUNTEER CARE	The aim of these facilities is to provide users with long term care needs with support, self-help or contact, with un-paid staff that offers accessibility, information, outpatient, day and residential care (as described in other branches).	
Self-help and volunteer care: professional	Facilities designed for users with long term care needs that regularly at least 60% of staff are graduate professionals trained or specifically qualified for providing assessment, intervention and support to users with long term care needs. Typically, over 90% of staff are unpaid, although administrative and management personnel can be paid	Care teams run by un-paid professional and specialised volunteers on a regular or stable basis.
Self-help and volunteer care: non-professional	Facilities aimed at users with long term care needs, where graduate professionals providing assessment, interventions or support to users with long term care needs are below 60% of total full time equivalent personnel. Typically, over 95% of staff is unpaid, although administrative and management personnel can be paid.	Self-help groups conducted by users, informal care associations of mutual help and care teams entirely provided by volunteers are included in this section

b. Glossary of terms used in thesis in relation to mental health service mapping

Term	Description
Accessibility to care	Its main aim is to provide accessibility aids to users.
Availability	The presence, location and readiness for use of services or other organisational units in a care organisation or a catchment area at a given time. A service is available when it is operable or usable upon demand to perform its designated or required function. Opening times and placement and workforce capacity are some indicators of care availability.
Basic Stable Input of Care	Minimal set of inputs with temporal continuity and organisational stability for delivering health related care to a defined and identified group of users in a specific location. It is usually composed of an administrative unit with an organised set of structures and professionals. BSICs are the minimal micro-level functional systems of care organisation. Within the production model of health-related care (input-throughput-output), BSIC refers only to input functions of care that are stable and continuous over time and not to other organisational arrangements, tangible inputs (devices, facilities), or procedures (interventions)
Benchmark region	A region used as a representative area from a country for comparison with other areas mapped in the same way
Care provider	An individual or an institution helping in identifying or preventing or treating illness or disability in a systematic way. An individual health care provider is also known as a health worker and may be a health care professional within medicine, nursing or allied health professions. An institutional health care provider is also known as a health facility and includes hospitals, clinics, primary care centres and other service delivery points.
Carer	Here this term refers to non-professional carers who provide support to family or friends who need help with various activities in daily life. Typically carers are not paid, but in some circumstances they can receive some financial compensation for their caring time.
Case management	A multidimensional and collaborative process involving a set of interventions for assessment, planning, coordinating and review of the options and services required to meet a client's mental health-related needs, and support her/him to reach her/his goals related to participation in life roles. Case management is broadly considered, in particular in the field of mental health, as a component of "integrated care"/"care coordination".
Catchment area	A geographical area which determines entitlement to localised services, usually based on residency. These services are usually provided within the catchment area, but in the case of more specialist services may be provided elsewhere.

Commissioners	<p>Bodies at national or local level that hold a budget which they use to purchase services.</p> <p>Detailed contracts or service agreements may be drawn up with service providers as part of this process.</p>
Community care	<p>Services (including mainly social services) and support to help people with care needs to live as independently as possible in their communities.</p>
Community mental health centre	<p>Found in some countries, a CMHC is a mental health treatment centre located in a catchment area close to the homes of mental health service users. It features a series of comprehensive services performed by mental health professionals and all aimed at providing a coordinated program of continuing mental health care. Psychotherapeutic services can be inpatient, outpatient, therapeutic rehabilitation, emergency, day treatment, screening and personal care home services.</p>
Community mental health teams	<p>A multi-professional team offering outpatient and mobile services which is often located in a neighbourhood catchment area close to the homes of service users. It may be based in a community mental health centre. Services may be delivered in people's own homes. Features include offering a series of comprehensive services by one or more team members, provision of continuity of care, linkages to a variety of health and social services, etc.</p>
Complex systems	<p>A complex adaptive system is a collection of individual agents with freedom to act in ways that are not always totally predictable, and whose actions are interconnected so that one agent's actions changes the context for other agents.</p>
Consultation liaison service	<p>A specialist within psychiatry dealing with the overlap of physical and mental health care. It provides timely psychiatric consultation to patients in medical/surgery units and utilises a multi-disciplinary team approach (psychiatry, psychology and nursing) for assessment and treatment. It mainly consists of psychiatric or psychological management, liaison with the referring treatment team, ongoing monitoring of mental health status during hospitalisation and facilitation of transfer to other mental health services.</p>
Consumer/client	<p>Any person receiving direct support from any of the services providing mental health or psychosocial support which are included in the Atlas. Includes carers or family/other support people where these are, or are included in, the target population of the service.</p>
Context	<p>defined as all sources of evidence of the local system: geography, social and demographic factors; other environmental factors; service availability and capacity; service use; and costs. It could also include legislation, other normative aspects and expertise on the milieu (e.g., the historical account and current state of the art)</p>

Context analysis	Context analysis, including service provision, is part of “health- care ecosystem research” , an emerging discipline that analyses the complexity of care systems and interventions in a defined environment, using methods developed in environmental sciences for ecosystem services research
Crisis resolution team	This team aims at responding to people in crisis by providing an assessment and treatment service. It is active 24 hours a day and it delivers acute mental health care in the community. The team is multi-professional (physicians, social workers, nurses staff etc.) and provide psychiatric assessment, outpatient psychotherapy, case management services and medication management services avoiding long waiting periods for patients.
Day care	See DESDE code descriptions in table above
Day Hospital	A specific type of day care provided in a special clinical facility or a hospital setting where structured treatments, occupational programmes and diagnostic procedures may be performed. Service users return home or go to their usual hospital ward at the end of the day.
De-institutionalisation	The policy of moving severely mentally ill people out of institutions (like a mental hospital or clinic) and then closing part or all of these institutions. Over the longer term fewer mental health treatments are delivered in hospitals and more services are provided by community based mental health services. The process started in earnest in high income countries in the second half of the twentieth century and the shift towards greater use of community care is ongoing.
Disability	An umbrella term covering impairments (problems in body function or structure), activity limitations (difficulties in executing a task or action), and participation restrictions (problems in involvement in life situations). It is a complex phenomenon reflecting the interaction between features of a person's body and features of the society in which (s)he lives.
Dual diagnosis	Dual diagnosis is a diagnostic term usually used to refer to an individual living with both a mental disorder and alcohol/substance abuse disorder.
Ecosystem (mental healthcare)	The mental health ecosystem is a subset of the general health system which focuses on domains relevant to mental health, such as the characteristics of the population at risk of or suffering mental illness, the workforce and organisations providing care and support to this target population, and their connections, for example, clinician–patient contacts, and the relationships between patients and organisations and among organisations.
Early intervention	A process of assessment and therapy provided to young people to prevent developmental disability, delay or detect psychosis.
Emergency room/ department	A medical treatment facility specializing in acute care of patients who present without prior appointment, either by their own means or by ambulance. The emergency department is usually found in a hospital or other primary care centre.

Evidence Informed Care	An evidence-informed, rather than evidence-based, approach is needed: one which can integrate generalised research based evidence “based on positivist research standards” with a more inclusive systems based approach : “enriched by prior research but not limited to it” , while still using “standards of relevance, rigor, and logic (that) are currently available” . It is an approach that is able to incorporate the multiple sources of evidence, and high degree of uncertainty inherent in healthcare, and in the pathways of interventions in systems of healthcare delivery
Equality	Equality is about the equal distribution of shares (of health or health care) so that each individual receives the same amount. The notion of equity transcends equality (Raine R, Or Z, Prady S, et al. Evaluating health-care equity. In: Raine R, Fitzpatrick R, Barratt H, et al. Challenges, solutions and future directions in the evaluation of service innovations in health care and public health. Southampton (UK): NIHR Journals Library; 2016 May. (Health Services and Delivery Research, No. 4.16.) Essay 5. Available from: https://www.ncbi.nlm.nih.gov/books/NBK361257/ doi: 10.3310/hsdr04160-69)
Equity	Equity is about fairness and justice and implies that everyone should have an equal opportunity to attain their full potential for health or for the use of health care (Raine R, Or Z, Prady S, et al. Evaluating health-care equity. In: Raine R, Fitzpatrick R, Barratt H, et al. Challenges, solutions and future directions in the evaluation of service innovations in health care and public health. Southampton (UK): NIHR Journals Library; 2016 May. (Health Services and Delivery Research, No. 4.16.) Essay 5. Available from: https://www.ncbi.nlm.nih.gov/books/NBK361257/ doi: 10.3310/hsdr04160-69)
Forensic service	A service providing assessment and treatment of people with a mental disorder and a history of criminal offending or at risk of offending. "Forensic" means related to or associated with legal issues. People may be referred for assessment by the police, courts, prison, other health or mental health services or justice agencies, and may have a mental illness or mental disorder. Treatment may be provided in the community, in hospital or in prison.
Full Time Equivalent	The workload expressed in terms of the number of days equivalent of one employee working full time, calculated as the ratio of the total number of paid hours during a specific period (part time, full time, contracted) by the number of working hours of full-time workers in that same period.
Geographic Information systems	A geographic information system (GIS) is a system that creates, manages, analyzes, and maps all types of data. GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there). This provides a foundation for mapping and analysis that is used in science and almost every industry. GIS helps users understand patterns, relationships, and geographic context. The benefits include improved communication and efficiency as well as better management and decision making (taken from https://www.esri.com/en-us/what-is-gis/overview)
Health care centre	A health centre is a facility which is used for the provision of primary care services and a range of community health services.
Health care system	The organization of people, institutions, and resources to deliver health care services to meet the health needs of target populations.

Hospital	The neutral term "hospital" refers to any institution based in one or more buildings providing medical and surgical treatment and nursing care for sick and injured people. This institution can also provide more specific treatment like obstetric or psychiatric care. Basically; it is a place where people who are ill are looked after by doctors (general practitioners or specialists), nurses and other health professionals.
Information for care	See DESDE code descriptions in table above
Inpatient care	Care provided with the use of a bed overnight.
Inpatient mental health care	Delivery of mental health care services on an inpatient basis, where at least one night is spent in the health care facility.
Integrated Atlas of Health Care	Integrated Atlases (Atlases) of Mental Healthcare provide an analysis of the whole system of care delivery in a defined region. Data, including service availability, capacity, and diversity, is collected at local level using a standardised, multi-axial service classification instrument, the Description and Evaluation of Services and Directories for Long Term Care (DESDE-LTC). Atlases also include key socio-demographic indicators and other local context information and present data using visualisation tools including Geographic Information Systems (GIS).
Integrated care	The management and delivery of health and social care services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health and social care systems.
Intensity of care	The levels of care received by a patient when hospitalised. It is calculated on the basis of the total time and staff mix of health care resources consumed by an individual patient during a specific episode of care.
Local health authority	An organisation that is officially responsible for ensuring the provision of publicly funded health services and facilities (in a specified geographical area).
Long term care	This is a blanket term that brings together a range of services for persons who are dependent on help with basic activities of daily living (ADLs) over an extended period of time. This range includes medical and/or social services designed to help people who have disabilities or chronic care needs. Services may be short or long-term and may be provided in a person's home, in the community, or in residential facilities.
Main Type of Care	It is the major descriptor of the BSIC (see definition) in relation to its more relevant, general and meaningful activity or 'generic care function'. Six descriptor levels define the MTC according to the health status of the user (acute/non acute), the category, intensity and other specification of the care activity.
Mental disorder	This is an umbrella term referring to many different disorders that affect the mind. These illnesses can be either non-psychotic (e.g. depression and anxiety) or psychotic (e.g. schizophrenia and bipolar disorder) or an organic brain disorder (i.e. a damage to brain tissue caused by diseases like dementia or alcoholism), a personality disorder (i.e. an enduring disturbance in the way a person interact with others) or an intellectual disability (e.g. a disability caused by problems with brain development). Generally speaking, a mental illness is a medical condition that disrupts a person's thinking, feeling, mood, ability to relate to others and daily functioning.

Mental health	The WHO defines mental health as a state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community. The positive dimension of mental health is stressed in WHO's definition of health as contained in its constitution: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."
Mental health care	The provision of services, treatments, medications, programmes and all other health related actions aimed at maintaining and improving the emotional and mental wellbeing of people.
Mental health ecosystems research (MHESR)	MHESR is founded on a broader concept of scientific knowledge than that of the traditional evidence-based (Cochrane) "pyramid." It draws from conceptual frameworks developed in the ecological sciences, which are also engaged with complex and dynamic systems. It also incorporates disciplines relevant to the implementation sciences, such as systems dynamics and context analysis
Mental health specialist	A mental health specialist is a person who has advanced training to work with those with mental illnesses and psychological issues. Examples are: Psychiatrist, psychologist, psychotherapist, clinical social worker, psychiatric nurse, etc.
Mobile mental health service	Health care and non-health care services that are delivered outside of hospitals or other ambulatory care facilities. Instead services may interact with patients in their own homes or in other settings in the areas in which they live. This for instance includes assertive outreach teams, social care provided at home and the like
Non acute mental health	All types of psychiatric care (home health care, hospice, extended care, respite, rehabilitation, nursing facility, residential care, long-term care, geriatric care, adult day care etc.) which are addressed to patients with chronic mental health conditions.
Non Government Organisation	Any non-profit organisation that is recognised within local law. Many NGOs provide health and social care services; some advocate or lobby policymakers and other actors to improve service of provision and outcomes for their interest groups.
Other health or mental health worker	Health or mental health worker possessing some training in health care or mental health care but not fitting in any of the defined professional categories (e.g. medical doctors, nurses, psychologists, social workers, occupational therapists). This definition includes nondoctor/ non-nurse primary care workers, professional and paraprofessional psychosocial counselors, special mental health educators and auxiliary staff. It excludes general staff for support services within health or mental health care settings (e.g. cooking, cleaning staff, security).
Outpatient care	See DESDE code descriptions in table above.

Out of pocket payment	A charge that individuals must pay personally for the use of a service sometimes at the point of service and sometimes at a later point in time. In some cases a proportion or all of the out of pocket payment can be reimbursed. Out of pocket payments can take different forms, they can be a fixed fee or proportional to the total costs of the service received. There may also be ceiling on the maximum level of out of pocket payments in a defined time period. In the case of long stay residential care, especially care provided outside of the health sector, there may be substantial regular out of pocket payments for care, often charged by the week or month.
Pathway of care	A pattern of service utilisation with at least two service contacts in an observable sequence.
Primary health care	While used in different ways in different health care systems health medical care is often the first level of contact people have with the health system in relation to their health. In many countries it is used to refer to primary medical services such as general practitioner or family practice services provided by primary care physicians, nurse-practitioners (nurses with some prescribing powers) and practice-based colleagues such as nurses and physiotherapists. More broadly it can also refer to other community based services such as dentists, opticians and podiatrists.
Primary Health Network	Primary Health Networks were established in 2015 as key components of primary health care reform. PHNs are tasked with increasing the efficiency and effectiveness of services, and improving co-ordination of care “to ensure patients receive the right care in the right place at the right time”, through an analysis of local need and identification of available services and gaps in service delivery. Funding for PHNs is based on a number of elements, including population, rurality and socio- economic factors. In addition, funding has been specifically provided to PHNs for mental health, suicide prevention, drug and alcohol treatment services, and Aboriginal and Torres Strait Islander health.
Psychiatric/ mental health mobile care	Mental health services which are not delivered at a mental health centre but instead delivered in many other locations in the community, including in a service user’s home.
Psychosocial problem	Any problem related to one's psychological development in and interaction with a social environment. It could refer to the lack of development or atrophy of the psychosocial self, often occurring alongside other physical, emotional or cognitive dysfunctions.
Public	Services that are funded through taxes or other public financing resources like social health insurance.
Recovery	In mental health it is a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills and/or roles. It is defined by 8 fundamental components: hope; medication/treatment; empowerment; support; education/knowledge; self-help; spirituality; employment/meaningful activity.
Residential care	See DESDE code descriptions in table above.

Secondary mental health care	A specialist mental health service including psychiatric hospitals, psychiatric wards within general hospitals and community mental health services based more locally. These services can provide any combination of inpatient and outpatient care offering a range of treatments like psychiatric drugs but also therapy and counselling. Their staff includes psychiatrists, psychiatric nurses, clinical psychologists, social workers, therapists and counsellors.
Self-help and volunteer care	Its main aim is to provide users with self-help or contact, with unpaid staff that offers accessibility, information, day, outpatient and residential care (see definitions).
Service	Umbrella term that encompasses many different units of analysis in service research. At the micro-organisation level of care delivery it describes a combined and coordinated set of inputs (including structure, staff and organization) that can be provided to different user groups under a common domain (e.g. child care), to improve individual or population health, to diagnose or improve the course of a health condition and/or its related functioning.
Service user	The term 'service user' is often used as an alternative to the use of the word patient or client/consumer to refer to people with mental health problems who are in receipt of services. The term patient is seen as too 'passive', implying that individuals do not have a say over any treatment and support they receive. It has there been seen to be politically inappropriate by service user groups and many mental health professionals.
Service mapping	Service mapping is an instrument for a standardised description and classification of services within a defined geographical area. When mapping services, the different levels of service provision are also categorised. A visual representation of results can be given by plotting services on a map to indicate their spatial distribution.
Severe mental illness	SMI is usually defined as a psychotic or major affective disorder. It can also cover other disorders that lead to chronic disability. It can include major depression, schizophrenia, bipolar disorder, obsessive compulsive disorder (OCD), panic disorder, post-traumatic stress disorder (PTSD) and borderline personality disorder. SMI have recurrent functional limitations on major life activities. The definition of SMI may take account of duration of illness and intensity of service utilisation
Social care	Social care covers a wide range of services to help people live independently. It can include services provided in people's homes to help them with everyday activities of daily living as well as the provision of day services that individuals can choose to attend. Services are often funded and provided by local government or contracted to not for profit or for-profit organisations.
Supported employment	Refers to both the development of employment opportunities and on-going support for those individuals to maintain employment on the open labour market. It can provide assistance such as job coaches, assistive technology, specialist job training and individually tailored supervision

Supported housing	Support for independent housing can take different forms including houses or flats for one or more people without any on-site support, or blocks of houses or flats for single or shared use with an on-site manager or support worker providing support. In some cases residence will be time limited while in other instances it will be seen as a potential permanent dwelling.
Tertiary health care	Tertiary care is specialised consultative health care, usually for inpatients and on referral from a primary or secondary health professional, in a facility that has personnel and facilities for advanced medical investigation and treatment.
Utilisation rate	The percentage of the capacity (in terms of maximum number of potential users) of a service that is actually used (in terms of total real users) over a specific period of time. This percentage shows the relationship between the potential output of a service and its actual use.
Vocational rehabilitation service	A service to enhance and support people with long term health problems and disabilities to prepare for, obtain or return to employment. It can take many different forms. For example, a vocational rehabilitation counsellor helps the user throughout all this process by understanding the abilities, strengths, priorities and capabilities of the user.
Voluntary care	Unpaid services which are nonetheless provided by a non-profit and non-governmental organisation. Service provider does not receive public funding for the several social activities provided (e.g. visiting inpatients, working alongside the emergency services and providing support for disabled and sick people). Staff are unpaid and on a free voluntary basis. The aim of voluntary care facilities is to provide users with mental health need, with support, self-help or contact. There could exist in some countries voluntary organisations which are contracted and paid to provide services.
Work related activity	See DESDE code descriptions in table above