OPEN ACCESS

University of BRISTOL

Kirkpatrick, I., & Veronesi, G. (2019). Researching Health Care Management Using Secondary Data. In M. Saks, & J. Allsop (Eds.), *Researching Health: Qualitative, Quantitative and Mixed Methods* (3 ed., pp. 359-385). London: SAGE Publications Ltd.

Peer reviewed version

Link to publication record in Explore Bristol Research
PDF-document

University of Bristol - Explore Bristol Research
General rights

Researching healthcare management using secondary sources

Ian Kirkpatrick (Warwick Business School) and Gianluca Veronesi (University of Bristol)

Aims

a) To highlight gaps in the extant research on the characteristics and impact of managers in healthcare.

b) To define and provide a taxonomy of administrative data sources relevant to researching healthcare management.

c) To review the range of statistical techniques used to analyse administrative data.

d) To illustrate how the analysis of administrative data sources can advance knowledge both with regard to the characteristics of managers in healthcare and their impact.

e) To discuss the limitations of administrative data and avenues for future research.

Introduction

This chapter focuses on how emerging new 'administrative data sources might enhance research into the changing management of health services. Since the early 1980s, most developed countries have given priority to reforming management (Mintzberg, 2017). Costs have risen due to ageing populations and the technologies developed to meet their changing (and rising) expectations, concerns and needs (Kuhlmann et al. 2015). These demands have been especially acute in tax funded health care systems. In the UK National Health Service

(NHS), for example, the government has most recently set targets for a 2% annual efficiency gain (£9 billion in total) from providers in the five years up to 2021 (NHS England, 2016). Concerns have also been raised about high levels of 'unwarranted variation' in the productivity and efficiency in non- specialist acute services, according to one review (Carter, 2016), costing £5 billion per annum.

Despite these mounting policy concerns, attempts to reform management have been highly controversial and, in most healthcare systems, continue to be questioned and criticised. The introduction of managers in executive roles in hospitals, with a mandate to control resources, has often been resented by the medical profession, viewing that as a challenge to its dominance and autonomy (Kirkpatrick et al., 2005). In the NHS, for example, it is noted that even after three decades of reforms, there still remains a pressing need for 'dialogue and conflict resolution' to improve 'doctor–manager relationships' (Powell and Davies, 2016). This level of cynicism about managers in the NHS has also spilled over into public debate. In the UK, media headlines, such as 'death by bureaucracy', 'greed of NHS fat cats' or 'cure the NHS with fewer managers', are increasingly commonplace (Kirkpatrick et al. 2017a). Most recently, Max Pemberton (himself a doctor), writing in the *Daily Mail*, has criticized the recruitment of managers at the expense of front line clinical staff (nurses and doctors). Managers, he suggests, have proliferated in the NHS and add little or no value: 'Put a manager in a room with a clipboard and they will find work' (Pemberton, 2017).

However, while these assumptions are widely held, what do we really know about the nature and impact of managers and management in health systems? Who are these managers and what roles do they perform? More importantly, what impact have managers had on the performance of health services? Are they a largely unproductive overhead, as many recent accounts would have us believe, or do managers add value as 'the people who keep the show

on the road, day-in day-out' (Managers in Partnership - http://www.miphealth.org.uk/home-/Home.aspx)?

In this chapter, we explore some of the challenges these questions pose in terms of research methods. In recent years there has been a proliferation of studies focusing on the dynamics of leadership and management in the NHS – some of it funded through the National Institute for Health Research (NHIR) – much of this work has been predominantly (if not exclusively) qualitative (see NIHR (2013) for a summary). This research has deepened our understanding of how management and leadership roles have developed in specific cases, although with some exceptions (Bloom and Van Reenan, 2010) we still know little about the wider characteristics of management (for example in terms of size and different functions) and even less about its impact.

To address these concerns, we highlight the usefulness of alternative 'administrative data' sources that are increasingly available for conducting research on the nature and impact of healthcare management (Smith et al., 2004). While such data is not designed exclusively for research, it has been used extensively, including in other areas of public management research. Examples of this include studies focusing on the size and characteristics of administrative functions in public organisations ('administrative intensity') (Andrews and Boyne, 2014) or on the impact of management policies and practices (Walker, 2013). By contrast, in healthcare, despite a growing interest in the use of human resource data (such as payroll information) to assess the nature and outcome of nurse staffing levels (Griffiths et al., 2016; 2015), and issues associated with organisational climate and culture (West et al., 2015) less attention has been paid explicitly to management.

In this chapter, we illustrate the potential of an alternative research agenda focusing on managers in the English NHS, one which also draws on a growing availability of

'administrative data sources' (Smith et al., 2004). In what follows we first set the scene by identifying certain gaps in the current research on managers and management in healthcare, focusing specifically on the case of the English NHS. We then turn to a discussion of administrative data in the NHS and methods of analysis, before turning to examples of current research on the nature and impact of managers which we, ourselves, have conducted.

MANAGERS AND MANAGEMENT IN THE NHS: KEY QUESTIONS FOR RESEARCH

In this section we outline some of the key questions relating to the development of managers and management in healthcare systems and the challenges this poses with regard to data and research methods. As we noted earlier, healthcare systems around the world have been subject to demands to improve efficiency and develop enhanced management capabilities. These reforms are frequently described in terms of the new public management, or NPM (See Box one for a full description). While the NPM implies multiple changes, a key development has been the greater emphasis on management at the levels of hospitals and other healthcare organisations. This topic has been widely researched in the literature, but certain questions have still not been addressed as fully as they might. First is with regard to the characteristics of management within healthcare organisations and its antecedents (by 'antecedents we mean, the factors that explain variations in the development of management)? Second are questions regarding the impact of this management on a range of different outcomes in healthcare (including efficiency and service quality).

BOX ONE ABOUT HERE

Nature and antecedents of management

In the recent literature terms such as management and managerialism are sometimes loosely without much clarity. Often it is assumed that NPM reforms have led to the employment of more managers and that managers themselves are a unified group with a well- defined agenda of controlling costs regulating professional practice. However, there are some obvious difficulties with these assumptions.

First, what exactly do we mean by managers and management? In the wider public administration literature the need to differentiate between these terms is noted (Diefenbach (2009; p. 894). While 'management' is a general process which might conceivably be performance by anyone, the latter highlights managers as a 'distinctive occupation' (Grey 1999; p. 562). In the NHS, management as a process is highlighted by the general thrust towards performance management, focusing on greater accountability for achieving results and targets at levels (Verbeeten and Speklé 2015). From this perspective, a large proportion of staff (including clinical professionals) are involved in 'management', a tendency exaggerated by the growing emphasis on 'leadership' from ward to board (Spurgeon and Clark, 2016). A recent study by Buchanan et al. (2013), for example, found that around one in three clinical staff had some kind of 'managerial' role (associated with administration or staff supervision), even if they do not hold formal 'management' job titles.

By contrast, 'managers' is a narrower category, referring to people who occupy job roles with the title of 'manager'. Historically, this has been less apparent in healthcare organisations, which have tended to be 'bureaucracy-lite' (Hales, 2002), with parallel hierarchies for administrators and clinical professionals and decisions made through consensus (Ackroyd et al., 2007). In the NHS, the appearance of general (or 'pure play') managers dates mainly back to 1983 when the then prime minister, Margaret Thatcher,

commissioned Sir Roy Griffiths, the Director of the supermarket chain J. Sainsbury's, to conduct a review. His solution was to recruit dedicated managers with the executive authority to run hospitals, holding them accountable for budgets and (later) performance.

A second question concerns the identity or background of these general or 'pure play' managers. In some accounts managers are often treated as a unified block of outsiders, recruited into the NHS to challenge the (legitimate) decisions of clinical professionals. However this image of managers is clearly problematic given the emergence of hybrid professional-manager roles within healthcare systems (see Kirkpatrick (2016) for an overview). An important development was the creation of clinical directorates at the middle level of hospitals, delegating (some) budgetary responsibilities to professionals (usually doctors). At the strategic level, doctors and nurses were also recruited onto the boards of hospitals in roles such as medical and nursing director (Kirkpatrick et al, 2013). But, while there is a mounting body of research on these hybrid roles, much of it focusing on issues of identity (see for example, Croft et al. (2015); Spyridonidis et al. (2015)), surprisingly little is known about the backgrounds of these 'managers' or about how significant these 'hybrids' are as a proportion of all managers.

Third are questions about the overall size and composition of the 'management' function within healthcare organisations and the conditions that have influenced its development. As we noted in the Introduction, there is an assumption in the media and some political circles that expenditure on management in the NHS has grown exponentially in recent years. It is also widely believed that this growth has been most pronounced in organisations such as Foundation trusts or clinical commissioning groups (CCGs), which gave been given greater formal autonomy (Kirkpatrick et al., 2017). Yet, while general estimates of the number of managers in the NHS are available (see Kings Fund, 2011), our understanding of these issues remains surprisingly limited.

All three questions pose challenges in terms of available research methods and data. An obvious limitation of the qualitative research on this topic, based on case studies, is a lack of any accurate measure of the size and characteristics of management functions across the NHS. To some extent, the latter information can be obtained from official sources. Using NHS official figures, the Kings Fund report that in 1995 there were 20,842 'managers and senior managers' in the NHS, accounting for 1.9 per cent of the workforce. Since then, management numbers have fluctuated in a context of growing financial constraints and a major re-organization of primary care. At the time of writing there were approximately 31,113 managers employed, accounting for 2.97 per cent of the workforce (NHS Confederation 2017). Walshe and Smith (2011) also find that in 2010, in England, the largest proportion of managers (53.6%) were located in 'provider' organizations, with less than 6% in central functions (including regional authorities) and 40.8% in primary care (commissioning roles). However, while these figures are a useful starting point, they are based on very crude definitions of 'management' and administration' and do not provide a clear breakdown of different roles *within* management (including hybrids).

Impact on performance

A further deficiency of the existing research is that few studies to date have focused on the impact of managers on the performance of healthcare organisations. As we noted earlier, the assumed costs of management in the NHS have become an issue of growing media and political concern. A recent poll published by Lord Ashcroft KCMG (2015) asked respondents what they believed the biggest problems facing the NHS are today. Appearing first on the list of public concerns was 'too much being spent on management and bureaucracy'. This ranked higher than (arguably far more pressing) issues such as 'hospital closures and other cuts',

'staff shortages' and 'patients being denied drugs or treatment because of cost'. Many politicians have also jumped onto the anti-management bandwagon. Most recently in a speech to the NHS Annual conference in 2017, the current Minister for Health, Jeremy Hunt, declared: '…we should today ask whether the NHS made a historic mistake in the 1980s by deliberately creating a manager class who were not clinicians' (*Guardian*, 2016).

The view that managers are largely ineffective (or even irrelevant) is also widespread in some of the academic literature (Greener et al., 2013). However, not all studies are equally disparaging about the motivations and contributions of managers. While some have emphasised quite stark differences in values between managers and doctors (Degeling et al., 2006), others point to many areas of shared commitment, and a strong public service orientation of middle managers (Crilly and LeGrand, 2004). This research also highlights the possibilities for more productive relationships between medicine and management that can be negotiated locally and which support service improvement (Kirkpatrick et al., 2008).

Hence, there is some debate in the literature concerning the motivations and experiences of managers in the NHS. There is also some research focusing on the impact of management practices, such as human resource management and leadership styles on performance and staff satisfaction (see West et al. (2015) for a summary). A much publicised example of this is the work of Bloom and colleagues (Bloom and Van Reenen, 2010; Bloom et al., 2015). In collaboration with the global management consulting firm, McKinsey & Co., Bloom and Van Reenen (2010) developed a 20 point scale of management practices. Although designed initially for manufacturing this survey has been applied to over 2000 hospitals (public and private) in nine countries (including the UK). The results show that high management scores correlate strongly with clinical outcomes and a range of financial outcomes (including profitability), especially in private hospitals subject to greater competition (Bloom et al., 2015). However, while useful this research is cross sectional –

making it hard to impute the direction of causality (whether management practices generate improved hospital performance or are a result of it?) - and relies on subjective self-assessments of practices by managers themselves.

ADMINISTRATIVE DATA SOURCES AND METHODS FOR RESEARCHING HEALTHCARE MANAGEMENT?

So far we have outlined some important gaps in the research on managers and management in the NHS and related challenges in terms of data and methods. In this section we now turn to the matter of how knowledge in this field might be advanced though the use of an alternative research design drawing on and combining a range of 'administrative' data sources. First we first describe these data sources and their advantages before exploring a range of analytical techniques that may be used to exploit them. In the following section we focus on illustrative examples from recent research we have conducted ourselves.

What is administrative data?

'Administrative data' refers broadly to information collected primarily for administrative (not research) purposes (Smith et al., 2004). According to Connelly et al. (2016: 2) it relates to 'data which are derived from the operation of administrative systems (e.g. data collected by government agencies for the purposes of registration, transaction and record keeping)', so is essentially a form of 'Big data' (Mayer-Schonberger and Cukier, 2013). In the UK, government departments are the main (although not exclusive) controllers of large administrative databases, including welfare, tax, educational record systems and, crucially,

health. Although these datasets are used primarily to inform policy-making, their potential for research has also been realised.

As is widely documented in the literature, administrative data has many strengths (Connelly et al., 2016). Because it has already been collected (with the exception of extraction and cleaning) there are few additional costs associated with collection. The coverage of such data across populations (say organisations in a sector) is often complete (sometimes including 100% of the records in question) with information regularly updated in a standardised and consistent format (to ensure comparability). More often than not administrative data is longitudinal making it possible to address research questions about change over time. Data is usually also subject to rigorous quality checks and is generally not that intrusive for the target population. Lastly, as we shall see, there are potential advantages in matching administrative data sets, to conduct analysis with avoids many of the pitfalls of single source bias.

At the same time administrative data is not without certain weaknesses. Most importantly, the information collected is limited to whatever data is required for administrative purposes and is therefore beyond the control of the researchers. There are also risks of frequent changes in the administrative procedures used to collect such data (for example, in classification and coding) which may make some data sets hard to use a longer time period (see below). As we have seen, not all administrative data is free for public use, with some important sources held by commercial organisations (see Angrave et al. (2016) for a discussion of data sources in the HRM field).

Administrative data relating to healthcare management

In the English NHS context, one can identify different strands of administrative data, which vary along a number of dimensions. First is in terms of ease of access. Some data has already been collected, collated and made available for download to any potential interested researcher (for example, from NHS Digital, the main NHS data repository). One advantage of existing datasets is that all the information included (from number of patient admissions to percentage of bed occupancy and so on) can be traced at the organisation level, and each organisation has a unique identifier that is constant across databases. By contrast, other data are still publicly available, but need to be extracted and re-organised before they can be used for analytical purposes. An example here are the official communications of NHS organisations, such as annual reports and related financial statements, board meeting minutes and any other formal document available on the organisation website. This would, for instance, include information on educational background and professional expertise of members (directors) of hospital trust governing boards.

A further dimension is the degree of public availability. While many datasets (or sources) have unlimited access (see above), others are privately owned, subject to fee payments or special access arrangements. A prime example of the latter is the Binley's database of NHS managers (owned by Wilmington Healthcare Ltd). This is a directory containing information on personal details of individual managers (salutation, gender, professional belonging etc.) as well as their formal managerial role (e.g. financial director, estates manager, clinical director and so forth). Published since 1991, the database is periodically (every four months) compiled and updated through survey of employees of NHS organisations, containing more than 30,000 individuals and over 100 job functions (including clinically qualified managers).

An outline of the different sources of publicly available administrative data relating to management in the English NHS is provided in Table's 1 and 2. Broadly speaking Table 1 includes data relating to the nature and antecendants of management. This includes sources that provide estimates of management numbers (for example, NHS Workforce statistiucs and the Binleys database) and those providing information on potentially relevant organisational conditions (such as financial information and hospital episode statistics). By contrast, Table 2 describes sources that can be used primarily as outcome (or performance measures), including efficiency data and patient experience scores. Of course, these distinctions are not hard and fast. As we saw earlier, NHS Staff Survey data (Table 2) provides information on the nature of management practices, including HRM policies and assessments of leadership styles. NHS Trust Accounts Data might also be used to assess levels of investment in management, or associated activities, such as the use of management consultants (for an application of the latter see Kirkpatrick et al., 2018).

TABLE ONE ABOUT HERE

TABLE TWO ABOUT HERE

Analytical methods

There are a wide range on analytical methods to exploit these 'administrative' data sources to investigate the nature and impact of management on performance outcomes. In what follows, rather than review all of these possibilities we summarise instead some of the more obvious methodological approaches, including those that feature in our own research (see Table 3 for a summary).

TABLE THREE ABOUT HERE

A first possibility is to simply look at descriptive statistics such as measures of central tendency (e.g. mean, median, and mode) and indicators of variability or dispersion (including: standard deviation/variance, minimum and maximum values, and kurtosis and skewness). These are most revealing when a whole population is taken into consideration, but are also useful even for (smaller) representative samples. For example, in their report on the NHS management workforce for the King's Fund, Walshe and Smith (2011) use the Binley's NHS Directory to present trends on the composition and characteristics of senior and middle management, over a period of 14 years (1997-2010).

Beyond descriptive analysis, a more revealing approach is to investigate the existence and magnitude of the effect of one or more explanatory variables upon a dependent variable at a given point in time. This analytical approach (usually) requires the formulation of hypotheses, grounded in theory and looking for statistically significant associations between said variables. Goodall (2011) for example, employs a linear regression model to focus on the relationship between the background of hospital CEOs (medical or not) and its effect on the quality-ranking of the top-100 U.S. hospitals in 2009. Also using data related to the U.S. healthcare system, Bai (2013) utilises ordinary least squares to analyse the relationship between governing board size and presence of doctors (measured as a binary variable) with the social performance (community benefits) of 703 hospitals, accounting for the confounding factors such as patient mix, location, workforce, and range of services offered.

Our own research has also used cross-sectional analysis (based on data collected by observing many organisations at the same point in time), to focus on the impact of clinical representation on the governing boards of English NHS acute care trusts (Veronesi et al., 2013). Following a similar research design (and with matching databases), we looked at the

effect of clinical directors on the board of 102 hospital trusts over the period 2006-2009 on two outcome measures: the Healthcare Commission (now Care Quality Commission) rating for the quality of care provided and Dr Foster's (a commercial provider of healthcare benchmarking data) hospital-related mortality rates. Given the characteristics of the dependent variables, in the first instance the analysis employed pooled regression (that, is observed cross sectional data of the same organisation at different points in time) via an ordered logit model (that is, a regression model for ordinal independent variables), whereas for the morbidity rates (a continuous variable) an ordinary least squares regression (that is, a method for estimating the unknown parameters in a linear regression model) was used.

An approach that is arguably more sophisticated is to exploit the longitudinal nature of datasets using a technique called panel corrected standard errors (that is, a class of estimators for the variance-covariance matrix – a square matrix containing the variances and covariances associated with the variables - of the OLS when there are many observations per year in a relatively short time period). In our own research, this was used to analyse the effects of clinical leadership in governing boards on the experience of patients in acute care hospital trusts (Veronesi et al., 2015). This methodology has the advantage of controlling for prior levels of the dependent variable (essentially the existence of path dependency) as well as accounting for potential correlation of the errors across trusts within the same time period (autocorrelation) and unequal variances across different subsets of hospitals (heteroskedasticity). To confirm the main results, separate robustness tests can be ran that apply a panel data with fixed effects and random effects estimations. The former is useful to address the possibility of an omitted variable bias (i.e. unobserved heterogeneity or not including alternative explanatory factors), whereas the latter controls for the likelihood that variation across trusts is random and not correlated to the explanatory variable. To address the concern of reverse causality (essentially a two-way causal relationship), one can also treat

the main independent variable - the presence of clinicians on the board - as endogenous (i.e. its values are affected by other functional factors) - by applying the Arellano-Bover/Blundell-Bond dynamic panel data estimations.

An extension of this approach is the system Generalized Methods of Moments (a type of dynamic panel data models), where the dependent variable is dynamic, meaning that its lagged values are entered in the estimation regressions, and the predictors are treated as not strictly exogenous (i.e. potentially correlated with past and possible current realisations of the error). This methodology becomes particularly useful when the association between certain factors (e.g. management size, board composition, and so forth) and organisational performance is explored, as it allows to account for the possible feedback loop between variables (management can influence performance, but these in turn can also influence management).

A different method employed in our body of research on NHS management consists of structural equation modelling. This is a statistical technique used mainly for confirmatory testing of hypotheses based on a general linear model. Related to this is partial least squares path modelling (based on predicted and observable variables), which operates similarly to multiple regression analysis. As a soft modelling technique, this method is particularly suited for exploratory research purposes as well as dealing with formative indicators (i.e. the indicators causing the construct). In our case, we use this methodology as it allows modelling the relationship between 'board heterogeneity' (the mix of skills and backgrounds of members) and hospital trust performance while exploring the mediating (and mutually reinforcing) role of line managers styles and practices and levels of staff satisfaction (see Blanco-Oliver et al., 2016).

Lastly, we have also employed a data analysis technique applying the rules of logical inference to examine the characteristics of those members of governing boards of NHS acute trusts with a medical background. Specifically, we use fuzzy-set / Qualitative Comparative Analysis (fsQCA), which combines case-oriented and variable-oriented quantitative analysis. Based on the analysis of set relations, this technique allows a greater degree of freedom to examine causal complexities and focuses on a joint causal system that accommodates interaction effects amongst characteristics in a case.

MANAGERS AND PERFORMANCE: EMERGING RESEARCH

In this section we turn to some of the applications of this research using administrative data and the range of analytical methods described above, conducted by ourselves and others. This provides an insight into the challenges posed by this kind of research and how the substantive findings are useful for advancing knowledge about management in the NHS. To achieve this we focus on studies relating to the two central questions described earlier: a) the characteristics of management and antecedents; and b) the impact of managers on performance.

Managers in the NHS: characteristics and antecedents

As we noted earlier, while Figures relating to the overall size and composition of management in the NHS are available (Kings Fund, 2011), little attention has been given to exploring this data in more detail. In this regard, our own research drawing the administrative data sources (Tables 1 and 2) has helped to advance the debate. This is both in relation to the characteristics of general management as a whole and, more specifically the composition (or human capital) of boards.

Managers in the acute hospital trust sector

Building on the debates mentioned earlier, research by Kirkpatrick et al (2017a) sought to explore the characteristics and antecedents of (or factors explaining) the development of management in the NHS, drawing on the Binleys database and other sources. This study focused on English acute trusts over a five year period (2007 to 2012), with a panel of 158 hospital trusts in 2012. It made use of a variety of administrative data sources, especially those described in Table 1 and different analytical methods, including descriptive statistics and Panel corrected standard errors (See Table 3). Using categories adopted from Mintzberg (1993), the study found that 'strategic apex' managers accounted for around 27% of the total, with middle tier managers (mainly in clinical directorates), another 33%. Clinical managers, or 'hybrids' (including roles such as Clinical and Medical Director and senior nurse managers), accounted for 30% of total managers in 2012. Further analysis revealed some interesting variations in the development of these management functions within trusts. For example, both specialist trusts and teaching trusts tended to have higher proportions of managers to staff.

However, most interesting and surprising was the divergence in practice between foundation trusts (FTs), with greater formal autonomy, and non FTs. Contrary to what one might expect, Kirkpatrick et al. (2017a) found that the shift to FT status has a statistically significant *negative* impact on the size of management functions, despite challenges associated with increased delegation and accountability. At the same time, it showed that FTs tended to deploy more managers involved in strategic roles. The latter underscores the trend towards developing board level governance arrangements and the additional work associated with satisfying the demands of regulators and other external stakeholders, such as commissioners (Klenk and Pavolini 2015). More generally, the results question the idea that

NPM style reforms aimed at 'corporatizing' public organisations are necessarily leading to an expansion in the number of managers. While these organisations are more 'managed' in terms of processes and accountability regimes, it is possible that they are also *under-managed*,

To explore some of the reasons for this outcome, additional tests were conducted focusing on the possible mediating impact of media scrutiny. This was motivated by the idea that growing public (and political) concern about the value and impact of managers (see above) might have a negative impact on the willingness of decision-makers in FTs (concerned about bad press) to recruit managers. In the event, we found some evidence to support this proposition. Using the Lexis-Nexus database (which covers all published media), it was noted that FTs were significantly more likely to attract media scrutiny (calculated as the number of times mentioned in the Lexis-Nexus database). This in turn was found to be a powerful mediating factor explaining the (relatively) lower proportion of managers-to-staff. Such findings highlight the political sensitivities associated with moves towards FT status and how this may be impacting on decisions concerning the relative size and resourcing of management functions. They also highlight another key advantage of administrative data, namely the ability to combine multiple and diverse data sources.

Board level management

A second strand of research has focused on the characteristics of managers who sit on the boards of NHS acute trusts, in particular, with regard to their human capital – for example, clinical or non-clinical? (Veronesi et al., 2013; 2014; 2015; Kirkpatrick et al., 2017b). In this area, publicly available administrative data were less useful, making it necessary to manually extract this information from hospital trust websites and annual reports (see above) covering

four years (from 2005/06 to 2008/09). A limitation of this approach is that in earlier years, many hospital trusts provided less detailed information on their governance structures, making it hard to develop a complete panel for the entire population.

Using mainly descriptive statistics in the first instance, this research yielded some interesting results. The average board size stood at 12.45 in 2008/09, with the ratio of non-executive directors on the board being just over 50 per cent. Women made up a minority of board members (33.8% in 2008/09). Although representing only a slight increase since the later 1990s (Walshe and Smith, 2011), the gender mix of NHS boards compares favourably with those of leading commercial organisations. Even more revealing was the proportion of hospital board members with non-public sector or business and commercial backgrounds. The drive to recruit business specialists is a hallmark of NPM reforms (Petrovsky et al., 2014), notably so in the NHS following the Griffiths report in 1983 (see above). Our own analysis revealed that, on average, 52.12% of board members came from outside the NHS, ranging from 20% in some trusts and 80% in others. Interestingly, however, business experts made up only 3% of CEOs (Kirkpatrick et al., 2017b).

Given the above, it is perhaps not surprising that our analysis indicated that clinicians made up a minority of board members. Overall, clinicians accounted for 26.4% of membership in English Trusts in 2008/09, roughly evenly split between doctors and those with other clinical backgrounds (including nursing). In most cases, board participation was limited to the statutory roles of nursing and medical director, although in roughly a quarter of cases they made up more than 30% of board members. Interestingly, over the four years, only around a fifth of the CEOs had a clinical background (Veronesi et al., 2013). Such figures highlight the dominance of non-clinical management in the highest echelons of the NHS, although involvement of clinicians (GPs) is higher in primary care organisations such as clinical commissioning groups (Pritchard and Harding 2014).

However, even more intriguing were the findings of an additional study (Kirkpatrick et al., 2016) focusing on the backgrounds of medical board members in one year (2012). This study employed a more sophisticated method of Fuzzy set/Qualitative Comparative Analysis (fsQCA) described earlier. Matching information from the Binleys database and the General Medical Council (GMC) register, the study was able to categorise medical directors according to their medical specialisation and educational background. Using national (and international) rankings of universities and specialisms, this information was then used to assess the relative status backgrounds of medical directors. Initial analysis found that in 2012, from a population of approximately 150 medical directors, 85% came from either a top three ranked specialism (Surgery, General medicine and Anaesthesiology) or the top three medical schools (Oxford, Cambridge and London). In addition, 34.6% of medical directors combined *both* of these status credentials, compared with only 4.2% of the GMC population of doctors in England as a whole. Hence, while medical leaders represent only a minority of hospital trust governing boards, those that occupy these roles hail from the upper echelons of the profession in terms of their elite status. Such findings again highlight the ways in which multiple administrative data sources (Binleys and GMC register) can be combined in innovative ways to advance knowledge about healthcare management.

Managers and performance

In this section we turn to research focusing on the second question of what impact, if any, managers in the NHS might have on performance. To do so, we build on the earlier distinction between the management function overall and the specific context of board level managers. For both themes, this research drew both on data relating to the characteristics of

managers (as above) and a range of organisational outcome (or performance) statistics summarised in Table 2.

Board human capital and performance

For some time the broader literature on boards and governance has sought to explore the impact of different mixes of human capital – for example, generic versus sector specific expertise – on corporate performance (Sundaramurthy et al., 2014). This theme has also been picked up in research focusing on CEO appointments in public organisations (such as local authorities) and the relative importance of 'publicness fit' (Petrovksy et al., 2015). In the NHS context, while there has been growing interest in board governance (Chambers et al., 2013), with the exception of studies focusing on board culture (Jacobs *et al.* 2013; Dixon-Woods et al., 2013), less attention has focused on performance outcomes. In this regard, our own research has sought to fill this gap, focusing on two key themes: the impact of business experts (Kirkpatrick et al., 2017b) and clinicians (Veronesi et al., 2013; 2014; 2015; Blanco-Oliver et al., 2016) on NHS boards. These studies employed a range of different methods including cross-sectional regression and structural equation modelling (see Table 3).

Starting with business experts, our analysis of four years of data (see above), found that the presence of these board members had *no negative* (or positive) impact on service quality and patient wellbeing. On the other hand, business expertise did appear to have a positive impact on a more specific range of financial management and efficiency outcomes. In this regard, our findings suggest a need for caution when assuming that the influx of managers with non-public backgrounds will necessarily have damaging consequences. On the contrary, this expertise may be useful in terms of helping to respond to demands for improved efficiency, at least on those trust boards that are less experienced (Kirkpatrick et al., 2017b).

Turning to the question of clinical involvement on boards, more research has been conducted in healthcare settings, notably in the US (see Sarto and Veronesi (2015) for a review). Jiang et al. (2009), for example, show how greater medical participation in hospital committees improves performance in terms of the care process (measured as quality of care of heart attack, heart failure, pneumonia, and surgical infection prevention) and mortality rates. Goodall (2011) also finds that having a CEO with a medical background generates greater quality improvements and results in higher hospital rankings.

Our own work, focusing on the NHS, largely confirms and extends these findings. An initial study by Veronesi et al. (2013), using cross sectional data and pooled regression, found a very strong relationship between (now redundant) Healthcare Commission quality ratings and clinical involvement on trust boards. Similar results were obtained using an alternative indicator of quality - the hospital standardised mortality ratio (HSMR) published by Dr Foster. An additional test (marginal effects) was conducted to quantify the benefits of having a higher share of doctors on boards. This showed that if the proportion of doctors increases by roughly 10%, the probability that a hospital trust will achieve the maximum score of four is increased by 7.34%.

Surprisingly, despite the critical importance of nursing for the delivery of high quality care, the research found that the influence of nurse directors on performance was negligible. The results also suggest that the qualifications of the CEO may be less significant than previously assumed. Contrary to the findings of Goodall (2011), for example, there was no significant relationship between CEOs who are doctors and performance. Instead, what appears to count for more is having a larger group of clinicians on boards collectively contributing to decision-making.

Other papers, extending this work, looked at the impact of clinical involvement on a range of other performance outcomes, including efficiency and patient experience (Veronesi et al., 2014; 2015). Against expectations, we found that the higher participation of doctors on boards had a positive, albeit weak, impact on Healthcare Commission financial ratings. Medical participation was also strongly related to improved patient experience, in terms of care: access, co-ordination, information, relationships with clinical staff and comfort (Veronesi et al., 2015). However, further tests revealed that these positive relationships were constrained only to the boards of foundation trusts. Implied here is that the voice and influence of doctors in strategic decision-making may be greatly enhanced in organisational contexts where hospital trusts also exercise greater formal autonomy.

General Managers and performance

As noted earlier, with the possible exception of Bloom and Van Reenen (2010) far less has been written about the impact of managers. To address this, we built on an earlier study of the management function in acute trusts (Kirkpatrick et al., 2017a) to also look at how the proportion of managers to staff, their pay and job tenure on performance (Veronesi et al., 2017). The study used a longitudinal database, drawn from Binleys, for all English acute trusts spanning six years (2007-2012), combining this with data from NHS Digital on annual manager salaries (mean of £52,000) and average annual turnover for managers (a mean of roughly one in ten). This research used the generalised method of movements (described in Table 3) and also multiple organisational performance data (see Table 2).

To explore the impact of managers on performance two main tests were conducted: one looking at our key explanatory variables (management size, pay and job tenure) in isolation and a second looking at them in combination. The results of this analysis question

the popular assumption that managers represent an essentially unproductive overhead in the NHS. Specifically, we found that a higher manager-to-staff ratio in hospital trusts led to a reduction in infection rates and greater efficiency, and these results were not affected by issues of reverse causality due to endogeneity concerns. Patient experience also seemed to be positively affected by having more managers in relation to staff, although the statistical confidence in this finding was less robust. Management pay and job tenure did not have any significant association with performance outcomes. Further analysis revealed that even a small increase in the proportion of managers (1% above the average) could lead to significant improvements, placing an average performing hospital trust in the top third in terms of efficiency and infection rates. For an average size hospital trust (employing 3,900 staff), a 1% growth in this ratio would mean employing approximately 39 more managers at a basic gross salary cost, of £2.03 million.

CONCLUSIONS

Our point of departure in this Chapter are debates concerning healthcare management and its contribution, if any, to performance. We noted that, while NPM reforms have been ongoing for some time, relationships between managers and clinical professionals continue to be fraught with difficulty. These concerns have also spilled over into policy debates, with politicians and media critiquing managers as rent seeking bureaucrats or unproductive overheads (Kettl, 2017). However, while these claims are often made, the research evidence both on the nature and characteristics of managers and their impact is limited.

In this chapter, we have tried illustrate the potential of an alternative research agenda, one which also draws on a growing availability of 'administrative data sources' (Smith et al., 2004). These data have numerous advantages. As we saw, it is possible to combine data sources to understand the characteristics, antecedents and performance consequences of

management. Often, administrative data allow for large (almost complete) coverage of relevant populations (such as NHS hospital trusts) and are relatively standardised and consistent over time. The latter also means it is possible to perform longitudinal analysis, making it easier to determine the broad direction of association (or causality) over time.

As we saw from the examples of our own (and other) research focusing on the English NHS, using administrative data can help to advance knowledge of management in a number of key respects. First, it is with regard to the growth of managers (both clinical and non-clinical). According to Nigel Edwards, previously head of the NHS Confederation, the view that that there are 'too many chiefs', is one of the 'five myths of the NHS that we need to dispel' (Guardian, 2016). Our analysis confirms this assumption, showing how organizations such as FTs are often under-managed – despite having greater responsibilities delegated to them – and how this is accentuated by (mainly negative) media scrutiny (Kirkpatrick et al., 2017a).

A perhaps even more significant contribution, however, is to our emerging understanding the impact that managers can have on performance. Research using administrative data adds to existing research on board governance, noting the positive impact of hybrid professional managers on boards (notably doctors) (Goodall, 2011; Jiang et al. 2009). However, it also qualifies this work, noting how these benefits may be restricted to certain organizational contexts such as foundation trusts (Veronesi et al., 2015). In addition, new data sources have made it possible to explore the impact of management functions more generally on performance. This calls into question the assumption that managers are an unproductive overhead and points instead to their importance for the co-ordination of complex services. While the practice of managers is certainly not beyond criticism, as Hyde et al. (2016; p. xiv) suggest, they play 'vital roles in the daily functioning of healthcare organizations'.

When noting these advances, it is of course important to also acknowledge certain risks associated with the greater use of administrative data sources. Often this data only offers very crude proxies for actual management practice and could also be more-fine grained. A particular criticism of HC ratings for example, is that they failed to adequately capture the quality of the healthcare provided (Bevan & Hood, 2006), focusing too much on subjective assessments of process. More worryingly, it is suggested that the HC reviews generated perverse incentives for hospitals to 'game' the system by inflating their scores and that consequently more qualitative aspects of performance were ignored or given only secondary importance. Criticisms have also been lodged against measures such as the hospital mortality ratio collected by Dr. Foster Intelligence – which fails to differentiate between preventable and non-preventable deaths (Lilford & Pronovost, 2010) – and the Reference Cost Index as an accurate measure of efficiency (Deloitte, 2014).

A perhaps even more significant challenge is in terms of the explanatory power of the kind of analysis we have previewed in this paper. While it may be possible to establish strong associations (even causal) between variables (for instance, management and performance), this does not explain *why* these relationships exist. This limitation under-scores the need for research using this type of data to be guided by theory. It also highlights the usefulness of multi method research strategies, perhaps combining the interrogation of administrative data (to identify patterns and associations) followed by more targeted qualitative research (using ethnographic or comparative-case study designs).

Notwithstanding these limitations, there is obvious potential for further research adopting the approach we have outlined in this chapter. This may probe deeper into questions relating to the antecedents and impact of management, perhaps drawing on yet untapped administrative data sources. Here, it would be useful to focus on the experience of primary care organizations, such as clinical commissioning groups (CCGs), where there has been an

explicit policy drive to recruit clinicians (general practitioners) onto boards. Future research might also look at the issue of CEO turnover and succession events in NHS organizations, or the role played by external management consultants. Some initial work on the latter theme has already been conducted, drawing on the financial accounts of hospital trusts to quantify annual expenditure on consultants and the negative relationship between this spending and efficiency (Kirkpatrick et al., 2018). However, there is clearly scope to explore this topic further, to understand the factors which mediate the use of consultants by NHS organizations.

Lastly, it would be beneficial to replicate this approach in other national health systems. Studies conducted by ourselves and other colleagues (Sarto et al., 2018), focusing on management in Italian public hospitals, demonstrate similar dynamics to the English NHS. Further work of this kind will depend on the availability of relevant administrative data (in Italy and elsewhere). However the potential for more national case studies of healthcare management and, in the longer term, even comparative research (multi country- studies) is clearly evident, helping to inform both theory and policy.

REFERENCES

Ackroyd, S., Kirkpatrick, I. And Walker, R. (2007) 'Public management reform and its consequences for professional organisation: a comparative analysis', *Public Administration*, 85(1): 9-26.

Andrews, R. and Boyne, G. A. (2014) 'Task complexity, organization size, and administrative intensity: The case of UK universities', *Public Administration,* 92(3): 656-672.

Angrave, D., Charlwood, A., Kirkpatrick, I., Lawrence, M. and Stuart, M. (2016) 'HR analytics: Why HR is set to fail the big data challenge', *Human Resource Management Journa*l, 26, 1: 1-11.

Bach, S. (2004) *Employment Relations in the Health Service: the Management of Reforms*. London: Routledge.

Bai, G. (2013) 'How Do Board Size and Occupational Background of Directors Influence Social Performance in For-profit and Non-profit Organizations? Evidence from California Hospitals', *Journal of Business Ethics*, 118: 171–187

Bloom, N. and Van Reenen, J. (2010) 'Measuring and Explaining Management Practices across Firms and Countries', *Quarterly Journal of Economics*, 122(4): 1351-1408

Bloom, N., Propper, C., Seiler, S. and Van Reenen, J. (2015) The impact of competition on management practices in public hospitals', Review of Economic Studies, 0, 1-33

Buchanan, D. A., D. Denyer, J. Jaina, C. Kelliher, C. Moore, E. Parry, and C. Pilbeam. (2013) *How do they manage? The realities of middle and front line management work in healthcare*. Southampton, England: NIHR HS&DR (Project Ref: 08/1808/238).

Carter (Lord) of Coles (2016) Operational productivity and performance in English NHS acute hospitals: Unwarranted variations - https://www.gov.uk/government/uploads/system/-uploads/attachment_data/file/499229/Operational_productivity_A.pdf

Chambers N, Harvey G, Mannion R, Bond J, Marshall J. (2013) *Towards a Framework for Enhancing the Performance of NHS Boards: A Synthesis of the Evidence about Board Governance, Board Effectiveness and Board Development. Volume 1* (HS&DR: 1, 6).

Connelly, R., Playford, C., Gayle, V. and Dibben, C. 'The role of administrative data in the big data revolution in social science research', *Social Science Research*, 59, 1-2.

Crilly, T. & Le Grand, J. (2004) The motivation and behaviour of hospital Trusts, *Social Science & Medicine,* 58(10): 1809-1823.

Croft, C., G. Currie and A. Lockett. 2015. "Broken "two-way windows"? An exploration of professional hybrids". *Public Administration* 93(2): 380–394.

Degeling, P., Zhang, K., Coyle, B., Xu, L. Z., Meng, Q. Y., Qu, J. B., & Hill, M. (2006) Clinicians and the governance of hospitals: A cross-cultural perspective on relations between profession and management, *Social Science & Medicine*, 63(3): 757-775.

Deloitte (2014) *Reference Cost Data Quality*: A Final Report for Monitor, London: Deloitte

Diefenbach, T. (2009) 'New public management in public sector organizations: the dark sides of managerialistic 'enlightenment'', *Public administration,* 87(4): 892-909.

Dixon-Woods, M., Baker, R. Charles, K. et al. (2013) 'Culture and behaviour in the English National Health Service: overview of lessons from a large multimethod study', *BMJ Quality and Safety*, 23: 2.

Edmonstone, J. (2008) 'Clinical Leadership: The Elephant in the Room', *International Journal of Health Planning and Management*, 10, 290-305.

Edwards, N. (2016) 'Wasteful, too many chiefs: five myths about the NHS we need to dispel', *Guardian*, 26 January - https://www.theguardian.com/society/commentisfree/2016/jan/26/-five-myths-nhs-health-service

Glouberman, S. and Mintzberg, H. (2001) 'Managing the care of health and the cure of disease—Part I: Differentiation', *Health care management review,* 26(1): 56-69.

Goodall, A. (2011) 'Physician-Leaders and Hospital Performance: Is There an Association?', *Social Science & Medicine*, 73: 535-539.

Greener, I., Brooke Harrington, D. Hunter, Russell Mannion, and Martin Powell. (2013) A realistic review of clinic-managerial relationships in the nhs: 1991-2010. Southampton, England: NIHR Service Delivery and Organisation programme (Project 08/1808/245).

Grey, C. (1999) ''We are all managers now', 'we always were': On the development and demise of management', *Journal of Management Studies*, 36/5: 561-585.

Griffiths, P, Ball, J, Bloor, K, Briggs, J, Pryterch, D, Smith, G, Meredith, P, Sinden, N, Böhning, D, Maruotti, D, de Longh, A., and Schmidt, P (2015) *Nurse staffing levels, missed vital signs observations and mortality in hospital wards: modelling the consequences and costs of variations in nurse staffing and skill mix. Retrospective observational study using routinely collected data*. NIHR HS&DR Protocol 13/114/17.

Guardian (2016) 'Why would doctors and nurses put themselves through the ordeal of NHS management?', 2 December. https://www.theguardian.com/healthcare-network/2016/dec/02/-doctors-nurses-ordeal-nhs-management

Hales, C. (2002) ''Bureaucracy-lite' and continuities in managerial work', *British Journal of Management*, 13(1): 51-66.

Hood, C. (1995) 'The "New Public Management" in the 1980s: variations on a theme', *Accounting, organizations and society,* 20(2-3): 93-109.

Hyde, P., Granter, E., Hassard, J. and McCann, L. (2016) *Deconstructing the Welfare State*, London: Routledge.

Jacobs, Rowena, Russell Mannion, Huw T. O. Davies, Stephen Harrison, Fred Konteh, and Kieran Walshe. (2013) 'The relationship between organizational culture and performance in acute hospitals', *Social Science & Medicine,* 76: 115-125.

Jiang, H.J., C. Lockee, K. Bass and I. Fraser (2009) 'Board Oversight of Quality: Any Differences in Process of Care and Mortality?', *Journal of Healthcare Management*, 54: 15-29.

Kettl, D. F. (2017) 'The Clumsy War against the "Administrative State"', *Public Administration Review,* 77(5): 639-640.

Kirkpatrick, I., Ackroyd, S. And Walker, R. (2005) *The New Managerialism and Public Service Professions*, London: Palgrave.

Kirkpatrick, I. Shelly, M., S., Dent, M. and Neogy, I. (2008) 'Towards a "productive" relationship between medicine and management: reporting from a national inquiry', *International Journal of Clinical Leadership*, 16(1): 27-35.

Kirkpatrick, I., Bullinger, B., Lega, F. and Dent, M. (2013) 'The translation of hospital management reforms in European health systems: a framework for comparison', *British Journal of Management*, 24: S48-61.

Kirkpatrick, I. (2016) 'Hybrid Managers and Professional Leadership', in Denis, J-L and Dent, M. (Eds.) *The Routledge Companion to the Professions and Professionalism,* London: Routledge.

Kirkpatrick, I., Veronesi, G. and Zardini, A. (2016) 'The Emergence of Professional-Management Hierarchies in Public Hospitals: Reinforcing and Changing the Professional Status Order'. Paper presented at 31st EGOS Colloquium July.

Kirkpatrick, I., Veronesi, G. and Altanlar, A. (2017a) 'Corporatisation and the emergence of (*under managed*) managed organizations: the case of English public hospitals', *Organization Studies*, 38: 12.

Kirkpatrick, I., Veronesi, G. and Vallascas, F. (2017b) 'Business experts on public sector boards: what do they contribute?', *Public Administration Review,* vol 77: 754-765.

Kirkpatrick, I., Sturdy, A., Reguera, N., Blanco-Oliver, A. and Veronesi, G. (2018) 'The impact of management consultants on public service efficiency', *Policy and Politics –* forthcoming.

Klenk, T. and and Pavolini, E. (2015) *Restructuring Welfare Governance - Marketisation, Managerialism and Welfare State Professionalism*, Cheltenham: Edward Elgar Publishing

Kuhlmann, E., Blank, R., Bourgeault, I., and Wendt, C. (Eds.) (2015) *The Palgrave International Handbook of Healthcare Policy and Governance*, London: Palgrave.

Lindlbauer, I., Winter, V. and Schreyögg, J. (2015) 'Antecedents and consequences of corporatization: An empirical analysis of German public hospitals', *Journal of Public Administration Research and Theory,* 26(2): 309-326.

Lord Ashcroft KCMG (2015) *The People, the Parties and the NHS*, London, UK: Lord Ashcroft KCMG PC.

McKee, M. & Healy, J. (2002) *Hospitals in a changing Europe*, European observatory on health care systems series. Buckingham: Open University Press.

Mayer-Schonberger, V. and Cukier, K. (2013) *Big Data*, London: John Murray

Mintzberg, H. 1993. *Structure in fives: Designing effective organizations*. Englewood Cliffs: Prentice-Hall.

Mintzberg, H. (2017) *Managing the Myths of Health Care*, Oakland: Brent-Koehler.

National Institute for Health Research (NIHR) (2013) New Evidence on Management and Leadership, London: HSDR: https://www.journalslibrary.nihr.ac.uk/downloads/research-programmes/HSDR/New-Evidence-on-Management-and-Leadership.pdf

NHS Confederation (2013) Challenging Bureaucracy, London: NHS Confederation http://www.nhsconfed.org/~/media/Confederation/Files/Publications/Documents/challenging-bureaucracy.pdf

NHS Confederation (2017) http://www.nhsconfed.org/resources/key-statistics-on-the-nhs. (Accessed March 2018)

NHS England. 2016. *NHS Five Year Forward Review* London: NHS England.

Blanco-Oliver, A., Veronesi, G. and Kirkpatrick, I. (2016) 'Board heterogeneity and organisational performance', *Journal of Business Ethics* – online ready.

Pemberton, M. (2017) 'Dr Max the mind doctor: It is nurses working at the coalface of the NHS that we need, not more bosses', *Daily Mail*, 3 March.

 http://www.dailymail.co.uk/health/article-5456701/It-nurses-need-not-bosses-says-Dr-Max-Pemberton.html#ixzz59uBcnSLl

Petrovsky, N., James, O. and Boyne, G. A. (2015) 'New leaders' managerial background and the performance of public organizations: The theory of publicness fit', *Journal of Public Administration Research and Theory,* 25(1): 217-236.

Powell, A. and Davies, H. (2016) *Managing Doctors, Doctors Managing*, London: Nuffield Trust.

Saltman, Richard B., Antonio Durán, and Hans F.W. Dubois. (2011) *Governing public hospitals. Reform strategies and the movement towards institutional autonomy*. Copenhagen: European Observatory on Health Systems and Policies.

Sarto, F. and Veronesi, G. (2016) 'Clinical leadership and hospital performance: assessing the evidence base'. *BMC Health Services Research*, 16.

Sarto, F., Kirkpatrick, I. and Veronesi, G. (2018) 'Organising professionals and their impact on performance: the case of public health doctors in the Italian SSN', *Public Management Review* – forthcoming.

Smith, G., Noble, M., Anttilla, C., Gill, L., Zaidi, A., Wright, G., Dibben, C and Barnes, H. (2004) *The Value of Linked Administrative Records for Longitudinal Analysis*, Report to the ESRC National Longitudinal Strategy Committee**.**

Spurgeon, P. and Clark, J. (2018) *Medical leadership*, CRC Press

Spyridonidis, D., J. Hendy and J. Barlow. 2015. "Understanding hybrid roles: the role of identity processes amongst physicians". *Public Administration* 93(2): 395-411

Sundaramurthy, Chamu, Kuntara Pukthuanthong, and Yasemin Kor. (2014) 'Positive and negative synergies between the CEO's and the corporate board's human and social capital: A study of biotechnology firms', *Strategic Management Journal*, 35(6): 845-868.

Verbeeten, F. H. and Speklé, R. F. (2015) 'Management control, results-oriented culture and public sector performance: Empirical evidence on New Public management', *Organization studies,* 36(7): 953-978

Veronesi, G., Kirkpatrick, I. and Vallascas, F. (2013) 'Clinicians on the Board: What Difference does it make?', *Social Science and Medicine*, 77: 147-155.

Veronesi, G., Kirkpatrick, I. and Vallascas, F. (2014) 'Does clinical management improve efficiency? Evidence from the English NHS', *Public Money and Management*, January: 1-8.

Veronesi, G., Kirkpatrick, I. and Altanlar, A. (2015) 'Clinical leadership and the changing governance of public hospitals: Implications for patient experience', *Public Administration,* 93(4): 1031-1048.

Veronesi, G., Altanlar, A. and Kirkpatrick, I. (2018) 'Managers in the public sector: a bureaucratic burden? The case of English public hospitals'. Paper presented at the Organisational Behaviour in Healthcare Conference, Montreal.

Veronesi, Gianluca, and Kevin Keasey. (2012) 'A (new) model of board of directors: Evidence from the national health service', *International Journal of Public Sector Management*, 25/4: 272-286

Walker, R. M. (2013) 'Strategic management and performance in public organizations: findings from the Miles and Snow framework', *Public Administration Review,* 73(5): 675-685.

Walshe, K. and Smith, L. (2011) *The NHS management Workforce*, the Kings Fund, London.

West, M.A., Armit, K., Loewenthal, L., Eckert, R., West, T. and Lee, A. (2015) *Leadership and Leadership Development in Health Care: The Evidence Base*, London: Faculty of Medical Leadership and Management.

Table 1: Administrative data sources relevant to the nature and antecedents of management in the NHS

Database Name	Source	Content
Estates & Returns Information Collection	NHS Digital	Trust type and location, number of sites used, and contracted-out (non-clinical) services.
NHS Bed Availability and Occupancy Data	NHS England	Average daily numbers of available and occupied beds (day and overnight) by sector.
Hospital Episode Statistics	NHS Digital	Number of consultant episodes, number of admissions, aggregated patient level data (including time waited and length of stay), day cases, and bed days.
NHS Workforce Statistics (staff management and numbers)	NHS Digital	Staff divided into professional groups and contractual arrangements, sickness and absence rates, joining and leaving rates, and stability index.
NHS Workforce Statistics (staff earnings)	NHS Digital	Mean annual earnings divided by staff groups.
NHS Trusts Accounts Data	GOV.UK	Statements of comprehensive income, financial position, and cash flows.
Binley's database of NHS managers	Wilmington Healthcare Ltd.	Database of NHS managers, including 30,000 individuals and over 100 job functions.

Table 2: Administrative data sources relevant to the performance of NHS organisations

Database Name	Source	Content
Clinical Indicators	NHS Digital	Hospital care, NHS Outcomes Framework, and Summary Hospital-level Mortality Indicator.
NHS Patient Experience Survey	Care Quality Commission	Annual survey of inpatients, outpatients, accident & emergency patients on the quality of services provided.
NHS Staff Survey	NHS England	Annual survey of staff divided by professional groups.
National Patient Safety Incident Reports	NHS Improvement	Patient safety incidents.

Table 3: Example of analytic techniques for interrogating administrative data in NHS management research

Technique	Description	Examples
Descriptive statistics	Summary of the data sample, including central tendency, spread and shape	General characteristics of NHS managers (Walshe and Smith, 2011; Pritchard and Harding, 2014)
Cross-sectional regression analysis	Regression analysis using information about different observations at the same point in time or during the same time period (e.g. Ordinary Least Squares, logistic regressions etc.)	Relationship between human capital of hospital board members and performance (Goodall, 2011; Veronesi et al., 2013) The impact of business experts on performance (Kirkpatrick et al. 2017)
Time series cross-sectional analysis	Method to investigate the nature of a sequential set of data points, measured typically over successive times (e.g. Panel Corrected Standard Errors)	The impact of different hospital types (Foundation and non-Foundation trusts) on the nature and size of management functions (Kirkpatrick et al., 2017 The effect of clinical leadership and organisational status on patient experience (Veronesi et al. 2015)
Times series longitudinal analysis	Method to examine changes in variables over time and differences in variables between observations, either through static or dynamic panel data estimations.	The impact of managers, pay and employment tenure on hospital performance (Veronesi et al, 2017).
Structural equation modelling (including Partial Least Squares)	Multivariate statistical analysis technique that is used to analyse (sometimes inductively) structural relationships.	The consequences of 'board heterogenity' for performance (Blanco-Oliver et al., 2016)
Fuzzy set/Qualitative Comparative Analysis (fsQCA)	Configurational comparative method based on the analysis of membership of cases in a population with given characteristics	The importance of elite status for advancement to senior medical manager roles (Kirkpatrick et al., 2016)

BOX 1: The New Public Management

In response to challenges associated with multi-morbidity, rising costs and population aging, there has been a common emphasis on reforming the management of health services to increase 'control over input mix and level, outputs and scope of activities' (McKee and Healy, 2002). These reforms fall under the rubric of what has come to be known as the new public management (NPM). Broadly speaking, this refers to a cluster of doctrines and practices that are held to constitute a paradigm of management distinct from 'traditional modes of public administration' (Verbeeten and Spekle, 2015). According to Hood (1995), an NPM agenda means empowering managers and stressing their 'right to manage' with fewer constraints such as those imposed by rules and bureaucracy. These reforms have been associated with a transformation in the organisational landscape of health systems, moving away from vertically integrated hierarchies to a situation where hospitals and other agencies have their own governing boards and increased formal autonomy, similar to private firms (Saltman et al., 2011; Lindlbauer *et al*., 2015). There have also been changes in funding of healthcare organisations (linked to variable budgets associated with activity or performance) and attempts to increase 'competition' between providers (so-called quasi markets) (Le Grand, 2007). Lastly, reforms have sought to strengthen the internal management capabilities of healthcare organisations such as public hospitals (Ackroyd et al., 2007). The latter bore many of the hallmarks of a 'professional bureaucracy', with management formally separated from the 'worlds' of care and cure (Glouberman and Mintzberg, 2001). However, more recently, the trend has been to make management more integral, developing specialist (non-clinical) management functions and also co-opting doctors and other professionals into management and leadership work (for instance, through clinical directorates) (Kirkpatrick *et al*., 2013).