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How to cite this publication
Please cite the final published version:


Publication metadata

Title: Tackling the Performance Regime Paradox: A Problem-Solving Approach Engages Professional Goal-Based Learning
Author(s): Donald P. Moynihan, Martin Bækgaard, Mads Leth Jakobsen
Journal: Public Administration Review, 80(6), 1001-1010
DOI/Link: https://doi.org/10.1111/puar.13142
Document version: Accepted manuscript (post-print)
Abstract

Public performance regimes are bedeviled by a paradox: they must engage the specialized knowledge of professionals who often perceive those very regimes as a threat to their autonomy. We use a mixed-method analysis of performance management in Danish hospitals, with separate data for managers and frontline professionals, to offer two insights into this challenge. First, we show that managerial behavior – in the form of performance information use - matters to how frontline professionals engage in goal-based learning. Second, we show that how managers use performance data matters. When managers use data in ways that reinforce the perception of performance management as an externally-imposed tool of control, professionals withdraw effort. However, when managers use data in ways that solve organizational problems, professionals engage in goal-based learning. The threat to professional values that performance regimes pose can therefore be mitigated by managers using data in ways that complements those values.
Evidence for Practice

- To make performance regimes work, public managers must engage professional employees whose expertise provides insights into the causes behind organizational performance, as well as the levers to improve results.

- Our study of Danish hospitals shows that frontline hospital professionals are more engaged in goal-based learning if their managers use performance data for problem-solving.

- Professionals are less likely to engage in goal-based learning when their managers use data for reward and control.

- Professionals are wary of the threats of performance regimes even as political leaders want to make those regimes work: a compromise path for both groups is to commit to aligning performance regimes with professional values.
Performance management reforms are ubiquitous, fueled by a desire to improve the efficiency and competitiveness of the public sector (Im and Hartley 2019). However, their potential is bedeviled by a paradox: to succeed for complex public services, performance regimes must engage professional employees whose specialized knowledge gives them insights into the causes behind the performance numbers, as well as what should be done to improve them. And those professionals – teachers, doctors, nurses, social workers, and even academics – view such reforms warily, worried about how the quantification of work will undercut their goals, autonomy, and status.

A tool that the worker leaves in the toolbox offers little value. Performance management systems have struggled to engage public service professionals (Jakobsen et al. 2018). Practitioner assessments of performance improvement have come to similar conclusions (Moynihan and Beazley 2016; National Academy of Public Administration 2018). Professional resistance to performance management may explain its limited success (Gerrish 2016), and why it appears to work better in conditions where employees view it more positively (Destler 2017; Kroll 2015a).

This paper examines a broad conceptual question - it is possible to engage professionals in performance regimes? More specifically, we first ask if manager’s use of performance data affects whether their frontline employees engage in goal-based learning. Second, we ask how managerial uses of performance data are associated with professional goal-based learning. These questions are important for both public management practice and scholarship. For practice, they are central to the potential for widely-adopted public management reforms to improve performance. For scholarship, it points to the need to bring professionals back into the discourse of public administration (Perry 2018), understanding how their workplace has been changed by management reforms, how they are responding,
and whether it is possible to align professional values and contemporary reforms (Andersen and Pedersen 2012; Brodkin 2006; Moynihan and Soss, 2014).

Such questions are, however, difficult to resolve given the inattention to frontline employees in the study of performance management (Destler, 2017). The literature on performance management is largely concerned with how managers use performance data (e.g. Dimitrijevska-Markoski and French 2019). To the extent that professionals are featured in discussions of performance management, it is often as the object of an externally exposed and unwelcome imposition on their professional lives, resulting in a demotivating effect (Jakobsen et al., 2018; Weibel, Rost and Osterloh, 2010) and unintended dysfunctional behaviors such as gaming and goal displacement (Figlio and Getzler, 2006; Jacob and Levitt, 2003; Kerpershoek, Groenleer, and de Bruijn, 2016).

One potential key to engaging frontline officials is the behavior of managers who supervise them. Managers can use performance data in different ways, and we propose that professional engagement in goal-based learning is influenced by how their managers make use of performance data. If professionals see managers using data to solve problems, this might lead them to believe that the system will draw on their expertise and align with their professional goals. However, if managers use data to reward and control, it may confirm professional’s concerns that the system is a tool designed to weaken autonomy.

To test these questions, we conduct a quantitative analysis using a survey of a group of Danish healthcare professionals, and a separate survey for their managers. We develop hypotheses from research on employee motivation and performance information use. We also use data from qualitative interviews to illustrate our findings.

The analysis offers two contributions. First, we provide the first evidence that we are aware of that managerial performance information use does indeed matter to how public sector professionals engage in goal-based learning, while using separate data sources for
managerial and employee perspectives to avoid common source bias. Second, we provide evidence that different types of managerial performance information use are not all equal. When managers use performance data as a general organizational development tool, professionals are more engaged in goal-based learning. The more that managers say they use performance data for reward and control, the less their professional employees report that they are engaged in goal-based learning.

The following sections consider the uneasy relationship between performance regimes and professionals, before theorizing about how managerial use of performance data might affect professional goal-based learning. We next present data and methods, and discuss our results before concluding.

**Professionals and Performance Management**

This section considers how professional frontline employees are important for performance management systems, a role which has been largely overlooked in public management research, reflecting a broader inattention to the role of professionals. James Perry dedicated his 2017 Gaus lecture to the intellectual blind spots created by this inattention: “Scholars and practitioners should move forward expeditiously on a professionalism agenda to fill knowledge gaps, integrate disparate research streams, and affirm an identity that has fit the reality of public administration for nearly half a century.” (Perry 2018, 99).

We use Sullivan’s (2005) definition of professionals as a group with specialized training, public recognition of autonomy to manage their practice, and a broader commitment to serving the public. Such groups are motivated by their own professional norms as well as a desire to protect the autonomy of their professional practice. We study healthcare, and focus on nurse and doctors at the frontlines. We therefore use the term professionals and frontline
employees interchangeably throughout the article. Other common types of professional frontline employees are police officers, judges, teachers and social workers. However, we acknowledge that many professionals who are not frontline employees (such as physicians who have become managers), and that some frontline employees are not fully part of a professional group (such as administrative staff, or doctors in training). In our design we include these other groups to compare to the frontline professionals we study.

Observations on how performance reforms have struggled in practice have led to a re-evaluation of what is practically possible for such initiatives. Principal-agent models that depend on political principals actively sifting through performance data have proven largely unrealistic. The attachment of high-powered incentives to metrics also led to unintended effects, such as gaming (Kerpershoek, Groenleer, and de Bruijn, 2016). It is partly for these reasons that more recent assessments of performance management practice observe a need to better incorporate the expertise of professionals involved in delivering public services (Behn 2014; Jakobsen et al., 2018; Moynihan and Beazley 2016).

A frequently observed barrier to the use of performance information is a lack of knowledge of what the data actually means for practice (Kroll and Moynihan 2018). Performance data, by itself, does not tell the user how to make sense of it. Frontline professionals have different types of knowledge that can solve this challenge. They have professional training to apply to problems, and, to varying degrees, years of experience in applying that expertise. They also have contextual information about how inputs and processes are related to outputs and outcomes, as well as tacit knowledge on what changes might be feasible in their organization and for their clients.

The multi-dimensionality of public sector goals makes it infeasible for political principals to substitute their judgement for professional knowledge (Roberts and Dietrich, 1999). For example, public hospitals pursue efficiency, cost containment, education, clinical
quality, and patient satisfaction. Each goal could create different performance criteria for
different stakeholders, the criteria can be formal and informal, subjective or objective
(Andersen, Boesen, and Pedersen, 2016). Qualitative and quantitative user surveys, economic
benchmark reports, evaluations of professional practices, all kind of audits, and individual
experiences are all potential sources of information when considering performance (Kroll,
2013). In short, there is a lot to make sense of, requiring substantive professional knowledge.

If the logic for why professional input is necessary for performance management
may seem obvious, actual practice reveals a tension. Professions are defined by “public
recognition of a certain autonomy on the part of a community of practitioners to regulate their
own standards of practice” (Sullivan 2005, 36). Professionals see externally-imposed
quantified measures, often used to facilitate the commodification of their job, as undercutting
their status and discretion (Bevan and Hood 2006; Brodkin 2006; Espeland and Vannebo
describe law school’s reactions to rankings as “as best understood as the evolving responses
of an assortment of actors who struggle to reconcile their sense of themselves as professional
educators with an imposed market-based logic of accountability.”

From the perspective of professionals, the rise of performance measures weakens
their ability to assert expertise to legitimate their approach to work. Instead, they are
vulnerable to externally imposed competition for dominance about basic organizational
decisions. Elected officials can tie rewards and punishments to measured goals, displacing
professional discretion and power. This is not so much surprising as it is the logical result of a
reform of government intended to enable political principals to reduce information
asymmetry (Gormley and Weimer 1999). The consequence, as Soss, Fording and Schram
point out (2011), follows a Foucauldian logic: efforts to discipline professional actors can
profoundly shape consciousness and behavior, but do so in inconsistent ways, sometimes
leading to perverse outcomes. As a result, performance regimes can all too easily default into a situation where neither professionals nor their political principals get what they want: the regime imposes unwelcome costs upon professional but fails to engage their knowledge to generate the improvements sought by political leaders.

**Professional Frontline Worker Engagement in Goal-Based Learning**

To assess if frontline professionals are deploying their knowledge in the context of performance management, we utilize the concept of goal-based learning. Learning is in a general sense a process of “encoding inferences from history into routines that guide behavior” (Levitt and March, 1988, 320). In the context of performance management, this type of behavior has been previously conceptualized as goal-based learning (Moynihan 2005). In public sector practice, “stat” models, or learning forums are practices intended to create such learning, providing information about whether goals are fulfilled, pointing to discrepancies between intention and result, and offering hints about techniques that appear to improve outcomes (Behn 2014; Holm 2018; Moynihan and Kroll 2016).

Professional engagement with goal-based learning therefore provides our dependent variable (Argyris and Schön 1996, 16; Mahler 1997, 519). More specifically, we consider goal-based learning to have occurred if employees (1) are exposed to performance information; (2) engaged in the key learning activity of drawing lessons from performance information, and (3) this engagement is institutionalized within the organization to make it a systematic activity (Moynihan, 2005). Engagement in goal-based learning can thus be understood as the exposure to and lesson-drawing from performance information within institutionalized settings. For example, in the context of the hospitals we study, it includes a ward where staff discuss a daily table on patient satisfaction, causing discussions of possible causes of problems and solutions.
Managerial Uses of Performance Data

Our primary independent variable is managerial use of performance data. As long as managers are expected to inculcate a performance ethos among their ranks, it is crucial to understand whether their performance information use affects employee engagement in learning. While there is an extensive literature on public manager’s use of performance data (e.g., Kroll 2015b), no study we are aware of connects such behavior to the learning efforts of frontline professionals. There is therefore little evidence to inform how managerial behavior, or other factors, relate to our dependent variable. Destler (2017) offers one exception. She considers how culture affects how frontline officials engage with performance data, finding that schools with an emphasis on high trust and teacher welfare saw greater attention to learning at the frontlines, findings that imply that professionals are more likely to use data if performance management occurs in a less threatening environment.

The literature on managerial use of performance data offers one crucial insight for our purposes here, which is that managers use data in different ways (Behn, 2003; Kroll 2015b; Moynihan 2009). Our theoretical interests lead us to focus specifically on managerial use for problem-solving, and reward and control. For our empirical analyses, we also control for other types of managerial use of data, including using performance data to educate leadership and advocate for resources.

We propose that the engagement of frontline professionals in goal-based learning depends on whether their managers use performance information, and how they use it. We therefore draw from the literature on employee motivation and professional values to make three assumptions. First, we assume that professional beliefs can be shaped by managerial behavior. Professionals will respond to managerial role-modeling and the creation of routines of performance information use, especially if managers are considered to be part of the
professional group (Ouchi, 1980). Second, we assume that professional employees are driven by autonomous motivation, responding negatively to systems that are perceived as externally imposed and experienced as controlling (Mikkelsen, Jacobsen, and Andersen, 2017). Third, we assume that professionals are intrinsically and altruistically motivated to achieve professional goals in ways that benefit others and will welcome tools that will allow them to do so (Jakobsen et al., 2018).

The above assumptions guide how we hypothesize how different forms of managerial behavior matter. While managers might perceive that all of their efforts to use performance data as valuable to the organization, they may be experienced quite differently by frontline professionals. Managerial use of performance data to solve problems is expected to encourage professional goal-based learning because it aligns with frontline professional’s values and preferences. By contrast, managerial use that feels externally imposed and aimed at controlling professionals will be resisted. We next examine different types of managerial uses of data in more detail and hypothesize how they affect professional goal-based learning.

**Using Data for Problem-Solving.** One type of managerial use is identifying organizational problems, and choosing solutions, which Moynihan and Kroll (2016) classify as problem-solving. Such purposeful use might lead to professionals engaging in goal-based learning via two likely overlapping mechanisms: goal alignment and role-modeling.

The broad literatures on autonomous motivation and public service motivation suggest that professionals care about organizational goals (Andersen and Kjeldsen 2013; Belle 2014; Perry, Hondeghem and Wise 2010; Ryan and Deci 2004; Van Loon, 2016). As managers demonstrate that performance management can solve what frontline professionals view as real problems, professionals may become more confident that it is a tool that aligns with the goals they care about.
A second potential mechanism is that managers model behavior that professionals adopt (Moynihan, Wright and Pandey 2012). If the manager exemplifies engagement with goal-based learning by using data to identify and solve problems, such behavior becomes legitimated within the organization, and employees learn to trust the system and commit to learning (Chun. et al, 2009).

Some prior work suggests that if leaders model a commitment to performance, managers become more engaged in using data (summarized in Kroll 2015b). Perhaps most persuasively, Sun and Henderson (2017) find that school principals that demonstrate transformational leadership are associated with higher school performance, partly by modeling performance information use in ways that employees mimic. Frontline professionals, in turn, will become more committed to goal-based learning through involvement in such discussions.

Our first hypothesis reflects the assumption that professionals will respond positively to problem-solving behavior on the part of managers.

H1: Managerial use of performance information for problem-solving increases professional employee engagement in goal-based learning

**Using Data for Reward and Control.** A second type of managerial use of performance information is for reward management, to identify and incentivize desired employee behavior. The use of reward (and, by implication, sanction for those who fail to win the reward) can be tied to performance targets. Such extrinsic rewards can generate increased productivity, via extra effort in response to the incentive, but if managers cannot establish meaningful indicators that capture the performance of individuals and teams that are seen as a fair representation of the actual effort, professional employees may see the use of extrinsic rewards as arbitrary and illegitimate.
Such problems are more likely to exist in complex public services or settings where professionals have strong intrinsic or altruistic motivation, as in the setting we study. The positive motivational benefits of extrinsic rewards may be overwhelmed by the crowding out of intrinsic and altruistic motivation (Weibel, Rost, and Osterloh 2010), disengagement of employees who view the regime as controlling (Soss, Fording, and Schram 2011), and gaming of metrics (Jacob and Levitt 2003; Heinrich and Marschke 2010).

Observers of performance systems have therefore suggested a tension between the use of metrics for reward and control, on the one hand, and goal-based learning on the other (Moynihan 2008; Van Dooren, Bouckaert and Halligan 2015). Systems that make use of performance metrics as a vehicle to hold individuals accountable with rewards and punishments run the risk of discouraging the experimentation and acknowledgment of error needed for learning. Research from organizational learning points to defensiveness as a primary barrier to learning processes, a response that becomes more likely in control systems that allocate reward and blame (Schilling and Kluge 2009).

Ultimately, systems centered on control and reward are externally imposed on employees, rather than part of a collective process where employees have a chance to determine the goals. We therefore hypothesize that this type managerial use of data should have a negative association with employee engagement in learning.

**H2:** Managerial use of performance data for reward and control is negatively related to employee engagement in goal-based learning.

**Design and Data**

We use data from 16 Danish hospitals. The setting reflects our theoretical interest in performance metrics in complex public services. Healthcare is characterized by a multitude of sometimes conflicting goals, requiring in-depth professional knowledge about how to
produce desired outcomes (Elpern et al. 2009), as well as strong pressures to better use information to improve services and limit costs (Kislov et al 2019). The wards were studied as part of a broader hospital reform within the Central Denmark Region in 2014. Nine wards saw a new financial structure put in place that relaxed the connection between their budget and number of services provided, while the seven other wards continued to have some portion of their budget associated with level of services. The reforms had no significant effect on employee motivation (Van Loon, Baekgaard and Moynihan in press) as well as no systematic impact on the specific performance measures included in the reform (Larsen, Kristensen, and Søgaard, 2018). Nevertheless, we include a control for the wards that were reformed in 2014 in our analysis.

Managerial uses of performance information and employee involvement in goal-based learning use were measured via email surveys sent to all managers and employees (3,976 in total) at the 16 wards in early 2016. The response rate was about 30 per cent, with 1,057 responses relevant for this study. In our main regressions, we focus on employees only. Since around 150 of the 1,057 respondents are ward managers and since a few respondents provide missing or don’t know responses on some of our control variables, the N is further reduced to 865. Of those 865 respondents most responses were received from nurses (491), followed by medical secretaries (137), junior physicians (68) and more senior physicians (17). There is an ‘Other’ category consisting of smaller professions such as physiotherapists, dentists, bio-analysts, and health care assistants (152). For the purposes of our analysis, employee responses were matched with their appropriate managers.

The chief advantage of our analysis over standard survey-based assessments of performance management is that our independent and dependent variables come from separate surveys of different groups of employees, reducing concerns about common source bias (Meier and O’Toole 2013). Moreover, since performance systems tend to be
implemented by managers, employee engagement in interpreting performance data will be shaped by managerial actions, rather than the reverse (Moynihan 2008). Hence, while proper statistical control is needed to account for spurious relationships, reverse causality is unlikely.

To illustrate how our independent and dependent variables play out in actual management practices and frontline employee behavior, we use qualitative interviews conducted with the managers of the 16 wards from which we have collected the surveys. Danish hospital wards are managed by a chief nurse and a chief physician. The interviews were conducted in 2015 and 2016 and included questions such as “how do you gain information about the performance of your ward?” and “how do you as a management team use performance information?” Thirty interviews took place, although the actual number of interviewees is higher since some interviews included multiple managers. The transcribed interviews were coded. The code “Performance information behavior, use, and systems” provided examples of managerial performance information use, frontline employee engagement, and the managers perceptions of their role were identified. One question in mixed method analysis is what role do different methods play, and how to sequence the presentation of data (Mele and Belardinelli 2019). In our case, out theoretical framing is deductive, based on prior research. The qualitative data is used in the discussion section to illustrate the theoretical mechanisms that link managerial behavior and professional engagement in learning.

Managerial uses of performance information were measured by a battery of five-point likert-scaled questions. These questions were only sent to respondents with personnel and/or professional manager responsibilities. For each ward, we calculate a simple average for each of the managerial performance information uses across managers at the ward. The average scores are afterwards linked to each of the employees without managerial
responsibilities in order to examine the impact of managerial performance information uses on employee involvement.

A factor analysis (reported in Table 1) shows that two factors are relevant to managerial performance information use from the five-question battery while two items do not load as well as the others on one of the factors. Consistent with prior research (Moynihan and Kroll 2016), two items are combined into a highly reliable index on performance information use for problem-solving (Cronbach’s alpha = 0.88; eigenvalue: 1.63). A third item measures to what extent managers use performance information as an instrument to reward employees for their effort. We use this item as our measure of reward and control.

Table 1 and 2 about here

We include two other measures of performance information use as controls in one model. Another item in Table 1 measures to what extent managers use performance information to advocate for resources from higher levels of the organization. We therefore use this item as a control to operationalize resource advocacy. We also control for whether managers use data to communicate with more senior managers – in our case, between ward managers and hospital leadership. Here, we examine managerial use of data that engages senior leaders about the performance challenges and development opportunities at the unit level, in this case, hospital wards. Two items are combined into an index (Cronbach’s alpha = 0.87; eigenvalue: 2.64) of managerial use of performance information to educate leadership.

Our dependent variable measures professional employee engagement in goal-based learning. This variable is measured by an index based on three questions. The items are consistent with what other researchers have labeled as informal learning routines (Moynihan and Lavertu, 2012). These questions were only given to employees without managerial responsibilities. As can be seen in Table 3, the questions all load highly on one factor, and we thus combine them into an index (Cronbach’s alpha = 0.77; eigenvalue: 1.52). As with all of
the measures of performance information, our dependent variable is re-scaled to run from 0-100. Descriptive statistics for all variables are reported in Table 4. We include a number of individual-level controls: gender, years of occupation at the ward, whether the respondents have a full- or part-time position, and their professional status (doctors, nurses and other).

Tables 3 and 4 about here

Results

Since we examined employees nested in hospital wards we analyze the data using random effects regression with clustered robust standard errors.ii The results are provided in Table 5.

Table 5 about here

The factor analysis suggests that the different types of managerial performance information use are not mutually exclusive, implying that managers can employ different types of use at the same time. For purposes of transparency, we therefore present the results using a series of different specifications. The first two models in Table 5 presents the effects of managerial performance information use for problem-solving and reward and control separately. The final specification (model 3) tests the impact of managerial uses in a specification in which the two uses are included simultaneously alongside two other types of managerial performance information use,iii reflecting the point that the various kinds of uses are neither theoretically nor empirically mutually exclusive. The different specifications yield consistent results.

Consistent with hypothesis 1, the specification for model 1 and model 3 find that managerial use of data for problem-solving is positively and significantly associated with greater employee engagement in goal-based learning. Hypothesis 2 predicted that the use of
performance data for purposes of reward and control will reduce professional employees’ engagement in goal-based learning. The results in both model 2 and model 3 support this hypothesis. Among the control variables, we see that managerial use of data to educate leaders increases is associated with higher goal-based learning, but that managerial use of data for advocacy is negatively associated with goal-based learning. We discuss these findings in more detail in the next section.

We see variation in the degree to which employees are engaged in goal-based learning. More senior physicians and nurses are highly involved, scoring 55.39 and 56.43 on average in the 0-100 scale of goal-based learning. Both score higher than junior doctors, who are recent university graduates required to spend time at a hospital to complete their training. Junior doctors score 50.86 in the same scale, while secretaries score at 49.08 and other professions (including therapists or bio-analysts) score 53.56. Nurses score significantly higher than junior doctors in a simple T-test, underlining the point that goal-based learning is not dependent purely on level of education or degree of specialization, but also on organizational experience. We further tested the role of professional groups by examining if certain types of professionals responded differently to different types of managerial performance information use. We did not observe any clear pattern in this regard, but some of the subsamples are relatively small, suggesting the need for additional research on this question.

At the individual level, ward tenure matters to goal-based learning. Each year of additional employment at the ward is associated with about 0.2 points higher level of engagement. We also find that females are more likely to report engaging in goal-based learning. Together with prior work that has shown that females report higher levels of performance information use (Kroll 2015b), the results call for more careful theorizing and
testing of whether gender matters in how public employees engage with performance regimes.

**Discussion**

Our results illustrate two pathways for performance regimes. In one path, managers use performance data in a way that alienates professionals. We find that managers using performance data as a means of reward and control for professional employees is associated with lower goal-based learning. This result reflects that performance systems that take time, erode discretion and do little to facilitate professional goals can easily become a source of resentment, causing professionals to withdraw their engagement. Indeed, there is some risk that performance management might be seen in purely negative terms: imposed from above, it can raise compliance costs (Bischoff and Blaeschke 2016), disempower professional and personal discretion (Moynihan and Soss 2014), putting professionals in a context where they are expected to meet new demands but without any substantive new autonomy (Jakobsen and Mortensen 2016). The professionals who collect and report the data are both acutely aware of these burdens and in the best position to know if they are unjustified in terms of organizational outcomes. A reward and control approach can also trigger defensive responses. One manager described how performance-based discussions can swiftly become personal: “it is just a bit more difficult because you start to step into the issues of an individual person” (interview 32).

The second path is for managers to use data to facilitate problem-solving, which is associated with greater goal-based learning. This finding is consistent with studies that have pointed to the positive effects of learning forums (Behn 2014; Holm 2018; Moynihan and Kroll 2016). Trying to understand organizational problems requires detailed professional knowledge. For example, previous research demonstrates how efforts to reduce hospital-
based infections relied on professionals collectively examining and discussing the meaning of metrics and modifying their daily practices as a result (Elpern et al. 2009). Some managers we interviewed modeled problem-solving as a deliberate approach in such discussions: “we needed to try something. That is, an innovative way of thinking in relation to what works and will it change anything…And then through dialogue we…could move some things” (interview 28). One manager talked about “going through [a patient satisfaction survey] in relation to where there could be a problem or not be a problem” (interview 21). Another described looking through quality databases “to see if there is something we can do better…If suddenly 10 percent of our patients are getting re-surgery what is then wrong?...If there is, for instance, a sudden variation in data on infections then we will look at it to see what is going on here” (interview 19).

The qualitative data also demonstrated that many ward managers were aware of the conflict between the problem-solving and reward and control paths, and sought to ensure that the performance system reflected professional needs. One manager spoke about how new performance metrics were not interpreted as burdensome for this very reason (interview 31). Other ward managers discussed the need to ensure that “the measures have been very, very close to the employees. I have been very focused on that quality. That is a very different dialogue. It gives a very different meaning for our employees” (interview 1). One ward manager cautioned against senior managers who “just sit and make up these quality goals. It is them [frontline professionals] that are involved in practice and must be involved” (interview 32). Some managers saw a close connection between professional ownership of the process and its success: “That is also a reason that we have succeeded…You can say that we have established some goals that made sense for us. The same goals would make no sense at all for another ward” (interview 25).
Problem-solving as a practice, and learning forums as an organizational routine, can be combined in a way that makes clear the shared interests of professionals and managers. In contrast to a reward and control approach, problem-solving can be structured as a collective enterprise shared between managers and professionals with immediate relevance to professional goals. Some of those interviewed discussed learning forums that “relate a lot to diving into the numbers, what do they express. And that is what we communicate or what we talk about, what people actually think” (interview 31).

Of the other types of managerial use of performance data, the results show a positive and significant association between educating leadership and goal-based learning. It is important to note that all forms of dialogue with leadership might not lead to this result – here, the items in the independent variable tapped into questions of how to develop the unit. They also involve mid-level managers – chief nurses and chief physicians – who are themselves professionals, and therefore might enjoy a higher degree of trust in their interactions with senior leaders than non-professionals might. In some ways, this finding also supports hypothesis 1, since our qualitative data suggests that much of the process of educating leadership involved “how we get our own leaders on board” with how lower level professionals are using performance data (interview 32). Rather than seeking to control professionals, this type of performance information use educates leaders about issues at the local level. It therefore provides another potential mechanism toward goal alignment. Using data to inform leaders about performance is therefore also an opportunity to educate them on how to develop a performance system consistent with professional goals.

The results pointing to a negative relationship between resource advocacy and professional employee engagement in goal-based learning bear additional discussion, given that prior work has speculated on the effects of managers using “data to advocate in a political environment” (Moynihan, Pandey and Wright 2012, 470). Some of the managers we
interviewed were explicit about the link between performance data and resources. One said: “We are very highly ranked in all of the databases that register clinical quality…That is quite obviously something we aim for, because it is a precondition for us having any justification to exist” (interview 3). Another noted how their high rates of outputs was helpful in defending their organization in cases of a financial deficit (interview 19). Even if such strategies are successful, it is unclear how they affect employee’s goal-based learning. Our results suggest that advocacy has a negative effect on learning. This may be because frontline professionals view resource advocacy as distant and irrelevant from their efforts. The need to engage in such advocacy may underline that performance systems are externally imposed, and a threat to their budgets. As managers spend more time using data for external audiences, they give less attention to internal use, and signal to employees that performance metrics are primarily for stakeholder justification. Professionals may therefore view managerial use of performance data for resource advocacy with a skeptical eye.

Our analysis has limitations. We do not observe what employees actually learned. Qualitative studies by other researchers of the implementation of performance management systems at some of the wards we study provide additional evidence demonstrate that the selection and interpretation of measures have indeed started learning processes where employees enter into dialogue about their accountability relationships (Bonde, Bossen, and Danholt, 2018). Our analysis is grounded in a particular professional setting, and while the theoretical constructs are intended to generalize beyond that setting, more empirical analysis is needed to verify if the results hold in other settings. Finally, our analysis involves an observational rather than causal design. For example, manager’s use of performance data may be a reflection of organizational context and other factors as well as their own preferences. In our design, the manager and employee both work in the same organizational context, and so there may be unobserved factors about that context that shape the results. An experimental
design could try to alter some aspects of that context, although in practice organizational factors such as culture are difficult to experimentally modify.

**Conclusion**

While a single article cannot resolve all aspects of a professionalism agenda for public administration (Perry 2018), we sought to consider how professionalism relates to a defining feature of modern governance, the use of performance metrics. The paradox of performance regimes is that they demand greater performance even as they often alienate the very professionals whose expertise is needed to generate better outcomes.

The results therefore have both theoretical and practical importance. Public organizations like hospitals deal with complex tasks that do not lend themselves easily to measurement. They are also populated by professionals who may justifiably be concerned about how performance management techniques will impinge upon their autonomy. Neither of these organizational realities can be easily changed. Organizations, can, however, change how their managers use of performance tools, and by doing so alter the willingness of frontline officials to engage with performance systems. Our clearest findings in this regard is that when ward managers use performance data for purposes of reward and control, it is associated with lower goal-based learning among professional staff, but when they used data for problem-solving, goal-based learning is higher.

Our analysis is the first that draws on separate sources of data from both public managers and frontline professionals to show the performance information use of the former is associated with the goal-based learning of the latter. To say that managerial behavior with performance management systems will make a difference to frontline officials seems both obvious and intuitive. It implies that credible commitment is necessary to engage frontline professionals. However, no prior work has documented this point persuasively, owing to a
tendency toward the use of single survey-based sources in studies of performance
management, and partly to the lack of attention to frontline professionals as a unit of analysis.
Moreover, our findings are more nuanced than “managerial behavior matters.” By showing
how managerial behavior matters, the results point to ways that such behavior can be oriented
toward implementing performance regimes in ways that align with rather than threaten
professional values.
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Kislov, Roman, Paul Wilson, Greta Commings, Anna Ehrenberg, Wendy Gifford, Janet Kelly, Alison Kitson, Lena Pettersson, Lars Wallin, and Gill Harvey. From Research Evidence to “Evidence by Proxy”? Organizational Enactment of Evidence-Based


### Table 1: Managerial performance information use. Exploratory factor analysis.

<table>
<thead>
<tr>
<th>Survey items (and relevant variables)</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use performance information to identify problems that need attention. (H1: Problem-solving)</td>
<td>0.4929</td>
<td>0.6946</td>
</tr>
<tr>
<td>I use performance information to set priorities. (H1: Problem-solving)</td>
<td>0.5655</td>
<td>0.6923</td>
</tr>
<tr>
<td>I use performance information to reward employees for their effort (H2: Reward and control)</td>
<td>0.5628</td>
<td></td>
</tr>
<tr>
<td>I use performance information to have a dialogue with the hospital leadership about the development of the ward. (Educating leadership control)</td>
<td></td>
<td>0.8332</td>
</tr>
<tr>
<td>I use performance information to advocate for resources to support program needs. (Resource advocacy control)</td>
<td>0.5654</td>
<td></td>
</tr>
<tr>
<td>I use performance information to inform the hospital leadership about ward performance. (Educating leadership control)</td>
<td></td>
<td>0.8631</td>
</tr>
</tbody>
</table>

Note: Exploratory factor analysis based on 135 hospital managers. Orthogonal oblimin rotation with Kaiser normalization. Only factor loadings higher than 0.3 are shown in the table.
Table 2: Correlations between variables measuring managerial uses of performance information

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Problem-solving</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Reward and control</td>
<td>0.4643</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Educating leadership</td>
<td>0.4968</td>
<td>0.5094</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4. Resource advocacy</td>
<td>0.3514</td>
<td>0.2859</td>
<td>0.5208</td>
<td>1</td>
</tr>
</tbody>
</table>

N = 135 ward managers.

Table 3: Professional Engagement in Goal-Based Learning. Exploratory factor analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am regularly exposed to information on patient satisfaction and/or professional quality</td>
<td>0.7259</td>
</tr>
<tr>
<td>I am regularly involved in discussions about the lessons from information on patient satisfaction and/or professional quality</td>
<td>0.7820</td>
</tr>
<tr>
<td>At my unit we have routine meetings where we discuss information on patient satisfaction and/or professional quality</td>
<td>0.6140</td>
</tr>
<tr>
<td>Variable</td>
<td>Mean</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Employee involvement</td>
<td>54.31</td>
</tr>
<tr>
<td>Problem-solving</td>
<td>69.93</td>
</tr>
<tr>
<td>Reward and control</td>
<td>53.16</td>
</tr>
<tr>
<td>Educating leadership</td>
<td>57.87</td>
</tr>
<tr>
<td>Resource advocacy</td>
<td>66.61</td>
</tr>
<tr>
<td>Reformed ward</td>
<td>0.57</td>
</tr>
<tr>
<td>Male</td>
<td>0.09</td>
</tr>
<tr>
<td>Years at ward</td>
<td>7.89</td>
</tr>
<tr>
<td>Fulltime employed at ward</td>
<td>0.51</td>
</tr>
<tr>
<td>Medical secretaries</td>
<td>0.16</td>
</tr>
<tr>
<td>Physicians</td>
<td>0.02</td>
</tr>
<tr>
<td>Nurses</td>
<td>0.57</td>
</tr>
<tr>
<td>Junior physician</td>
<td>0.08</td>
</tr>
<tr>
<td>Others professions</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Note: N = 865 employees. The “Others” category include, amongst others bioanalysts, occupational therapists, and physical therapists.
Table 5. The impact of managerial performance information use on employee involvement in goal-based learning. Random effects regression.

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem-solving</td>
<td>0.931***</td>
<td>-0.630***</td>
<td>-0.712***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.010)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Reward and control</td>
<td>-0.693**</td>
<td>-0.712**</td>
<td>-0.490**</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Resource advocacy</td>
<td></td>
<td></td>
<td>-0.490**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.000)</td>
</tr>
<tr>
<td>Educating leadership</td>
<td>0.264*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.036)</td>
</tr>
<tr>
<td>Additional Controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reformed ward</td>
<td>2.904+</td>
<td>-0.476</td>
<td>-0.471</td>
</tr>
<tr>
<td></td>
<td>(0.097)</td>
<td>(0.811)</td>
<td>(0.737)</td>
</tr>
<tr>
<td>Male</td>
<td>-6.080**</td>
<td>-5.251**</td>
<td>-5.804**</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Years of occupation on</td>
<td>0.196**</td>
<td>0.179**</td>
<td>0.202**</td>
</tr>
<tr>
<td>current ward</td>
<td>(0.004)</td>
<td>(0.006)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Employed fulltime</td>
<td>2.087</td>
<td>2.642</td>
<td>2.665</td>
</tr>
<tr>
<td></td>
<td>(0.209)</td>
<td>(0.120)</td>
<td>(0.116)</td>
</tr>
<tr>
<td>Medical secretary</td>
<td>(ref.)</td>
<td>(ref.)</td>
<td>(ref.)</td>
</tr>
<tr>
<td>Physician</td>
<td>9.119*</td>
<td>10.34*</td>
<td>9.654*</td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td>(0.018)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Nurse</td>
<td>7.546**</td>
<td>7.815**</td>
<td>8.437**</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.002)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Junior physician</td>
<td>4.953</td>
<td>5.227*</td>
<td>6.072*</td>
</tr>
<tr>
<td></td>
<td>(0.100)</td>
<td>(0.075)</td>
<td>(0.038)</td>
</tr>
<tr>
<td>Others</td>
<td>4.705*</td>
<td>5.654*</td>
<td>4.928*</td>
</tr>
<tr>
<td></td>
<td>(0.100)</td>
<td>(0.047)</td>
<td>(0.074)</td>
</tr>
<tr>
<td>Constant</td>
<td>-21.18</td>
<td>80.86**</td>
<td>51.64*</td>
</tr>
<tr>
<td></td>
<td>(0.330)</td>
<td>(0.000)</td>
<td>(0.013)</td>
</tr>
</tbody>
</table>

\[ R^2 \text{ within} = 0.04, \quad 0.04, \quad 0.03 \\ \[ R^2 \text{ between} = 0.28, \quad 0.44, \quad 0.71 \\ \[ R^2 \text{ overall} = 0.06, \quad 0.06, \quad 0.08 \\ \[ N = 865, \quad 865, \quad 865 \]

Entries are random effects regression coefficients; \( p \)-values in parentheses; \( + p < 0.10, \* p < 0.05, \** p < 0.01; \) cluster robust standard errors (ward level) used. Controls for ward tasks were used in the analysis but are not shown in the presentation. Observations from 5 hospitals and 16 wards are used in all analyses.
Endnotes

i Don’t know responses were possible to all items. Respondents with one or more don’t know responses were excluded in the process of constructing indexes. Robustness checks shows that alternative analyses to those presented here but with an index for performance for learning and improvement based on five items produces results similar to those presented in the regressions in Table 5.

ii Ward level fixed effects are not relevant here because our main independent variable, managerial use of performance information, does not vary across employees within the same ward.

iii One concern here is that adding the four uses simultaneously adds multi-collinearity to the analysis. Indeed, we find that high VIF-values for Problem-solving (19.87) and Educating Leaders (11.40). However, this does not appear to influence our results. If either is removed from model 5, VIF values drop substantially (to 8.62 for Problem-solving if Educating leaders is excluded and to 4.94 for Educating leaders if Problem-solving is excluded) and the other use-variables continues being statistically significant at the same level as when all four uses are simultaneously included.