SIPHER Consortium

Systems science
In Public Health and
Health Economics Research

SIPHER-7:

a seven-indicator outcome measure to capture wellbeing for economic evaluation

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Abstract

The SIPHER (Systems Science in Public Health and Health Economics Research) Consortium examines the complex causal relationships between upstream policies and wellbeing, economic and equality outcomes, and in so doing, it needs a common set of wellbeing indicators. This note outlines how the seven indicators that form the SIPHER-7 were selected by members of the Consortium through an iterative consultation process. An Appendix presents a series of descriptive statistics to illustrate SIPHER-7 in the UK general population, using the UK Household Longitudinal Study "Understanding Society", wave 9 from 2018.

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1. Introduction

1.1. SIPHER-7

SIPHER will build models to predict the causal relationships between policy interventions and outcomes (Meier et al, 2019). These will use data on various indicators of wellbeing of individuals, from different domains such as health, income, employment status, and so on. One challenge associated with multiple indicators of wellbeing is that they are difficult to interpret. Suppose over time self-reported health improves but disposable income goes down: is this change, overall, for the better, worse, or no different? For SIPHER models to be informative for decision making, we need an outcome measure that combines the various indicators of wellbeing in a single index by applying relative weights to each of them. Workstrand 6 (WS6) of SIPHER addresses this challenge by eliciting the relative preferences of members of the public across different domains of wellbeing, to be used as the weights.

However, before we could get to that, we needed to decide what the key wellbeing indicators are that are to be combined into the single index. The aim of this note is to outline how the SIPHER Consortium selected such a set of seven indicators of wellbeing across seven domains. The objectives of the exercise were to:

i. identify a set of domains of life that collectively represent the overall wellbeing of a person, and
ii. for each domain, to identify just one indicator to best represent the domain.

The resulting set of wellbeing indicators – the "SIPHER-7" – are listed in Table 1 along with the response categories. Also see the Appendix for a series of descriptive statistics to illustrate SIPHER-7 in the UK general population, using the UK Household Longitudinal Study[1], wave 9 from 2018.

[1] The UK Household Longitudinal Study (UKHLS) is a large-scale social survey involving approximately 40,000 households. It interviews all members of the same households, every year. The households are selected randomly, which means that the results can be understood to represent what UK households look like across the board. For more details, see their webpages: https://www.understandingsociety.ac.uk/

Table 1: SIPHER-7 wellbeing indicators

Domain	Indicator	Response categories
Income	Disposable§ income of your household is …	Median values of deciles of household disposable income after housing costs.
Employment	Your employment situation is….	FT employment‡; PT employment; FT education / training / apprenticeship; PT education / training / apprenticeship; volunteering; informal caregiving; home making; job seeking; retired; long term sick or disabled; other
Effects of physical health	You accomplish less because of your physical health …	None of the time / a little of the time / some of the time / most of the time / all the time
Effects of mental health	You accomplish less because of your emotional problems …	
Neighbourhood safety	You are concerned about the safety of the neighbourhood you live in …	Hardly ever / some of the time / often
Housing	Your home is in a reasonable state of repair, has reasonable facilities (cooking/washing) and provides reasonable warmth …	Yes to all of these / yes to some of these / none of these
Social isolation	You feel isolated from others …	Hardly ever / some of the time / often

§ Monthly (or weekly) income after tax, national insurance, any occupational pension contributions, and after deducting your rent, mortgage payments or other housing costs[2].

‡ Employment includes self-employment. Employment includes being on maternity / parental / sick / furlough leave.

Thus, SIPHER-7 has seven indicators of wellbeing, of which Neighbourhood safety, Housing, and Social isolation have three response categories each; Effects of physical health and Effects of mental health have five categories each; Employment has 11 categories; and Income is continuous. To illustrate, leaving the Income indicator aside (since it is a continuous variable), the remaining six indicators would allow 7,425 different combinations, or profiles, to classify individuals into.

1.2. Practical constraints

In selecting the domains and indicators of wellbeing for use in SIPHER models, there were a few practical considerations, or constraints.

The motivation for selecting the wellbeing indicators was so that they could be combined into a single index number. The different levels as they are cannot be directly summed across the indicators (it does not make sense to add household income of £2,000/month, hardly ever feeling lonely, and physical health sometimes affecting

[2] Student loan payments are also deducted.

daily activities). One possible solution would be to *standardise* the indicators so that each has a score between 0 for the worst level and 1 for the best level, and then to add the standardised scores across the indicators. However, this would involve the assumption that each indicator is equally important, which is quite arbitrary. Instead, SIPHER has proposed to combine the multi-dimensional wellbeing indicators into a single index number in a less arbitrary way, based on the quantitative preferences of the general public.

Figure 1 is a mock-up of a choice task that could be used to elicit, or measure, the preferences of a general public sample, in order to model them quantitatively. An introductory text preceding this will have explained to the respondents the key concepts such as household disposable income.

Figure 1: An example choice task

"Please imagine a year of your life, to take place in the next three to five years. If a year of your life in the near future could be like Life scenario A or Life scenario B, which would you prefer? Everything that is not mentioned is the same for A and B. Whichever you choose, after one year, you will return to your normal life."

Domain	Life scenario A	Life scenario B
Disposable income of your household is:	£1,000 / month	£2,000 / month
Your employment situation is:	full time employed	full time employed
You accomplish less because of physical health:	none of the time	most of the time
You accomplish less because of emotional problems:	some of the time	none of the time
You are concerned about the safety of the neighbourhood you live in:	some of the time	often
Your home is in a reasonable state of repair, has reasonable facilities (cooking/washing) and provides reasonable warmth:	Yes to all three	Yes to all three
You feel isolated from others:	hardly ever	some times

I prefer... Life scenario A ● Life scenario B ●

A large random sample of the general public would be surveyed, where each respondent would be given around 10 such choice tasks. The information given under the columns for Life scenario A and Life scenario B would be

selected formally as a discrete choice experiment (DCE), using specialist software. As in this example, Life scenario A could be better than Life scenario B in some, but not all domains, and some domains could be tied. The choice data would then be econometrically analysed to derive relative preference weights between each level of each domain (e.g. it would be possible to say, for example, going from the worst level to the best level in mental health is three times as valuable as going from the worst level to the medium level in housing quality). Details of a study eliciting general public preferences for SIPHER-7 are reported elsewhere (Ta et al, 2021).

In order to keep the demands on the survey respondents reasonable, we aimed to limit the number of domains (arbitrarily) to seven. Moreover, the choice experiment methodology requires each domain to be represented by a single indicator and that the indicator be specific to the domain (i.e. must not be closely correlated with the main features of another domain).

Further constraints were:

- SIPHER models will take the form of repeated cross-section snapshots, and therefore the wellbeing outcomes needed to be for a given point in time, and not include elements of time or duration such as lifetime income or longevity.
- The indicator must be measurable at different scales (Local Authority, national etc.) using existing data such as administrative data or major annual social surveys (e.g. UKHLS: the UK Household Longitudinal Study "Understanding Society").
- The indicator must be upward-scalable - we will first use these to elicit public preferences for individual wellbeing, but a later exercise will use the same indicators (appropriately re-worded) to capture population wellbeing (e.g. employment status of an individual vs. unemployment rate of a population).
- Ideally, the indicator would be measured on a continuous scale or have more than two levels.

In the below, section 2 for Methods outlines the steps followed in identifying the domains and indicators of SIPHER-7. Sections 3 and 4 outline how the domains of wellbeing and the indicators within each domain were selected, respectively. Section 5 discusses the key issues.

2. Methods

SIPHER-7 was agreed within the SIPHER Consortium following an iterative process between a small taskforce group making recommendations for consultation by the wider group. The process included the following stages:

(1) Preparation stage by the first taskforce in Oct 2019

This consisted of five members of the SIPHER Consortium based at the University of Sheffield. The group informally reviewed a number of policy frameworks in order to shortlist potential domains and a small number of candidate indicators for each.

(2) First consultation of the whole Consortium in Nov 2019

All members of the SIPHER Consortium (n=39 at the time) were invited to take part in the first consultation hosted as an online survey, either individually or in groups. The SIPHER team includes university researchers in a wide range of disciplinary backgrounds (data science, decision modelling, economics, engineering, geography, information science, psychology, public health, social policy, etc), alongside policy actors and analysts from the

SIPHER policy partner organisations (Greater Manchester Combined Authority, Sheffield City Council, and the Scottish Government). It was clarified that the purpose of the exercise was to consult team members for their views, and that the final selection of the domains and indicators will not be based on the counts of votes. There were 21 returns, of which 15 were by individuals; four were by two individuals each; and two were by five or more individuals. All three policy partner organisations submitted a group response each.

(3) Review of the first consultation returns by the second taskforce in Dec 2019

This consisted of five members of the SIPHER Consortium, of whom four were in the first taskforce. The group reviewed the consultation returns and made recommendations for the second consultation.

(4) Second consultation of the whole Consortium in Jan 2020

All members of the SIPHER Consortium were invited to take part in the second consultation. As with the first, this was hosted as an online survey, and returns could be made individually or in groups. There were nine returns from 11 individuals, including five individuals based at policy partner organisations.

(5) Final recommendation by the third taskforce in Feb 2020

This consisted of six members, of which three were also part of the first and second groups. This group included one member from a policy partner organisation. The final report was circulated to all members of the SIPHER Consortium in mid-March 2020.

The below will follow these steps for the selection of the domains (Section 3) and then for the selection of the indicator for each domain (Section 4).

3. The domains of wellbeing

(1) <u>The first taskforce</u>

The first taskforce conducted an informal review of different outcome frameworks to identify candidate domains of wellbeing. These included: the Vibrant Economy Index (Grant Thornton, 2016, 2018), the Thriving Places Index (Happy City, 2018), the Inclusive Growth Community Index (Centre for Progressive Policy, 2019), the Inclusive Economy Indicators (Benner and Pastor, 2016), the English Indices of Deprivation (Ministry of Housing, Communities & Local Government, 2019), the Public Health Outcomes Framework (Public Health England, undated), the Scottish Index of Multiple Deprivation (Scottish Government, 2016), the Scottish National Performance Framework (Scottish Government, 2019), the Living Well Outcomes (Greater Manchester Combined Authority, undated), and the Key Performance Framework (Sheffield City Council, 2019).

Key domains of wellbeing extracted from the above covered:

- Income and cost of living
- Employment
- Education, skills and training
- Health, mortality, morbidity, mental health and disability
- Crime

- Housing
- Physical and social environment
- Local business and commercial activities, R&D
- (In)Equality
- Political engagement
- Other miscellaneous

As outlined in the introduction above, it is not feasible to include all these domains of wellbeing, and the taskforce aimed to reduce this to seven at the most.

Health was to include physical and mental health, both acute and chronic. However, mortality was removed to be addressed separately in the modelling.

Physical environment and crime were combined into safety of the neighbourhood. As a result, elements of the physical environment such as access to green space were removed. Social environment, Political engagement and Business were interpreted as enablers rather than individual wellbeing outcomes and removed.

There was much debate over Education, skills and training, which some regarded as an enabler rather than an individual wellbeing outcome, but this was kept for the first consultation.

Inequality was removed as a domain of individual wellbeing, because it was felt that (in)equality is a consideration when individual wellbeing is aggregated to form population wellbeing. Allowing for a definition of individual wellbeing that included inequality would result in potentially double-counting the effect of inequality (once at the individual level and again at the aggregation stage).

The resulting shortlist consisted of the following seven domains:

I. Income
II. Employment
III. Education, skills and training
IV. Health
V. Safety of the neighbourhood
VI. Housing
VII. People and community, or social capital

(2) <u>The first consultation</u>

In the first online consultation, the seven shortlisted domains above were presented with a commentary, followed by an invitation to suggest any other domains (with a justification). Respondents were encouraged also to suggest any domains to remove.

There were three recurring comments regarding the set of seven domains proposed. First, mental health needs to be separated from physical health. Second, physical environment, living environment and climate change should be included. Third, education, skills and training could perhaps be dropped.

The majority of respondents supported the inclusion of social relationships and social capital, while a few queried whether social capital could be represented by a single indicator.

(3) The second taskforce

The second taskforce reviewed the consultation returns and recommended the following:

- To discuss why Employment (or main economic activity) was necessary as a domain of wellbeing, once income and social networks were accounted for, and whether including leisure might be more important.
- To discuss dropping Education, skills and training as a domain of individual wellbeing
- To separate Health into Physical health and Mental health.
- To discuss merging physical environment, living environment, housing (and possibly crime).
- To invite suggestions for a single indicator on social capital.
- To not include environmental sustainability and climate change as a domain of individual wellbeing.

Thus, there were eight domains included in the second consultation.

(4) The second consultation

The responses to the second consultation were overwhelmingly against dropping Employment. The reasons ranged from comparability with existing statistics and policy targets, to the prominence of employment in the established literature.

The feedback was also mostly against dropping Education. The arguments ranged from comparability with policy targets for inclusive growth/economy, to the effect of Education going beyond employability and income. A minority agreed to the proposal by the second taskforce to drop Education.

While there was an agreement to keep a domain on social relationships and/or social capital, most pointed out that there is no single-indicator question on social capital (see further details on the social capital indicators below.)

The feedback mostly agreed that environmental sustainability and climate change are not a domain of individual wellbeing. But a number of comments stressed that we should find a way to address this somewhere in the SIPHER project.

(5) The final taskforce

The taskforce agreed to keep Employment.

The taskforce considered keeping Education until the mock-up of the choice exercise for the discrete choice experiment (Figure 1) made clear that this domain will be problematic given its irreversible nature – it does not make sense to ask a respondent with A-levels as their highest educational attainment to choose between, for example, having a degree (Life scenario A) and having O-levels only (Life scenario B), for one year, after which they go back to having A-levels. A possible way to avoid this is to make the hypothetical scenarios apply to the rest of their lives. However, scenarios that end in death have its own problems (see Discussion below). Given this, the final decision was to drop Education, based on pragmatic reasons.

The main changes from the set of domains proposed at the initial online consultation are:

- Health is split into Physical health and Mental health
- Education, skills and training is dropped
- Social capital is replaced with social isolation

4. The indicators within each domain

Before going into the individual domains, there was one issue that was common across a number of domains: whether to use so-called objective indicators (such as income) or subjective indicators (such as satisfaction with income). A general problem with objective indicators (or rather, more descriptive indicators) is that they do not accommodate variation in personal circumstances (e.g., a disability would make people need objectively more income to achieve the "same" wellbeing than otherwise; people may freely choose the option we would interpret as low wellbeing out of personal preference). On the other hand, a general problem with subjective indicators (or rather, more evaluative indicators such as those that are satisfaction-based) is that they (a) correlate with mental health; (b) reflect expectations (i.e., some are forced to learn not to want too much; others have expensive tastes and are difficult to please); and (c) strictly speaking are not inter-personally comparable[3]. Because the aim of WS6 is to use these indicators to elicit the average preferences of the general public, the second taskforce recommended the use of objective indicators where practicable. Overall feedback on this issue from the second consultation was cautiously positive.

The rest of this section will look at each of the domains of wellbeing in turn, across the five steps outlined above.

4.1. Income

(1) <u>The first taskforce</u>

The first task force suggested the following three candidate indicators to capture income:

- Annual individual disposable income (i.e. after taxes and benefits)
- Annual household equivalised[4] disposable income (i.e. after taxes and benefits, and adjusted for household size)
- Finding it difficult to get by financially [e.g. never / sometimes / often / always]

[3] Assume two individuals report a life satisfaction level of 7 out of 10. However, imagine that one of them usually reports a life satisfaction level of 8, so that reporting a 7 means a lower-than-usual level of life satisfaction. On the other hand, imagine that the second person usually reports a 6, so that reporting a 7 means a higher-than-usual level of life satisfaction. This would mean that the life satisfaction scores cannot be interpreted in the same way across these two individuals, or in other words, it is not inter-personally comparable.

[4] A single-person household with an income of £50,000 has more resources per head compared to a five-person household with the same income. But because some facilities and costs can be shared, the five-person household does not require five times the household income to satisfy the same needs. There are different equivalence scales of adjusting household incomes by household size (and sometimes composition) to allow for this, and the level of household income adjusted for household size is called equivalised income.

(2) The first consultation

Over 70% of the responses were in favour of Annual household equivalised disposable income. Some of the recurring themes on income touched on the following:

- Households vs individuals: income data are typically captured at the household level, and in practice income is shared within a household. On the other hand, policies may target individual income and the SIPHER model will be at the individual level rather than the household.
- Income vs wealth: annual income may not reflect the ability to spend (or borrow). However, the snapshot approach means the outcome measure needs to use income as opposed to wealth or assets.
- Where to put housing costs: disposable income is usually defined as before accounting for housing costs. However, this is typically the largest household budget item for most people and is typically a fixed cost in the short run, so should be deducted from people's day to day spending money.
- Objective vs subjective measures; and absolute vs relative income: using objective/absolute amounts signal that lower incomes automatically mean constrained wellbeing, which may be too paternalistic. On the other hand, using subjective measures and/or relative income justifies expensive tastes and inflated expectations.

(3) The second taskforce

The second taskforce recommended the use of annual household equivalised disposable income, without deducting housing costs. It was noted that UKHLS data on household disposable income after housing costs are only available under Special License.

(4) The second consultation

Feedback from the second consultation on household vs individual income was in favour of the former, although concerns were raised about whether individuals would know about the income of others in the household, and about how resources/income are shared within households.

Views on not deducting housing costs was mixed. While four replies did not comment and one was supportive of not deducting, four were strongly in favour of deducting housing costs, because: housing costs in recent years have increased more rapidly than income/wages; housing costs in the short run are de facto imposed; and housing costs vary geographically.

(5) The final taskforce

Given the argument on the limited choice that many (and especially those with low incomes) have over housing costs, particularly in the short run, the taskforce decided to use annual household equivalised disposable income, where housing costs and pension contributions are deducted. More specifically, this would involve: (1) pooling income after income tax, national insurance, and pension contributions across members of a household; (2) subtracting housing costs; and (3) adjusting for household composition/size (by dividing with the square root of household size, following the simplest of the OECD methods; OECD, undated). This is a continuous variable.

4.2. Employment

(1) The first task force

The first task force suggested the following three candidate items to capture employment:

- Current employment status
- Satisfaction with job
- Job security (e.g. zero-hour contract or short-term contract)

(2) The first consultation

Around 90% of the responses for employment were evenly split between current employment status and satisfaction with job. Some of the recurring themes involve:

- If using an objective measure the list of categories needs to be long enough to accommodate those not participating in the labour market.
- If using a subjective measure, also important is the quality of the job and whether the individual finds their work meaningful.

(3) The second taskforce

The second taskforce recommended the use of Current employment status, but with a wide range of other alternative economic activities, in addition to FT/PT employment and job seeking.

(4) The second consultation

The majority supported the use of Current employment status with additional categories. A few suggested using two (or more) questions to capture the quality of the job.

(5) The final taskforce

The final taskforce decided to use Current employment status, with additional categories, namely: FT employment; PT employment; FT education/training/apprenticeship; PT education/training/apprenticeship; volunteering; informal caregiving; home making; job seeking (unemployed); retired; long term sick or disabled; other. Employment includes self-employment. Employment includes being on maternity/parental leave. It was acknowledged that it is not possible to capture the quality, stability, or meaningfulness of the activity within a single indicator.

4.3. Education, skills and training

(1) The first task force

The first task force suggested the following three candidate items to capture Education, skills and training:

- Highest level of education achieved
- Being working age (16-64) and not in Education, Employment or Training (NEET)

- Being working age (16-64) without any formal qualifications

(2) The first consultation

Just under half of responses opted for Highest level of education; over a third chose NEET; and under a fifth chose not having any formal qualifications. Recurring themes were:

- Whether the indicators capture the impact of education, skills and training on wellbeing
- Whether education should be one of seven domains of wellbeing

(3) The second taskforce

As was noted above under the selection of domains, the taskforce suggested dropping Education, skills and training as a domain of individual wellbeing.

(4) The second consultation

As was noted above, the suggestion to drop the domain was mostly opposed. Most were in favour of using the Highest level of education achieved. It was noted that highest educational achievement may not be comparable across different birth cohorts, given the rising average levels over time.

(5) The final taskforce

As was noted above, Education, skills and training was removed as a domain after the mock-up for an exercise to elicit people's preferences was examined.

4.4. Health

(1) The first task force

The first task force suggested the following three candidate indicators to capture health:

- Has a diagnosis of a mood or anxiety disorders
- Has a diagnosis of a long-term health condition
- Self-assessed health [e.g. excellent, very good, good, fair, poor]
- Self-assessed mental health [e.g. excellent, very good, good, fair, poor]

(2) The first consultation

Just under half the responses chose "Has a diagnosis of a long-term health condition". Under 40% went for "Self-assessed health", under 10% for diagnosed mood/anxiety disorders, and 5% (one return) chose Self-assessed mental health. The two main comments were:

- Separate physical health and mental health
- Self-assessed health (more subjective) vs specific diagnoses (more objective)

(3) The second taskforce

The second taskforce recommended splitting the health domain into Physical health and Mental health. It was noted that there is no corresponding question in the UKHLS on self-assessed physical and/or mental health. There are two questions adapted from the SF-36 questionnaire on accomplishing less because of physical health / because of emotional problems.

(4) The second consultation

The second consultation overwhelmingly agreed to separating physical health and mental health. Reactions on the accomplishment-based indicators were more cautious. It was noted that these are not health per se, will be subjective, and correlated with Employment. A few multi-indicator alternatives were suggested (e.g. SF-36; GHQ; ADL; EQ-5D), none of which has one indicator for physical health and one indicator for mental health.

(5) The final taskforce

The taskforce decided to split health into physical and mental, and to use the accomplishment-based indicators, with answer categories: None of the time / a little of the time / some of the time / most of the time / all the time. The two main reasons were: that we could not have three or more indicators for health; and that the parallel between physical and mental health was easier to achieve with the accomplishment indicators than with most objective indicators.

4.5. Crime and security

(1) The first task force

The first task force suggested the following three candidate indicators to capture crime and security:

- Have been a victim of crime in the past year
- Perception of personal safety in neighbourhood

(2) The first consultation

Almost all the responses (95%) were in favour of "Perception of personal safety in neighbourhood". The following recurring themes were observed amongst this group:

- Not many have actual experience of being a victim of crime.
- Crime affects wellbeing of non-victims, too.
- Crimes can be heterogeneous: financial vs personal crime; minor vs serious crime.
- One could be a victim of crime taking place outside their own neighbourhood.

(3) The second taskforce

The taskforce invited a discussion on how important the reference to the neighbourhood was, and whether this was about personal crime or about the general safety of the neighbourhood.

(4) The second consultation

The responses were in favour of focusing on the neighbourhood and on general safety rather than specifically on crime.

(5) The final taskforce

The taskforce decided to use "how often are you concerned about the safety of your neighbourhood?" [hardly ever / some of the time / often].

4.6. Housing

(1) The first task force

The first task force suggested the following three candidate indicators to capture housing:

- Living in housing in poor condition (fails to meet the Decent Homes standard.)
- Living in overcrowded house (house with insufficient space to meet the household's needs)
- Housing affordability (Difficulty of access to owner-occupation or the private rental market, expressed as the inability to afford to enter owner-occupation or the private rental market.)
- Satisfaction with house/accommodation

(2) The first consultation

A substantive majority was evenly split (43% each) between "Living in housing in poor condition" and "Satisfaction with house/accommodation". A few recurring themes were:

- Objective measures of quality of housing with common standards are better.
- Objective measures may not capture personal preferences and/or needs.
- Satisfaction might reflect mental health or social comparisons.
- Affordability could be captured under income.
- Overcrowding not an issue in Scotland, and a bigger issue in England.

(3) The second taskforce

It was noted that there are no directly corresponding questions in the UKHLS. A possible alternative was "Do you have enough money to keep your house in a decent state of repair?", which is in the UKHLS. While not everybody will be in a position to be responsible for the upkeep of the house they live in, amongst those who are, this question would capture the quality of the accommodation.

(4) The second consultation

The second consultation returns overwhelmingly rejected the alternative question, mostly because more and more people rent (and therefore are not responsible for the upkeep of their home), and this question is on income rather than the quality of the accommodation. However, there was no specific alternative that arose from the second consultation.

(5) The final taskforce

After much discussion, the taskforce agreed to use "Your home is in a reasonable state of repair, has reasonable facilities (cooking/washing) and provides reasonable warmth …" [Yes to all of these / yes to some of these / none of these].

4.7. Social relationships and social capital

(1) The first task force

The first task force suggested the following three candidate indicators to capture social relationships and social capital:

- Social capital (The resource of social networks, community cohesion, social participation, trust and empowerment.)
- Satisfaction with social relationships
- Having people to turn to for help (Has a spouse or partner, family member or friend to rely on a lot if they have a serious problem)

(2) The first consultation

Just over half the respondents to the first consultation supported "Social capital", while a third opted for "Having people to turn to for help", and the rest went for "Satisfaction with social relationships". A few recurring themes were:

- Social capital is wide, broad, multidimensional, and/or abstract. "Social capital" on its own cannot be an indicator.
- People to turn to may be better at capturing networks of relationships.
- People to turn to for help is not relevant for everybody all of the time; or, asks two questions (have you needed help? / do you have anybody if you do?)
- Social isolation and loneliness might be a better alternative.

(3) The second taskforce

The taskforce suggested an indicator on participation in organised activities with a list of examples. Respondents were also encouraged to consider what single indicator might represent social capital.

(4) The second consultation

The second consultation was emphatically against the indicator on participation in organised activities. Most responses noted that it is not possible to capture social capital in a single indicator. One suggested "feeling lonely".

(5) The final taskforce

The taskforce decided to use "How often do you feel isolated from others?" (Russell et al, 1978; ONS, 2018) [hardly ever / some of the time / often], with the domain label "Social isolation". This was since: there is no single measure of social capital; activities and friends look objective but are difficult to interpret; the term "loneliness" in the local government context would sound very health-oriented (proxy for mental health difficulties).

5 Discussion

This note has outlined the processes through which the SIPHER Consortium agreed to use a suite of seven indicators across seven domains to represent individual wellbeing. They are jointly referred to as SIPHER-7. This Discussion section will address two main issues: what the ideal process might have looked like; and what further challenges remain in eliciting the relative preference weights across the SIPHER-7 indicators.

5.1 The ideal process

The selection of the wellbeing indicators was not itself a research objective of the SIPHER project, but an intermediate step that was necessary for the subsequent workstrands to build on. We believe that the process outlined above was transparent and allowed input from a wide range of Consortium members over multiple waves, while being highly time-efficient. On the other hand, we do not claim that it was comprehensive.

In an ideal world, a longlist of candidate domains and indicators would have been selected based on three things: a systematic review of the literature and policy documents to identify possible candidates; quantitative analyses of large-scale social survey secondary datasets to examine the correlations and clustering between them; and draft versions of the SIPHER models where the set of indicators would be used. To narrow this further to form a shortlist and then the final set, the longlist would be scrutinised by different panels comprised of policy makers, of academic topic experts, and of representatives of the wider community, in a series of consultations accompanied by reports of the relevant evidence. The panels would be consulted at least once to narrow down the domains, and then again to select the indicators and the response categories.

Any process of selecting outcome indicators entails elements of deliberation and judgement, and involves compromises because consensus is not always possible. The final set of indicators may have been different had different evidence been examined, different personnel been involved or arguments presented in different ways. With this in mind, it is of particular importance to note that while those who inputted to the SIPHER-7 process included policy actors alongside researchers from multiple disciplines and subject expertise, there was no representation from the wider community or service users. The use of panels consisting of members of the lay public, and in particular people with lived experience of inequalities, can contribute to broaden the range of perspectives brought to bear on consultative discussions such as this one. However, at the time of our exercise, the SIPHER Community Panels were yet to be set up.

5.2 Further challenges

The next stage of the research project is to elicit the preferences of the general public so that the estimated preference weights can be used to calculate a single index number of wellbeing for all possible profiles of SIPHER-7. However, it should be noted that a choice exercise to elicit the relative preferences across seven domains will be extremely challenging. The below will comment on some of the challenges specific to each domain.

The Employment domain has 11 categories, including 'other'. While this may be necessary to allow individuals to accurately report their situation, the number of categories will need to be reduced for the elicitation of preferences. In particular, as Figure 1 illustrates, the elicitation task will require respondents to imagine being in a state for a limited duration of time, after which they go back to their 'normal' – this may not work well with the category retirement. (Also see the discussion below regarding the Education domain.) However, since those

retired make up about a quarter of the population, the category cannot simply be dropped. Since household income and the effects of health are addressed elsewhere in SIPHER-7, a possibility would be to merge the categories where one is not looking for paid work (viz. volunteering, home making, long-term sick or disabled, or retired).

Since the final objective is to calculate *individual* wellbeing, household income will need to be adjusted for household size. However, because the concept and process of household equivalisation is complicated to explain, it may be necessary to use non-equivalised, actual household disposable income after housing costs in the preference elicitation tasks where respondents will be asked to answer with their actual household size in mind, and then to adjust for household size in the subsequent analysis.

The health domains do not concern physical health and mental health per se, but their effects on activities. Other candidate SF-12 questions in UKHLS considered are:

(1) "Health limits moderate activities" – this does not distinguish between the effects of physical health and mental health.
(2) "Health limits climbing several flights of stairs" – this may be informative as a part of a suite of indicators, but on its own it is too limited.
(3) "Felt calm and peaceful" – this seems to go beyond mental health and include personalities.
(4) "Had a lot of energy" – this could be physical or mental (or both).
(5) "Felt downhearted and depressed" – this excludes anxiety, but may be a candidate for mental health, if there was a corresponding physical health indicator (which there is not).

The practical but major reason for dropping Education was its incompatibility with the hypothetical scenarios planned for the preference elicitation, where people are asked to imagine living in 'life A' or 'life B' for a set duration after which they go back to their 'normal' lives (see Figure 1). An alternative of using scenarios that end in death after a set duration (e.g., 1 year, or 10 years) have other problems. For example, respondents with underage children may focus disproportionately on income to leave an inheritance rather than on current own wellbeing. A further possibility is to make the hypothetical scenarios last longer, say, for the rest of one's life, but this would mean the analysis will not be able to distinguish the effects of the respondent's age and those of the duration of the scenarios[5], which would be problematic.

Wording for the housing domain needs further work before it can be used in a preference elicitation exercise.

Ideally, each domain should be independent so that any combination of the seven indicators is plausible. However, at least one combination appears unlikely: higher household income combined with unemployed, if the individual in question lives alone. Choice experiment designs that include this (and any other unlikely scenarios) would need to be avoided.

The SIPHER models will take the form of repeated cross-section snapshots, and therefore the wellbeing outcomes need to be for a given point in time. This requires, for example, a focus on income rather than wealth. It is known that the effects of persistent poverty or long-term unemployment are larger than the effect of time-limited poverty

[5] This is because younger respondents will have longer life expectancy.

or unemployment multiplied by duration. Therefore, this needs to be taken care of outside of the wellbeing outcome measure, when a given outcome is aggregated over time.

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APPENDIX

The seven tables below illustrate the distribution of the SIPHER-7 indicators in the UK general population based on the UKHLS "Understanding Society", wave 9, N=13,786 (University of Essex, Institute for Social and Economic Research. 2019. Understanding Society: Wave 9, 2018. 12th Edition. UK Data Service. SN: 6614, http://doi.org/10.5255/UKDA-SN-6614-14).

Table A1. Household disposable income after housing costs (£/month)

Min.	0.83
1st quintile	1507.00
Median	2437.98
Mean	2881.69
3rd quintile	3583.33
Max.	79666.66
standard deviation	2581.90

(Source variables: "i_fihhmnnet1_dv", "i_houscost1_dv")

Table A2. Employment

Full-time employed	40.18%
Part-time employed	16.47%
Job-seeking	3.62%
Full-time education	4.69%
Taking care of a family member with chronic illness or disability	1.14%
Not working	33.90%

(Source variables: "i_jbstat"," i_pjbptft")

Table A3. Effect of physical health

None of the time accomplishing less due to physical health	53.75%
A little of the time accomplishing less due to physical health	17.04%
Some of the time accomplishing less due to physical health	18.17%
Most of the time accomplishing less due to physical health	6.59%
All of the time accomplishing less due to physical health	4.45%

(Source variable: "i_scsf3a")

Table A4. Effect of mental health

None of the time accomplishing less due to mental health	52.79%
A little of the time accomplishing less due to mental health	17.85%
Some of the time accomplishing less due to mental health	20.98%
Most of the time accomplishing less due to mental health	5.36%
All of the time accomplishing less due to mental health	3.02%

(Source variable: "i_scsf4a")

Table A5. Neighbourhood safety

Hardly ever concerned about the safety of the neighborhood	61.17%
Some of the time concerned about the safety of the neighbourhood	37.62%
Often concerned about the safety of the neighbourhood	1.21%

(Source variables: "i_crteen", "i_crdrnk", "i_crvand", "i_crrace", "i_crburg", "i_crcar", "i_crmugg")

Table A6. Housing

Reasonable housing quality: All true	80.09%
Reasonable housing quality: Partly true	18.88%
Reasonable housing quality: Not true	1.03%

(Source variables: "i_hheat", "i_cduse5", "i_cduse6", "i_cduse7", "i_cduse8", "i_cduse9", "i_pcnet")

Table A7. Social isolation

Hardly ever feeling lonely	56.21%
Some of the time feeling lonely	31.58%
Often feeling lonely	12.21%

(Source variable: "i_sclonely")

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