

How to Do Government Analytics: Lessons from the Book

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Abstract

How can practitioners and researchers undertake government analytics effectively? This chapter summarizes lessons from ‘The Government Analytics Handbook’. To structure these lessons, the chapter begins by introducing a public administration production function. The production function illustrates how different data sources – such as procurement data or civil service survey data – shed light on different parts of the machinery of government. Before turning to how specific data and analysis can inform an understanding of government, the chapter highlights lessons that should be kept in mind when undertaking any measurement and analysis of government administration. The core of the chapter then summarizes the lessons the Handbook contains for how to undertake government analytics. Our focus is on a core set of data sources that can be used to understand how government is functioning. These are administrative data, such as payroll data, procurement data, budget data, case data or text-as-data; survey data from surveys of public servants; and external assessments of government, for instance household or citizen surveys. The chapter concludes by showcasing how different data sources can be integrated to understand core challenges in the administration of government – from corruption to personnel management.

Points for Practitioners

- Strengthening the quality of public administration can be substantially aided by the collection and analysis of data on inputs into public administration (such as individual public officials, goods or budgets), processes, tasks, outputs and outcomes. This data can be collected and effectively analysed throughout the machinery of government, or the ‘production function’ of public services. Such ‘government analytics’ empowers public managers and decision-makers with more and better evidence on the realities of their public administration.
- Government analytics can be undertaken with at least three types of data: administrative data collected or published by government entities such as payroll data; surveys of public servants; and external assessments, for instance household surveys or anthropological assessments. The Handbook provides lessons on how to use these data, frequently collected by government, to understand how well a public administration is functioning, and how it can be improved.
- Some of these data sources are better suited to assessing inputs into public administration, such as payroll data assessing the costs of different personnel. Some data sources are better suited to assessing the processes, practices and cultures that convert inputs into outputs, such as surveys of public servants that assess how they are being managed. And some data sources are better suited to assessing the outputs and outcomes of public administration, such as citizen satisfaction surveys. What type of data source is appropriate for analytics thus depends on what aspect of public administration the analyst is seeking to diagnose and improve. They can also be powerfully combined to understand overarching themes in how government is functioning, such as corruption.
- Frontier government analytics would integrate the analytics of these distinct data sources. It would generate them at a scale sufficient to inform the decision-making of individual managers. And it would make them easily accessible to those managers across government organizations and departments. For instance, dashboards integrating data sources and updating in real-time would provide managers with comparisons for their staffing issues, process quality, the perceived quality of management practices, and so on. They could keep tabs on outputs and outcomes, from task completion and case productivity to external assessments from citizens. Comparative data would allow them to benchmark themselves against other government organizations, or where appropriate, other countries. Managers would be capable of understanding the limitations and strengths of different analytics. The result would be a transformational change towards leveraging data to strengthen public administration.

- Imagine you are the manager of a social security agency of a medium-sized region somewhere in the world; one that pays retirement and unemployment benefits to a vulnerable population dependant on the support. Before government analytics you are unaware of your strengths and weaknesses as a manager, nor the productivity of your team. All seems well, but it is difficult to pin down the impacts your work has. With government analytics you realise that once adjustments are made for the complexity of their work, you have some of the most and least productive staffs in the country. You see that though your staff feel you provide clear guidance and fair appraisals, you could substantially improve how you mentor and provide regular feedback to them. Working to celebrate the successes of your most effective staff also allows you to appreciate what is working well for them, and you emulate this for the staff who are struggling. The number of mistakes in processing immediately falls and speed of payments at your agency are faster and more regular. Recipients can plan their spending and lives a little better. A few months later, a survey of citizens who have used your agency's services tells you that your changes are appreciated, and they have felt the impacts of your reforms.

Introduction

A common perception of government is that it is a place that no one, not even those inside it, truly understand. An incomprehensible maze, filled with a procedural fog. In contrast, public administration is brimming with information. The everyday business of government has naturally generated an abundance of records on who does what where. Each of these records has its origin in a contemporary administrative need by the public officials of the day. Yet with the right approach, these records also provide a window into the workings of the administrations that created them. A way to clear the fog and provide a map through the maze.

For example, as a social security officer decides how to organize their work, they are making decisions that will impact the delivery of cases they are working on. A reflection of these choices are recorded in the time stamps that accompany their cases, the degree to which they follow procedure, and the feedback they receive from those they serve. On its own, the record of their work is interesting, but combined with the records of their colleagues from their own organization and across the country it becomes a means to understand the functioning of government. Do all those officers working under a particular manager perform well on some aspects of their work but less so on others? Are some offices able to regularly process retirement benefits faster than others? The fog of uncertainty about how social security officers perform across their community can be cleared by turning records into a map of the public service.

The scale and detail of government records has recently intensified substantially. The world is witnessing an unprecedented explosion of data. Public administration is no exception. The increasing move towards digital government has multiplied the scale of electronic transactions between public administrations and citizens. From citizens paying taxes electronically to their registering online for driver's licenses, every interaction is now electronically recorded in government data systems. Digital government has also multiplied the electronic transactions within public administrations. Payrolls, procurement records or budget disbursement records are just some examples. Digital government has also facilitated the collection of other data, for instance by enabling governments to survey their employees at-scale online. All this makes a host of data from public administration easier to access than ever before.

This has been of critical importance to the productive functioning of government (Bakshi, Bravo-Biosca and Mateos-Garcia, 2014). A United Nations (2014) report notes that “Without high-quality data providing the right information on the right things at the right time, designing, monitoring and evaluating effective policies becomes almost impossible.”

Far less emphasis has been placed on how these records might be repurposed to understand how effectively government was functioning. By conceiving of government's electronic records as data in itself, existing government records, and in particular the vast troves of data now being produced, can be seen as a means of diagnosing and strengthening government administration.

As we argued in chapter 1 of this Handbook, this omission is unfortunate. Building an evidence base for informing the design, reform and management of public administration is at the heart of improving the state. The chapters in this Handbook aim to take steps towards addressing this gap. They shed light on different data sources and different methodologies available to governments and scholars to undertake government analytics. This chapter summarizes lessons from these chapters on how to do government analytics effectively.

Such efforts cannot rely on the data collection of other actors in society, as public administration presents particular measurement challenges and opportunities. This Handbook focuses on measurement because of those challenges, and the need to create a system of measurements that are fit for the public

administration, rather than repurposed from other settings. Though current government records are an excellent foundation stone for analysis, their suitability for generating knowledge requires work. Once analytics becomes a goal, the range and nature of the public record is likely to change, to optimize government data for both the task at hand and the broader assessment of government functioning.

To organize the discussion, this chapter lays out conceptually how the different chapters in the Handbook connect. To do so, it introduces a public administration production function. The production function visualizes the machinery of public administration: how public administrations convert inputs (such as labour and goods) through processes and procedures into outputs and outcomes. Public administrations produce outputs and outcomes directly (e.g. a budget created by a Ministry of Finance) and enables outputs and outcomes of frontline service providers (such as police stations). Different data sources and methodologies can help governments understand bottlenecks and strengths in different parts of this production function – be it the use of inputs (e.g. through payroll data), the processes inside government (e.g. through surveys of public servants, which ask public servants about management practices) or the outcomes of administration (e.g. through citizen surveys).

Different Handbook chapters thus shed light on the analytics of different parts of this production function. This chapter summarizes their lessons, focussing on the four types of data that make up the four parts of this book. The section following the production function thus discusses foundational and cross-cutting themes in government analytics – such as foundational statistical tools, ethical considerations, how to ensure data suites are sufficiently holistic and balanced, and how to measure the use of performance measures or, in other words, how to measure whether government analytics itself is used effectively.

Thereafter, this chapter moves to summarizing lessons from the largest section of the Handbook – namely how to undertake government analytics using administrative data. The section on administrative data discusses chapter-by-chapter how a wealth of different data sources already produced by government can be repurposed for government analytics. This includes administrative data on “inputs” into the production function (e.g. payroll and Human Resource Management Information System (HMRIS) data on personnel, or budget data), data on outputs (e.g. data on task completion in public administration) and data on outcomes (e.g. data on custom revenues). This summary chapter both discusses lessons chapter-by-chapter, and offers cross-cutting lessons on how to use administrative data for government analytics.

Subsequently, the chapter summarizes part3 of this Handbook, which provides a wealth of original evidence on how to design, implement, analyse and make the most of surveys of public servants. Such surveys are often the only available evidence on key aspects of officialdom, such as the motivation of public employees. The summary is organized around a decision-tree for surveys of public servants, from choices about appropriate survey modes and samples to choices about questionnaire design and survey reporting. As such, it provides a brief, evidence-based “how to” guide on surveys of public servants.

The final, short section of this Handbook covers external assessments of public administration – for instance through household surveys, citizen surveys, anthropological research and service delivery indicators. We provide a brief chapter-by-chapter ‘how to’ summary of these distinct approaches to diagnosing public administration from the outside.

The chapter concludes with a discussion of how the wealth of data sources reviewed in this Handbook can be integrated to diagnose major challenges in public administration around the world holistically – from corruption to “doing more with less” (efficiency) to fiscal sustainability.

Together, we hope the lessons provided by the Handbook will provide a platform for interested actors to take forward their own government analytics. By presenting ideas for measurement and analysis, and a

survey of current experience, the Handbook is a starting point for helping the reader bring frontier analytics into their own administration, and for pushing the frontier themselves.

What Government Analytics Can Analyse: Visualizing the Public Administration Production Function

Government analytics refers, as we noted in chapter 1, to the use of data to diagnose and improve the machinery of government. This then begs the question: what do we mean by the “machinery of government” – or public administration? And what are its component parts, which data – and thus government analytics – can shed light on?

To clarify this – and provide an overarching organizing framework for the different data sources assessed in the different chapters of this book – we introduce and visualize a public administration production function. In contrast to the relatively coherent consensus of functions of private sector production (Mas-Collel et al. 1995), no consensus has formed around an integrated model of a production function for public administration. This is likely in part due to the very motivation of this book: the limited use of micro-level data on the workings of different components of public administration to-date. As noted, a production function approach allows us a framing in which to discuss how distinct approaches to and data sources for government analytics relate.

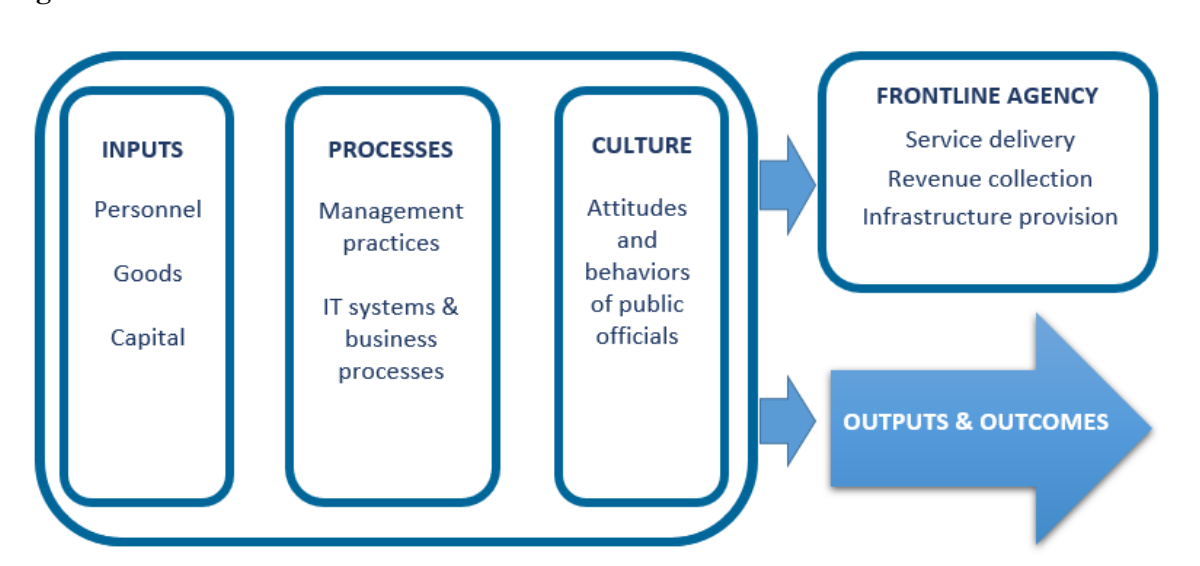
A production function relates input factors of production to the output of goods of an organization. The productivity of an organization thus depends on the quality and quantity of outputs relative to inputs. Figure 1 visualizes and summarizes the different components of our production function for public administration (Meyer-Sahling et al. 2023, World Bank 2019). While many core elements coincide with typical private sector production functions (Mas-Collel et al. 1995), the functioning of government administration has been characterized as distinct from that of private firms due to, for instance, the multiplicity of principals, ambiguity of tasks and presence of principals with political incentives.

In public administration, inputs include personnel (i.e. public employees), goods (e.g. computers) and capital (such as office space). Outputs and outcomes refer to, first, those produced by public administration organizations themselves. For instance, a Ministry of Finance might issue public sector debt at a certain interest rate. At the same time, public administration organizations also produce outputs which enable frontline agencies in the public sector – such as hospitals, police stations or schools – to deliver services and goods to citizens. For instance, a Ministry of Finance approves budgets which frontline agencies then disburse to deliver their services. In other words, an important role for public administration organizations is to enable outcomes and outputs by frontline agencies.

How are inputs (such as personnel) converted into outputs and outcomes by public administrations? In our production function, this conversion is enabled by policies (organizational objectives and work procedures), systems and management practices, and mediated by norms and behaviors inside public administration. For instance, a Ministry of Finance may have a policy in place to review a budget for an organization by a certain date. A team lead inside the Ministry then manages employees to ensure the task is completed on time and at quality – for instance through effective performance management practices. Those practices and organizational policies shape the norms and behaviors of the Ministry’s employees –

for instance their motivation to work hard – which in turn then allows the Ministry to produce outputs and outcomes (such as a budget review).¹

Figure 1. The Public Administration Production Function



Source: Adapted from World Bank (2019)

Government analytics can shed light on all parts of this production function – through different data sources and different methods. In other words, different data sources are useful for understanding different components in the public administration function – or, to put it more practically, to understand different bottlenecks to greater public administration productivity. As such, contemplating government analytics along the production function enables analysts to diagnose public administration challenges holistically, and to understand how different data and approaches to government analytics relate.

To illustrate, figure 2 maps a number of different data sources analysed in Handbook chapters to their respective components in the production function.

Several types of administrative data have particular strengths at diagnosing inputs into the public administration production function. For instance, payroll data and HMRIS data can help governments understand personnel as an input into the public administration production function – for instance, whether pay of public servants is competitive and fiscally sustainable, or whether staffing levels are adequate (see Farooq and Kim, 2023; Tavares, Nieto and Woodhouse, 2023). Procurement and budget data can help governments understand spending on goods and capital as inputs into public administration – for instance whether public administrations acquire similar goods cost-effectively across organizations in the public administration (see Cocciolo et al., 2023; Piatti-Fünfkirchen et al., 2023).

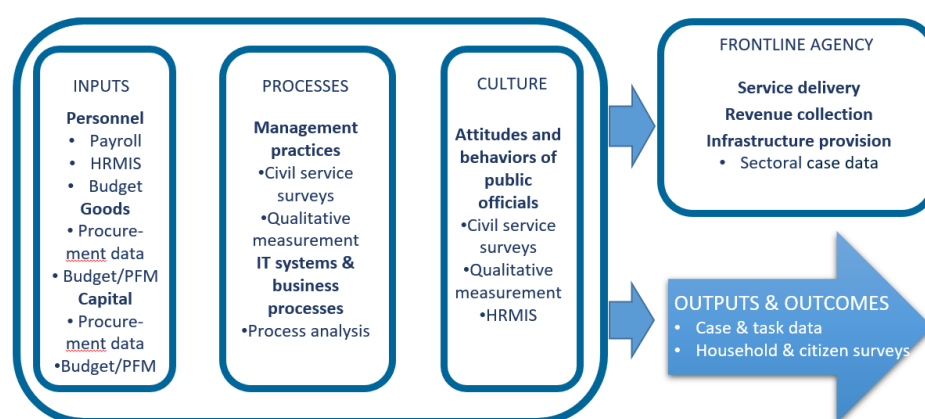
Government analytics can also shed light on the processes and practices which convert inputs into outputs and outcomes. Surveys of public servants and qualitative measurement have particular strengths

¹ Whether inputs effectively convert into outputs is also moderated by exogenous factors (such as the political environment). As those influence but lie outside public administration, we do not analyse micro-data to assess these exogenous factors in this Handbook, but instead refer readers to the many existing excellent resources to understand the exogenous and political environment of public administrations (e.g. Moore, 1996).

at diagnosing management practices. Management quality is fundamentally an experienced interaction that can often only be measured by employees or managers reporting it. Surveys can, for instance, ask public servants how they perceive the leadership of their superior or the quality of their performance feedback (see Khurshid and Schuster, 2023). Government analytics can also shed light on the quality of processes inside public administration, such as whether processes adhere to government procedure or are timely relative to deadlines for instance (see Adjabeng et al, 2023).

Whether practices and processes effectively turn inputs into outputs and outcomes is, as noted, mediated by the norms, attitudes and behaviours of public administrators. Surveys of public servants and, at times, qualitative measurement are standard practice in many governments to evaluate this component of public administration production – for instance, to understand how engaged, committed, and ethical in their behavior public administrators are (see, e.g., Lipinski et al., 2023). HRMIS data often complements rich survey data by providing insights into specific behavior of public employees which is digitally recorded – such as whether public servants leave the organization, work overtime or take sick leave (see Farooq and Kim, 2023).

Figure 2. Mapping Different Government Analytics Data in the Public Administration Function



Lastly, public administrations produce outputs and outcomes of their own, as well as enabling frontline agencies to produce outcomes and outputs. The productivity of frontline, service delivery agencies such as schools, hospitals and police stations has seen extensive previous measurement work, not least as direct contact with citizens enables more direct measurement of service delivery outcomes (such as learning outcomes in schools, or patient outcomes in hospitals) (see Andrews et al., 2023). As noted in chapter 1, this Handbook, instead, focuses on the analytics of *administrative* outputs and outcomes. Administrative case data is one important source for measurement in such contexts. Such data is often routinely collected by organizations – for instance number of tax or social security cases processed – and can be repurposed by organizations to measure outputs and outcomes (e.g. amount of tax revenue raised), and thus productivity (see, e.g., Best et al., 2023; and Duhaut, 2023). Beyond administrative data, surveying households and citizens – for instance surveying citizens about their trust in public administration organizations – can be an important data source to understand outcomes of public administration (Brezzi and Gonzalez, 2023).

In short, government analytics can help governments diagnose public administration across its production chain – from inputs to processes to norms and behavior of public administrators to outputs and outcomes. Different data sources and approaches allow governments to understand different bottlenecks

– be those overpriced input goods, ghost workers on the payroll, high staff turnover or slow processing of administrative cases, to name just a few. What will be of most significance to measure and analyse will depend on a specific organizational setting and topic of interest to decision-makers – but as figure 2 showcases, the data on public administration that is available for understanding how government is functioning is often abundant.

The different parts of this book provide insights into how to use these different data sources to understand how government is functioning and improve the management of public administration. The remainder of this chapter thus summarizes their lessons learned on how to do government analytics well.

Foundational Basics of Government Analytics: Part 1 of the Book

The first section of the Handbook focuses on ‘foundational themes’ in the measurement and analysis of public administration. In other words, it outlines considerations which should be kept in mind when undertaking any government analytics work or interpreting its findings. In particular, the section seeks to respond to four cross-cutting challenges: how to ensure that government analytics are undertaken (1) with due recognition and management of the risks involved (e.g. from managing political pressure to protecting key indicators from manipulation); (2) in a way that ensures analytical practices accord with current best-practice in social science, (3) ethically; and, (4) with measures of whether generated government analytics are, in fact, used.

Measuring what matters: Principles for a balanced data suite that prioritizes problem-solving and learning

Bridges and Woolcock (2023) tackle the first of these four challenges in chapter 4 of the Handbook. They note that over-reliance on quantitative government analytics comes with risks. For example, as with any performance targeting, hitting easy-to-measure targets risks becoming a false standard of broader success. Measurement also risks neglect of other important forms of knowledge – such as the qualitative work or practical knowledge – which may inhibit a deeper understanding of key public administration problems. Moreover, political pressures can lead, if undetected, to falsification of data – for instance to cover up problems such as corruption – and thus undermine the integrity of government analytics. Left unattended, these risks may implicate that government analytics inhibits real problem-solving and implementation capabilities of public sector organizations, rather than strengthening them.

How to do government analytics in light of these risks then? Bridges and Woolcock (2023) offer four principles for government analytics based on a “balanced data suite” that strengthens problem diagnosis and solving in public administration: (1) Identify and manage the organizational capacity and power relations that shape data management – for instance by defining and communicating to all staff professional standards for collecting, curating, analyzing and interpreting government analytics data; (2) Focus quantitative measures of success on those aspects which are close to the problem, for instance by targeting measurement of public administration problems prioritized by government; (3) Embrace a role for qualitative data, especially for those aspects which require in-depth, context-specific knowledge; and (4) Protect space for judgment, discretion and deliberation in those (many) decision-making domains which inherently cannot be quantified.

Practical Tools for Effective Measurement and Analytics

Chapter 5 by Jones and Daniels (2023) turns to a second cross-cutting challenge: statistical tools for government analytics. When one is doing quantitative analysis, what are the best-practices of modern social science? Jones and Daniels (2023) provide a survey and tools. They discuss important underlying statistical principles for government analytics – including the transparency of analysis and reproducibility

of results, to ensure that government analytics are credible. Thereafter, the chapter introduces the suite of tools and resources made available for free by the World Bank's 'Development Impact Evaluation' (DIME) Department to support the achievement of best-practice statistical analysis – such as research-cycle frameworks, extensive training tools, detailed archives of process and technical guidance, and a collaborative approach to data and analytics. For instance, producing analysis that accords with best-practice requires considering the full life-cycle of data work, such that each stage of handling data can be designed to support the next stages. The chapter links to online tools – such as an [online training hub](#) – available to help implement these practices.

The Ethics of Measurement of Public Administration

Wittels (2023), in the sixth chapter, discusses a third cross-cutting challenge in government analytics: undertaking ethical measurement and analysis in public administration. While guides for collection of data on citizens exist, there is a dearth of practical guides on the ethics of government analytics. This is particularly as it pertains to data collection by governments on their own employees. Wittels (2023) introduces a heuristic to encourage ethical government analytics, which balances three, at times competing, ethical considerations: (i) an individual dimension which comprises demands by public employees for dignity and privacy, (ii) a group dimension which relates to allowing for voice and dissent of public employees, and (iii) a public-facing dimension which ensures that analytics enable public administrators to deliver on public sector values - accountability, productivity, and innovation. These three considerations can be in tension. For instance, data diagnostics on public personnel can inform better management practices and enable greater productivity, but impinge on the privacy of employees, whose data is required for the diagnostic.

How to undertake government analytics ethically then? The chapter develops a 10-point framework to guide practitioners. To cite just two examples of this framework: the ethics of government analytics requires consideration of the granularity of data required for the diagnostic. Is data that identifies individuals required for the diagnostic, or could group-level or anonymous individual-level data enable a similar diagnosis? For instance, in a survey of public servants, do demographic questions need to identify the exact age of a respondent in an organization (which risks identifying the respondent) or are broad age bands (with a lower risk of identification) sufficient? As a second example, ethical government analytics requires consideration of who has a say in what gets measured. In particular, are those who are being measured consulted *ex ante*, and have an opportunity to input? Those and other questions in the framework can guide ethical government analytics.

Measuring and Encouraging Performance Information Use in Government

Finally, Moynihan (2023) discusses efforts to address a fourth challenge in government analytics: measuring whether government analytics measures are, in fact, used. Such measurement is important to guide better government analytics. It is turning the logic of government analytics on itself. If costly data collection or analysis is undertaken on public administration, but the resulting analytics are not used for better public administration, government analytics harms rather than furthers better government. Moynihan (2023) showcases that, like in government analytics generally, survey and administrative data can be drawn on to measure use of government analytics data (or, to use Moynihan's (2023) term, performance information). In particular, the chapter recounts the experience of the U.S. Government Accountability Office (GAO) which periodically surveys public employees on their use of performance information, including the survey measures deployed to this end. The chapter also alludes to administrative data governments can make recourse to – for instance data tracking the use of dashboards showcasing government analytics data. The use of government analytics can thus be subjected to the same evaluative measurement rigor that government analytics applies to public administration.

Government Analytics Using Administrative Data: Part 2 of the Book

How to do government analytics using administrative data? Part 2 of the Handbook discusses in 9 chapters the range of administrative data sources governments can draw on to undertake government analytics. We summarize key lessons for each of the data sources, each corresponding to a different chapter. Two further chapter contextualize these discussions. Farooq and Kim (2023) detail how to build the underlying data infrastructure for government analytics. Duhaut (2023) discusses includes how to integrate different data sources to measure the performance of public administration with multidimensional missions. Such an environment is typical of public sector organizations and Duhaut (2023) illustrates it with the example of customs offices.

Creating Data Infrastructures for Government Analytics

The introductory chapter of the section by Farooq and Kim (2023) focuses on how to create data infrastructures – or management information systems (MIS) – that are well suited for government analytics. Using the case of Human Resource Management Information Systems (HRMIS), the chapter provides a roadmap to guide the development of data infrastructures which enable government analytics. The roadmap emphasizes the importance of getting in place high-quality foundational data modules in the MIS first, and only then transition to developing more complex analytical modules. In the case of HRMIS, for instance, ensuring high quality foundational modules including payroll compliance and basic information on personnel should take precedence over more advanced modules such as talent management and analytics. Without quality foundations, other modules will produce imprecise or inaccurate analytics. Analytical modules which include dashboards and reports require that foundational modules are set in place and their data is accurate.

The roadmap thus emphasizes a sequential approach to creating data infrastructures, coupled with repeated testing of new infrastructures, accessible technical support for users of new MIS systems, tracking of the usage of new MIS systems, and building in-house capacity to maintain the system. To illustrate potential applications, the chapter is complemented by three case studies of analytical transformations in HRMIS systems in Luxembourg, Brazil, and the United States. Balmer, Blau and Bossaert (2023) discuss how the Government of Luxembourg introduced a Business Intelligence (BI) center for HR analytics, which transformed HR operations; Andrade, Kim and Soldi Hardt (2023) showcase the development of a system to detect irregularities in Brazil's Federal Payroll, using machine learning; and Klevins and Hoover (2015) illustrate how a US Federal Government agency developed a simple, but effective dashboard to extract insights from a federal public employee engagement survey.

The quality of analytics arising from any MIS is critically dependant on the quality of the underlying data, and the analysts understanding of its origins and limitations. The rest of the section discusses how to ensure quality measurement and analytics in the cases of a range of administrative data sources that measure aspects of the production function of public administration (figures 1 and 2). As illustrated in table 1, chapters 10 to 17 proceed to detail a variety of different administrative data sources and methods for government analytics. As noted above, each of these data sources enables governments to generate indicators to diagnose different components of the public administration production function – and thus different obstacles and levers to enhance public sector productivity.

Table 1. Administrative Data Sources for Government Analytics in the Handbook

Data source	Ch. #	Example uses of analytics	Example indicators
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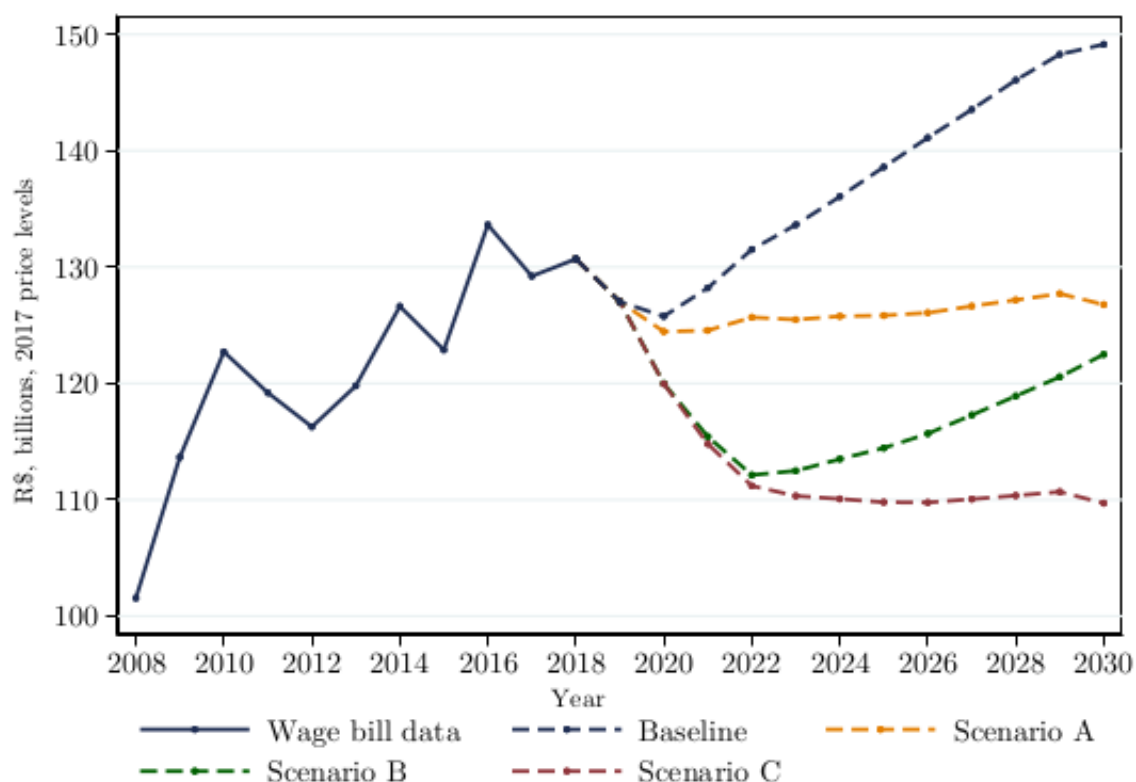
Payroll and HRMIS	10	• Fiscal planning and sustainability of the wage bill • Workforce allocation across government departments and territory • Pay setting	• Wage bill by sector and years • Distribution of civil servants by rank • Turnover of civil servants • Pay inequity between Ministries • Retirement projections
Expenditure	11	• Assess efficiency, equity and effectiveness of government spending • Assess whether government spending corresponds to budget priorities • Identify large transactions with high fiduciary risk	• Budget execution rates • Share of government expenditures covered by FMIS • Share of total expenditures by transaction value • Overdue accounts payable (aka payment arrears)
Procurement	12	• Monitor procurement markets and trends • Improve procurement and contracting, e.g. by identifying goods organizations overpay for, or organizations with high corruption risks in procurement • Assess effects of distinct procurement strategies or reforms	• Time needed for contracting • Number of bidders • Share of contracts with single bidder • Final price paid for a good or service • Share of contracts with time overruns • Share of SME bidders
Administrative Process	13	• Assess the speed and quality of administrative back-office processes and process implementation – for instance for project planning, budget monitoring or performance appraisals	• Adherence of administrator's process work to accepted government procedure • Timeliness of administrator's process work with respect to deadline
Customs	14	• Assess customs revenue collection • Assess trade facilitation (flow of goods) through customs across borders • Assess whether customs safeguards safety of goods and protect people (e.g. dangerous goods not crossing)	• Time delays in customs clearances • Cost of customs process • Total customs revenue collected • Number of goods in infraction seized in customs
Case Data	15	• Assess productivity of organizations and individuals processing cases (e.g. tax claims) • Assess the quality of case processing • Identify “best performing” offices and transfer best practices to other offices	• Total number of cases completed • Average time to complete one case • Error rate in completing cases • Timeliness of case completion • Share of cases with complaints

Text-as-Data (Machine Learning)	16	• Analyze ‘big data’ and convert unstructured text from government records into data for analytics • Examples of big data include payroll disbursements to civil servants or tax filings by citizens and firms. • Examples of text data include court rulings, procurement tenders or policy documents.	• Risk score for a procurement tender or payroll disbursement based on a predictive algorithm. • Bias score in court ruling, based on textual analysis of wording in the document (sexist or racial-profiling terms).
Task/Project Completion Data	17	• Frequency of completion of tasks on-schedule (e.g. delivery of training program, preparation of budget) • Understand quality of administrative task completion • Understand drivers of differences in task completion across government units	• Number of tasks completed • Share of tasks completed on time • Share of unfinished tasks • Share of tasks completed as planned

Government Analytics Using Human Resource and Payroll Data

In chapter 10, Tavares, Nieto and Woodhouse (2023) showcase how to use payroll and HRMIS data for government analytics. Using a series of examples from Latin American countries, the chapter underscores how the analytics of such data can enable more evidence-based decisions around both fiscal planning and personnel policy. For instance, payroll data can be drawn on for a better understanding of the likely future dynamics of wages and retirement based on the modelling of individual career trajectories. For example, figure 3 reproduces a chart from the chapter that showcases how analytical use of payroll data allowed Brazilian policymakers to simulate the financial implications of a set of different pay- and employment-related policies. The difference between the wage bill costs under the least and most expensive were almost 50% of total wage bill expenditures. Such a granular lens on employment trends enables governments to better plan for the longer-run fiscal implications of public employment and understand its drivers.

Figure 3. Wage Bill Projection and Policy Scenarios



Source: Tavares, Nieto and Woodhouse (2023)

The analytics of payroll and HRMIS data can also enable governments to improve personnel policy. For instance, data on workforce allocation across different regions of a country (e.g. of a tax administration) matched to data on the number of service users (e.g. taxpayers) in each region can help governments understand under- or overstaffing and improve workforce allocation, for instance by prioritizing new recruitment in understaffed regional offices. Payroll data also enables governments to measure turnover of employees across time, government institutions and even individual managers, helping governments pinpoint retention problems and their origins. By comparing pay for similar positions across government institutions, payroll analysis pinpoints potential salary inequities. As these examples illustrate, payroll and HR data can provide powerful analytical insights for both fiscal and personnel policy. Tavares, Nieto and Woodhouse (2023) thus recommend centralizing payroll and human resources (HR) data collection systems to render such data accessible to insights teams and provide a roadmap to this end that complements the discussions in Farooq and Kim (2023) and the accompanying case studies.

Government Analytics Using Budget Data

Chapter 11 by Piatti-Fünfkirchen, Brumby and Hashim discusses government analytics using expenditure data. Budget and government expenditure data are, of course, already widely used by governments to understand whether resources are used for budgeted priorities, spending is sustainable, as well as efficient, effective and equitable, and which (typically large value) government transactions might have high fiduciary risks. The World Bank, for instance, has a long-standing practice of Public Expenditure Reviews. Such reviews are often accompanied by benefit incidence analysis to orient spending towards those in need, by linking data on spending distribution with who receives services, for instance. The

chapter briefly reviews these well-established uses of expenditure government analytics, and then deep dives into an aspect missing in much expenditure analytics: how to ensure high quality data for expenditure analytics.

The chapter underscores the need to periodically review government expenditure microdata for (i) data-provenance and integrity, (ii) comprehensiveness, (iii) usefulness, (iv) consistency, and (v) stability. This requires a prior, clear definition of what counts as government expenditure, as well as a clear understanding and documentation of how transactions across spending items in government are created, what control protocols they are subject to, how this information is stored and how microdata are aggregated for analysis (e.g. by classifying government transactions by function, to be able to analyse aggregate spending data by function). The chapter provides practitioners with seven probing questions to include in expenditure analytics to ensure that the data is high quality, and the resulting analytics are as informative as possible for better government spending.

Government Analytics Using Procurement Data

Cocciolo, Samaddar and Fazekas (2023), in chapter 12, turn to how to use procurement records as data for government analytics. The digitization of national public procurement systems across the world has multiplied opportunities for procurement data analytics. Such analytics allow governments to strategically monitor procurement markets and trends, to improve the procurement and contracting process through data-driven policy making – for instance to identify overpriced goods, or corruption risks in procurement – and to assess the potential trade-offs of distinct procurement strategies or reforms. Cocciolo, Samaddar and Fazekas (2023) provide an overview of the range of procurement indicators to this end. For instance, indicators to measure the economy and efficiency of procurement include the time needed for contracting or the final price paid; indicators to proxy transparency and integrity in procurement include the share of single bidder tenders, and the share of excluded bids; indicators to measure competition in procurement include the number of bidders, while indicators of inclusiveness and sustainability include the share of bids coming from small and medium-sized enterprises (SMEs).

When e-procurement systems are integrated with other e-government systems – such as firm registries or tax data –analytics can go even further, for instance by allowing governments to detect potential family relations (and thus collusion risk) between owners of firms bidding for government contracts and procurement officials. Cocciolo, Samaddar and Fazekas (2023) also showcase how governments can use interactive dashboards to track, analyze and display key procurement indicators through customizable and user-friendly visualizations. All of this of course, requires that procuring entities record procurement transactions consistently and that such records are then centralized, and that (automated) data quality checks and periodic data audits ensure the data is accurate.

Government Analytics Using Data on the Quality of Processes

With personnel, goods and capital (budget) being core inputs to the effective functioning of government, their eventual value is determined by how they are processed and managed. Chapter 13 by Adjabeng et al. (2023) presents approaches to assessing the quality of processes in public administration. The chapter highlights the value of quantifiable measures of the quality of back-office processes. While front-line service delivery often enables service outcome measurement (e.g. in terms of patient outcomes), many of the activities undertaken by public administrators are characterized as applying proper process and procedure to a project, file or case. As such, the quality of processing work undertaken by public officials is an important part of the quality of government activity, and process analytics can help improve this work. Adjabeng et al. (2023) lay out a range of indicators to this end, such as the share of processes undertaken by public administrators that are timely with respect to deadlines, adhere to government procedure and are logical in flow. Such data can be collected automatically as part of digitized government

work, or manually by assessors employed to judge the quality of process in the physical records of projects, files or cases. To underscore the wide applicability of their approach, Adjabeng et al. (2023) showcase applications of their approach from Liberia (adherence to new processes for performance appraisal), and Ghana (quality of process in core office duties such as project planning, budgeting and monitoring).

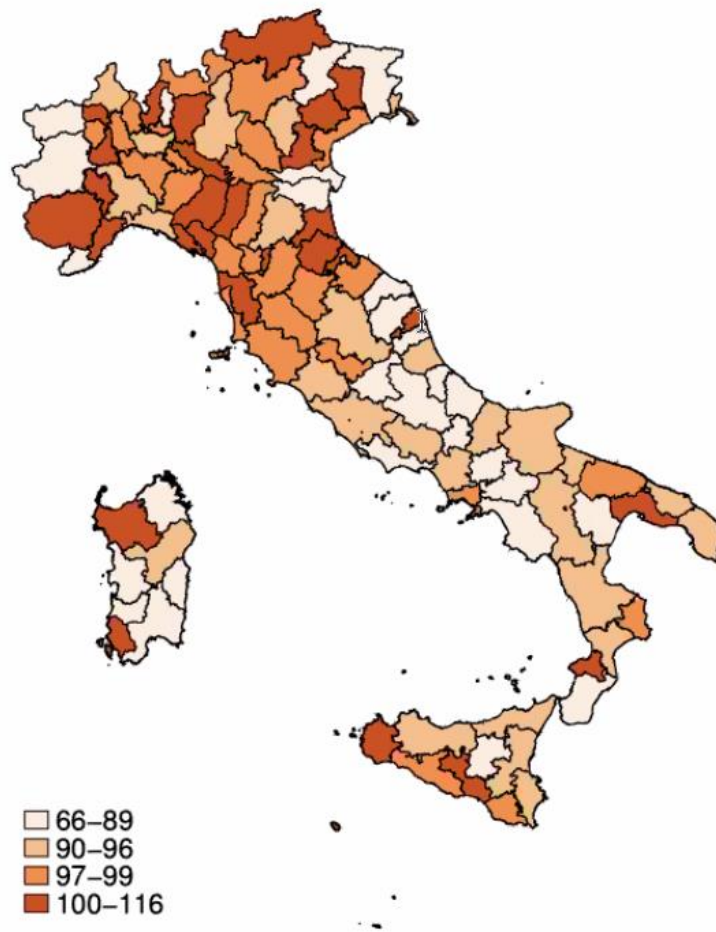
Government Analytics Using Customs Data

Chapters 14 and 15 cover government analytics in sectors, using case data and other complementary data. In particular, Duhaut (2023), in chapter 14, provides an overview of government analytics using customs data. Customs agencies typically have three core objectives: facilitating trade, collecting revenue, and ensuring the security and safety of the goods entering or exiting the country. As in many other government agencies with multi-dimensional missions, attaining one objective (e.g. greater safety of traded goods) can come at the expense of another (e.g. facilitating trade). Incomplete measurement of objectives risks encouraging attainment of measured objectives while unknowingly impairing other objectives. This puts a premium on effective measurement of all dimensions of a customs mission, which often requires triangulating different data sources. Duhaut (2023) showcases how this can be done, deriving indicators for (1) trade facilitation (e.g. costs of the process, in particular time delays); (2) revenue collection (e.g. trade volume and revenue collected based on the assessed value); and (3) safety (e.g. number of goods in infraction seized). Collecting these indicators requires integrating multiple data sources. The chapter thus discusses several data sources. These include, for instance, the Automated System for Customs Data, used by 100 countries and designed by the United Nations Conference on Trade and Development (UNCTAD), which captures, for instance, items declared, excise and duties; as well as complementary data sources, such as time release studies (TRS) and GPS data on the time spent at borders. The chapter also showcases how such data can be used for not only risk management, but also to assess customs performance ex-post.

Government Analytics Using Administrative Case Data

Best, Fenizia and Khan (2023), in chapter 15, go on to provide insights into the analytics of administrative case data in government more broadly. A case file is typically a collection of records regarding an application – for instance for social security, access to government-sponsored childcare, to obtain licences and permits, or to bid on a government contract. Best et al. (2023) draw on three example types of administrative cases: social security programs, tax collection and public procurement. In all three examples, governments routinely collect case data as part of their day-to-day operation. The chapter shows how this case data can be re-purposed to construct objective measures of performance. These include, for instance, measures to benchmark productivity measures across, say, regional tax offices – for instance the average time to complete (similar) tax cases, or the number of cases completed per officer. Figure 4, reproduced from the chapter, presents an index of the productivity of social security case processing. It illustrates how substantial the variability in government productivity can be across a single country, with some offices taking 2.5 times as long to process similar cases. Case data also enable governments to understand differences in quality, e.g. comparing the share of tax cases leading to appeals by taxpayers or being identified as erroneous by audits.

Figure 4. Variation in Productivity of Social Security Case Processing



Source: Best, Fenizia and Khan (2023)

Best et al. (2023) also underscore the importance of accounting for the complexity of each case. For example, a social security claim that clearly meets the requirements of regulation is a less complicated case to process than one in which there are ambiguities in eligibility and external validation is required. Best et al. (2023) provide guidance on how to adjust such case data for complexity. When accounting for complexity and quality, they conclude that the case data governments already collect provide a wealth of performance information to governments to make such adjustments.

Government Analytics Using Machine Learning

Chapter 16 shifts the focus to a different data source – text-as-data – and a different methodological approach, the use of machine learning (ML) and artificial intelligence (AI) for government analytics. Machine learning is fundamentally a methodological approach: it defines a performance indicator and trains, using collected data, an algorithm to improve this indicator. Such data can include text, allowing governments to classify quantitatively the ‘big data’ of texts it produces in records or communications. As a result, ML can be applied in a range of government analytics domains, from detecting payroll fraud to understanding bias in welfare appeal decisions, to name just a few. The chapter illustrates the use of ML and AI for government analytics in the case of the judiciary. In the justice system, the increasing digitalization of legal documents and court sentences, and the development of new techniques in natural language processing (NLP) enables analytics to improve judicial decision-making. India, for instance, has 27 million pending court cases; the sheer number of cases precludes manual classification of (often inconsistent) records and legal texts. ML algorithms can be trained to nonetheless classify such records.

This enables, for instance, analytics of bias and discrimination in courts (e.g. where judges with certain characteristics are associated with certain judicial outcomes in similar cases), or the evaluation of how judicial reforms shape judicial productivity and unbiasedness. The chapter also details the enabling environment for ML application – including how to build ML human capital and data infrastructure, the ethical considerations to keep in mind, and the importance of collaboration between ML engineers, domain experts, and the agencies that will use the technology to develop effective ML-based government analytics.

Government Analytics Using Data on Task and Project Completion

Lastly, chapter 17, by Rasul, Rogger, Williams and Woodhouse (2023), discusses government analytics using task completion data. Much government work consists of the completion of tasks, from creating major reports, to undertaking training programs and building infrastructure. A task completion approach allows for the investigation of which units and organizations are most likely to initiate, make progress on, and complete tasks – particularly where organizations complete similar tasks (e.g. preparing budgets). A task completion approach is particularly important to understand performance in administrative organizations in which productivity data mentioned in previous chapters – such as case data or frontline service delivery indicators – is not available.

Data for task completion can be extracted from a variety of sources. In Ghana, for instance, government units complete quarterly progress reports on all activities, which can be digitized and repurposed into task completion data, while, in the UK, the National Audit Office completes major projects reports that assess the progress of large infrastructure projects against corresponding planning documents. Sub-setting this data to similar tasks undertaken by all government units, units can be benchmarked on the average time it takes them to complete tasks and the share of uncompleted tasks, for instance. Matching this data to other data about these units – for instance on budget disbursements or management practices – can help governments understand why some government units are more effective at task completion, and identify drivers to improve productivity in lagging government units. Rasul et al. (2023) underscore the importance of – and provide guidance for – classifying task characteristics correctly (e.g. in terms of their complexity) to ensure cross-unit benchmarking is valid.

In sum, the ‘Government Analytics Using Administrative Data’ part of the Handbook underscores the variety of administrative data sources available for governments to diagnose and improve the machinery of government. Different data sources enable governments shed light on different components of public administration production, and different potential bottlenecks for greater public administration productivity. Whatever administrative task a public official is working on, the chapters in this section showcase how the records they create can be repurposed for analytics that aim to strengthen government.

The chapters in Part 2 also reveal some cross-cutting insights to keep in mind when undertaking government analytics using administrative data, which complement Part 1 of this book. To begin with, the infrastructure for – and thus quality of – the underlying measurement and resulting data is paramount and requires careful consideration. High quality administrative data is not a foregone conclusion. The first challenge a range of chapters identified is data coverage. A central payroll system, for instance, might cover only part of public employees (Tavares, Ortega and Woodhouse, 2023); and a central financial management information system might cover only part of government expenditures (Piatti, Brumby and Hashim, 2023). A second challenge is data validity. To illustrate, case data in tax or social security is often not recorded or designed to measure performance, and careful thought is needed to repurpose such data for performance measurement. Self-reported data – as in the case of some task completion data – may also suffer from inaccurate or manipulated data entry by the units being evaluated, putting a premium on independent, third-party data collection or validation (cf. Rasul et al., 2023). A third challenge for performance data in particular is completeness relative to the mission of an organization. As Duhaut

(2023) notes, missions and goals of public sector organizations are typically multi-dimensional (and at times contradictory), requiring the triangulation of multiple data sources to ensure performance is measured holistically, and government analytics does not incentivize the attainment of one goal of an organization at the expense of another (Bridges and Woolcock, 2023).

The chapters also emphasize the human capital requirements for government analytics using administrative data. Creating the IT systems which underlie centralized data infrastructures requires IT and data science skills (Farooq and Kim, 2023; Bhupatiraju et al., 2023). Processing records into usable data, analysing the data and making the data accessible for analysis and management improvements – for instance through dashboards – similarly comes with data science and visualization skills requirements. In some governments, advanced data science skills – for instance in machine learning – might be in short supply. Upskilling data scientists in government – or creating data science teams for government analytics – is thus important to make the most of government analytics opportunities.

Lastly, the chapters also underscore the importance of data accessibility for decision-makers. Creating dashboards to allow users to explore key insights from the data – for instance on procurement indicators or HR – is front and centre to that accessibility, complemented by briefings/slide decks with key diagnostic findings/insights and data storytelling (e.g. on the payroll) for senior policymakers to take action. In other words, government analytics data does not speak for itself, but needs to be made legible for government action.

Government Analytics with Surveys of Public Servants: Part 3 of the Book

Part 3 of the book focuses on a single data source for government analytics: surveys of public servants. The rationale for dedicating a whole section to one data source for government analytics is three-fold.

First, surveys of public servants are, arguably, one of the most widely used data sources for government analytics to-date. In their review of the global landscape in chapter 19 of this Handbook, Khurshid and Schuster (2023) find that the number of governments implementing government-wide surveys of public servants repeatedly every year or every two years has increased continuously over the last two decades, reaching at least 9 OECD governments in 2021 (with many others conducting surveys of public servants on a more ad hoc basis).

Second, surveys of public servants can be costly in terms of staff time in a way that repurposing administrative data is not. Not least as such surveys often sample a census of (i.e. all) government employees. Lipinski et al. (2023), in chapter 21 of this book, for instance estimate that the staff time cost of completing the U.S. Federal Government employee survey reaches US\$30m annually. It's therefore important to design them to be as efficient and effective as possible.

Third and perhaps more importantly, many key features of public administration production cannot be measured efficiently through other data (such as administrative data or citizen surveys). For example, understanding how public servants are managed, their motivations, and behaviors are all internal to the official's lived experience, yet matter for public sector productivity. Management quality is fundamentally an experienced interaction that can often only be measured by employees or managers reporting it. Public employees' motivations are difficult to observe outside of their own expressions of their motives. Thus, self-reporting through surveys becomes the primary means of measurement for many aspects of the public administration production function, and thus levers for improving public sector productivity.

In short, effectively designing, implementing and making the most of surveys of public servants for government improvement is crucial.

Surveys of Public Servants: The Global Landscape

To kickstart the section, Khurshid and Schuster (2023), in chapter 19, review current government practices in surveys of public servants. They find, first, that most governments tend to measure similar concepts in their surveys. These include, on the one hand, measures of core employee attitudes correlated with productivity – for instance job satisfaction and engagement, commitment to the organization and intent to remain working for the organization. On the other hand, governments measure a relatively consistent set of management practices as antecedents of these employee attitudes – such as the quality of leadership, performance management and training. This reflects, of course, that governments often undertake surveys of public servants with relatively similar objectives.

Despite measuring similar concepts and pursuing surveys with similar objectives, governments differ in how they design, implement and report on surveys of public servants, as Khurshid and Schuster (2023)'s review found. For instance, the wording of survey questions differs, even when measuring similar concepts. Approaches to sampling public servants differ, as can survey modes or approaches to dealing with non-response. Governments also widely differ in how they report survey results, for instance what kind of benchmarks are reported or at what levels of hierarchy inside organizations are measured and provided with results reports. Given that governments undertake surveys with similar objectives, why is there such diversity in how they design, implement and report on surveys?

The answer, arguably, lies in part in the limited evidence available to governments which could guide choices about design, implementation and reporting of surveys of public servants. The chapters in this section thus provide novel empirical evidence to enable governments and practitioners to make more evidence-based choices in response to some of these and other methodological questions in public servant surveys.

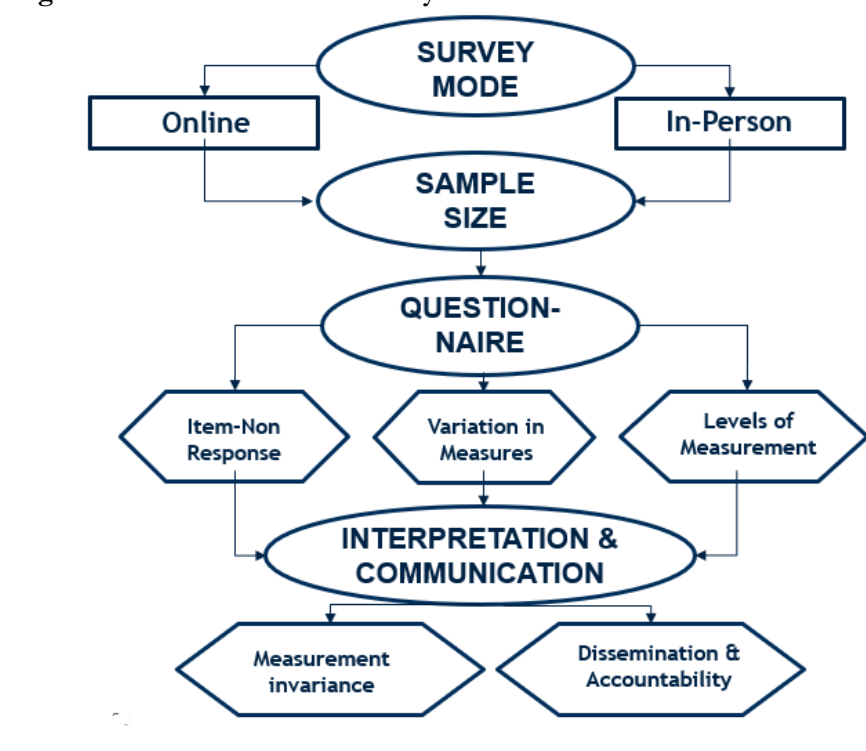
We structure our summary of findings from the section around a decision tree for choices involved in surveys of public servants (figure 5). Of course, this decision tree should *not* be read as a linear set of steps: there are interdependencies between choices. For instance, how many respondents need to be sampled depends on the expected variation in survey measures, which in turn is a function of questionnaire design.

With that said, governments undertaking surveys of public servants need to, first, choose a survey mode: are surveys conducted online, on paper, in-person, by phone or through a combination of these modes? Subsequently, they need to determine the appropriate survey population, and then an approach to sampling of respondents, including determining the desired sample size given the purpose of the survey. Subsequently, questionnaires need to be designed. While measures may vary across concepts, several general concerns apply across them. For instance, how can measures be designed that public servants are willing to answer (thus avoiding item non-response)? How can measures be designed that vary sufficiently, so that comparisons between organizations or groups of public servants on these measures become meaningful? And should survey measures inquire about the individual experience of public servants or instead ask them about their perceptions of practices in the organization as a whole?

Finally, governments need to decide how to interpret and report results of public servants. For instance, can responses from different groups – such as public servants in different countries, organizations inside a country, or demographic groups inside a country – be meaningful compared? Or might concepts such as job engagement mean different things to different public servants (even when answering the same question), and so benchmarking is not valid? Once decisions about who to benchmark are made, how can results be reported effectively to enable action? For instance, how are survey results presented to decision-makers and who receives results? How is capacity built to enable decision-makers to take action

based on survey results, and how are they incentivized to do so? The section provides novel evidence on each of these key questions in surveys of public servants.

Figure 5. Decision Tree for Surveys of Public Servants



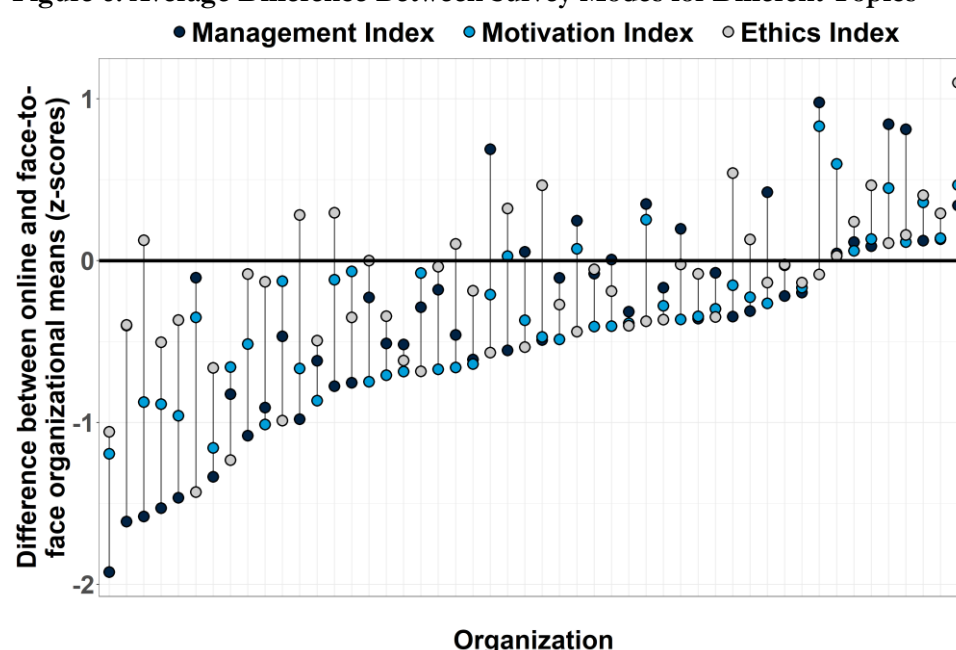
Determining Survey Modes and Response Rates: Do Public Servants Respond Differently to Online and In-person Surveys?

To begin with, chapter 20 by Han, Parker, Rogger and Schuster (2023) assesses the first methodological choice in our decision tree: which enumeration method or survey mode to choose? This matters as different survey modes may come with different response biases to questions and different overall response rates. In OECD governments, per Khurshid and Schuster's (2023) review, surveys of public servants are typically conducted online, though often not exclusively so. All nine government surveys reviewed implement online surveys, though, to enhance accessibility (for instance for staff with difficulty accessing or completing an online survey), Colombia, Switzerland, the UK and a few Australian agencies offer their survey in a paper format, while New Zealand offers its survey through paper and telephone upon request. The advantage of a predominantly online approach to surveying public servants across governments is clear: it reduces costs and may reduce biases such as those induced by respondents' notions of socially desirable answers when faced with an in-person or phone interviewer.

Online surveys, however, also tend to have lower response rates than other survey modes (such as in-person surveys). For instance, the last U.S. Federal Viewpoint survey had a response rate of 44%. This raises a concern that the data resulting from an online survey is not a valid representation of the population - in that case the entire public administration. In some instances, these concerns about the validity of online surveys of public servants become severe. The UK's civil service people survey, for instance, saw a parliamentary inquiry into the validity and quality of its underlying data, in part motivated by low response rates in some government organizations (UK Parliament, 2022).

To what extent then are low response rates in online surveys a concern (thus putting a premium on survey modes with higher response rates, such as in-person surveys)? Han et al. (2023) present evidence from a randomised control trial that compares face-to-face and online survey responses from Romanian public servants to find out. The face-to-face surveys had consistently high response rates across Romanian government organizations; the online surveys had, as is typical in other governments, varying response rates across organizations. The results suggest that that these diverging survey modes do not substantially impact aggregate estimates at the national level. They do, however, affect the comparability of findings across organizations. Figure 6, reproduced from the chapter, shows how big a difference mode of survey makes for indices of survey topics. For some organizations the impact of survey mode is substantial. Basic organizational and demographic characteristics explain little of the variation in these effects. In other words, survey weights are not effective at addressing these effects.

Figure 6. Average Difference Between Survey Modes for Different Topics



Source: Han et al. (2023)

Governments which offer varying survey modes should thus be careful when comparing the scores of organizations when some implement the survey primarily online while others implement it primarily based on pen and paper. Rankings of organizations in such instances do not appear to be valid. In the absence of that, we do not find evidence to suggest that (lower response) online surveys bias national-level inferences governments can make from surveys of public servants, though more research is required to confirm the external validity of this finding in other countries.

In a second step, governments need to define survey populations and their sampling approach. Who the appropriate survey population is, of course, depends on the measurement objectives of governments. Khurshid and Schuster's (2023) review shows that the survey population generally consists of central government civil servants, albeit with variations of the extent to which, additionally, public sector organizations and types of employee contracts outside the (legally defined) civil service are covered – for instance in other branches of government or frontline services. To use just one example, for the UK's government employee survey all public servants from 101 agencies excluding the Northern Ireland Civil

Service, the National Health Service (NHS) (which conducts its own survey) and frontline officials (for instance police officers and teachers) were eligible (UK Cabinet Office, 2020).

Who, then, should be sampled to respond to a survey of public servants within this survey population? As Khurshid and Schuster (2023) show approaches to sampling vary across governments, ranging from census to random, ad hoc and stratified sampling. Australia, New Zealand, the UK, Canada and Ireland adopt a census approach where all eligible public sector employees may participate in the survey. The US and Switzerland use (stratified) randomised sampling approaches for most years but conducts a census every few years. Colombia's public servant survey in turn uses a mixed approach: for larger organisations, a stratified sampling approach is used while for smaller organisations a census is taken to protect anonymity. Meanwhile, South Korea adopts a sampling approach for all annual surveys.

Determining Sample Sizes: How Many Public Officials Should Be Surveyed?

As Lipinski, Rogger, Schuster and Wittels (2023) note in chapter 21 of this book, determining the appropriate sample of a public administration survey is often a trade-off between increasing the precision of survey estimates through greater sample sizes and the high costs of surveying a larger number of civil servants. Greater precision enables both more precise benchmarking (e.g. between organizations) and survey result reports at lower levels of hierarchy in an organization. Less precision reduces the staff time lost responding to the survey.

How to resolve this trade-off? Lipinski et al. (2023) show that, ultimately, survey administrators have to decide on the sample size based on the type of inferences they want the survey to yield and the staff time they can claim for the survey. By employing Monte Carlo simulations on survey data from Chile, Guatemala, Romania, and the U.S.A., Lipinski et al. (2023) show government-wide averages can be reliably derived using sample sizes considerably smaller than those used by governments currently. On the other hand, detecting differences between demographic groups (such as gender and rank) and, in particular, ranking individual public administration organizations precisely requires larger sample sizes than are collected in many existing surveys.

These results underscore, on the one hand, the importance of not over-interpreting the substantive significance of small differences between organizations in public servant survey results (or individual ranks of organizations in results). On the other hand, the results underscore that governments should determine sample sizes based on the type of inferences and benchmarking exercises they wish to make with the data. Existing governmental surveys of public servants do not seem to be based on such a data-driven approach to sampling. Lipinski et al. (2023) offer an [online sampling tool to enable such sampling](#) and address this gap.

In a third step, surveys of public servants require the definition of a questionnaire. As noted, governments often measure similar concepts through dissimilar questions. As noted, the section sheds light on three cross-cutting dimensions of questionnaire design: how can measures be designed that public servants are willing to answer? How can measures be designed that vary sufficiently, so that comparisons between organizations or groups of public servants become meaningful? And should survey measures inquire about the individual experience of public servants or instead ask them about their perceptions of practices in the organization as a whole?

Designing Survey Questionnaires: To What Types of Survey Questions Do Public Servants Not Respond?

As Lipinski, Rogger and Schuster (2023) in chapter 22 show, surveys of public servants sharply differ in the extent of item non-response: respondents skipping or refusing to respond to questions. Item non-response can affect the legitimacy and quality of public servant survey data. Survey results may be biased,

for instance, where those least satisfied with their jobs are also most prone to skipping survey questions. Understanding why public servants respond to some survey questions but not others is thus important.

Lipinski, Rogger and Schuster (2023) offer a conceptual framework and empirical evidence to further this understanding. Drawing on other survey methodology research, they theorize that public servants are less likely to respond to questions that are too complex (as they are unable to answer) or sensitive (as they are unwilling to). Coding the complexity and sensitivity of public servant survey questions in Guatemala, Romania and the U.S., they find that one indicator of complexity – the unfamiliarity of respondents with the subject question – to be the most robust predictor of item non-response across countries. By contrast, other indicators of complexity or sensitivity or machine-coded algorithms of textual complexity do not predict item non-response. The implication for survey design is clear: avoid questions which require public servants to speculate about topics they are less familiar with.

Designing Survey Questionnaires: Which Survey Measures Vary, and for Whom?

A second prerequisite for effective question design is variation: survey measures should provide a degree of discriminating variation across respondents to be useful. Without discriminating variation across organizations, demographic groups or countries, survey measures cannot inform governments about strengths and areas for improvement. With this in mind, Lipinski, Rogger, Schuster and Wittels (2023a), in chapter 19 of this book, assess variation in a set of typical indicators derived from data sets of public service surveys from 10 administrations in Africa, Asia, Europe, North and South America.

The results show that measures related to personal characteristics such as motivation do not vary as substantially as those relating to management practices such as leadership. In other words, when respondents are asked to assess practices of others – such as their superior or their organization – survey responses exhibit significant discriminant variation across organizations and groups. By contrast, when respondents are asked to self-assess whether they possess desirable characteristics – such as work motivation – survey responses across countries tend to be heavily skewed towards favourable answers, and variation is so compressed that meaningful differences between organizations or demographic groups are difficult to detect. Standard measures for desirable attitudes, such as motivation, may therefore need to be redesigned in surveys of public servants to better discriminate between values at the top-end of indices.

Designing Survey Questionnaires: Should Surveys Ask about Public Servants' Perceptions of Their Organization or Their Individual Experience?

A third prerequisite for effective questionnaire design is valid measurement of organizational aggregates. Many surveys of public servants are centrally interested in organizational aggregates. For instance, which surveyed organization has the highest level of job satisfaction among its employees? Or which organization has the highest quality of leadership practices of superiors? This raises the issue whether surveys of public servants should use organizational referents in question design. That is, should respondents be asked about their organization (for instance the quality of leadership practices of superiors in their organization, or the level of job satisfaction in the organization)? Or should questions use individual referents, asking about the respondent's own experience (e.g. the quality of leadership practices of the respondent's superior, or the respondent's job satisfaction)? Mikkelsen and Parker (2023), in chapter 23, examine this question using survey experiments with public servants in Guatemala and Romania. The survey experiments randomly assign public servants to respond to questions about a topic with either an organizational-level referent phrasing or an individual-level referent.

Their chapter finds that, while there are no strong conceptual grounds to prefer either organizational or individual referents – both have advantages and disadvantages – the choice matters to responses, and alters response means. Mikkelsen and Parker (2023) also show that organizational questions are particularly useful when questions are very sensitive (e.g. on corruption), as respondents may, when asked about their own individual experience rather than practices in the organization, skew their response more strongly towards a socially desirable response option. Individual questions are particularly useful when

measured attitudes or practices are rare in the organization. In such instances, many respondents in the organization may not have the information organizational referent questions ask them to provide. In other words, they lack the information to accurately assess the prevalence of a practice in the organization, risking that they rely instead on, e.g., unrepresentative information or stories rather than real organizational characteristics. In short, whether survey questions should ask about the individual's experience or his/her perception of organizational practice depends on the characteristics of the question and the organization it seeks to measure.

Interpreting Survey Findings: Can Survey Results Be Compared across Organizations and Countries?

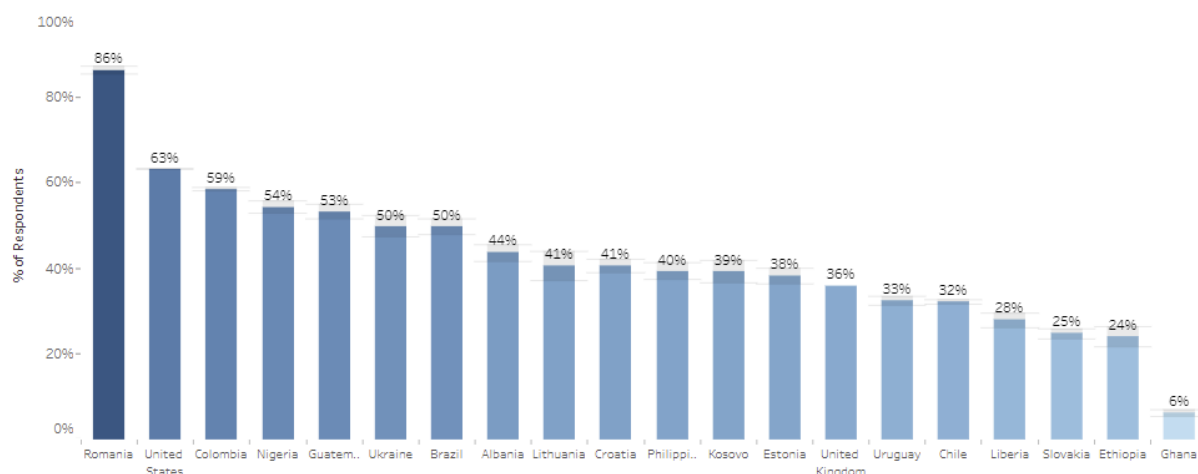
Chapters 24 to 26 of the book then turn to the interpretation and reporting of survey results. In chapter 24, Lipinski, Meyer-Sahling, Mikkelsen and Schuster (2023) focus on interpretation and in particular the question of benchmarking: can survey results be compared across organizations and countries? This matters, as survey results can rarely be understood in a void. Rather, they require benchmarks and points of reference. If, for instance, 80% of public servants are satisfied with their jobs, should a manager interpret this as a high or low level? Historical comparisons provide a sense of dynamics, but not of degree. The availability of similar statistics from comparator organizations in the public sector or other countries are a potentially valuable complement to a manager's own results. However, such benchmarking requires that survey questions measure the same concept in the same way, and therefore can be meaningfully compared. Even when phrased in the exact same way, however, the validity of comparison is not obvious. For multiple reasons, including work environment, adaptive expectations, and cultural factors, different people might understand the same question in distinct ways and adjust their answers accordingly. This might make survey results incomparable not only across countries, but also across different groups of public servants within a national public administration.

To assess this concern empirically, Lipinski, Meyer-Sahling, Mikkelsen and Schuster (2023) investigate, using data from 7 public service surveys from across Europe, Latin America, and South Asia, to what extent the same survey questions measure the same concept similarly, i.e. are measurement invariant, using as an example questions related to 'transformational leadership'. Their analysis finds support for what is termed scalar invariance: that means of transformational leadership can be compared *within* countries across demographic groups (they test gender and education) and organizations. Across countries, they find tentative evidence for scalar invariance, and stronger evidence when countries are grouped by regions and income.

The findings – though tentative and requiring further confirmatory evidence from other settings - thus underscore the utility of global benchmarking of countries in surveys of public servants.² As Khurshid and Schuster (2023) detail, the [Global Survey of Public Servants](#) offers a tool to harmonize questions across governments. In conjunction with the freely accessible [Global Survey Indicators](#) dashboard, the Global Survey of Public Servants thus enables governments to understand strengths and areas for development of their public administration in global comparative terms. For example, as presented in their chapter and reproduced here as figure 7, the global survey provides comparative data on pay satisfaction from public administrations around the world. As can be seen from the figure, this varies substantially across countries.

Figure 7. Public Servants Satisfied with Their Pay and/or Total Benefits (% of Total)

² Read in conjunction with other research cited Lipinski, Meyer-Sahling, Mikkelsen and Schuster (2023), this conclusion holds particularly for questions that are more factual and less culturally specific. For instance, questions on specific management practices (e.g. around the presence of certain performance evaluation practices) can be more plausibly benchmarked across countries without measurement invariance concerns than attitudinal questions (e.g. on how engaged employees are).



Source: Fukuyama et al. (2021)

Once decisions about who to benchmark against are made, consideration turns to how to report and disseminate survey results – or, in other words, how to make the most of survey results. Chapters 25 and 26 provide two complementary perspectives on this challenge.

Making the Most of Public Servants Survey Results: Lessons from Five Governments

Chapter 25, by Schuster et al. (2023), develops a self-assessment tool for governments which lays out low-cost actions governments can take to support evidence-based reforms based on the insights from public servant surveys. The self-assessment tool is structured around three key components of an ecosystem for turning surveys of public servants into management improvements: 1) information, 2) capacity and 3) incentives to take action. The chapter applies this tool to six governments to assess the comprehensiveness of their ecosystem to turn survey results into management improvements.

The first component is information: public servant survey results can improve public administration by providing tailored survey results to four key types of users: the government as a whole, each public sector organizations, each unit/department within organizations, and the public, including public sector unions. Results reporting should both make salient key takeaways about the strengths and weaknesses of particular organizations and enable users to explore aggregate survey results in a bespoke manner, for instance through dashboards. The second component is capacity to take action. Reporting of results can also become more impactful where it includes (automated) recommendations to users – such as managers of units or organizations – on how to best address survey findings, as well as action plans for users to develop their own actions. Where more resources are available, tailored technical assistance – or Human Resource Management (HRM) consultancy – provided either by a central HR unit or an external provider can further help managers turn survey findings into improvements. The last component is incentives to take action, through accountability mechanisms. For instance, governments can introduce central oversight of actions taken in response to survey findings by government organizations and units; can construct and publicize “best place to work” indices in government to foster external oversight, or measure employee perceptions of the extent to which government organizations take action in response to survey findings.

Applying this self-assessment framework to six governments – the US, UK, Australia, Canada, Colombia and Ireland – Schuster et al. (2023) also find that many governments could undertake a range of additional low-cost actions to enhance the benefits they derive from public servant surveys for improved public administration. In short, more could be done in practice in many countries to turn survey results into management improvements.

Using Survey Findings for Public Action: The Experience of the US Federal Government

Chapter 26 by Hoover et al. (2023) complements chapter 25 by deep diving into the experience of the country with the longest-standing government-wide employee survey, the United States. The chapter underscores, first, the importance of considering action in response to survey results at the point of survey design. In particular, questions should focus on topics that staff and senior leaders find most important for the achievement of their mission. Second, the chapter delineates the critical architecture necessary in each public sector organization to translate survey results into management improvements. This includes, for instance, a technical expert in the organization capable of interpreting survey data; a strong relationship between that expert and a senior manager in the organization who acts as a “change champion;” and the development of a culture for survey-informed improvement initiatives.

The chapter also provides guidance on how to develop a culture of responsiveness to surveys of public servants. It underscores, for instance, the importance of leaders in an organization being transparent in sharing and discussing the survey results with their workforce, co-developing action plans and co-producing with staff improvements in response to survey results. In short, chapters 25 and 26 point to the importance of a carefully crafted ecosystem or architecture for turning survey results into management improvements, and provide a wealth of suggested actions to this end.

Part 3 of the book thus provides evidence-based good practice on a range of choices involved in designing, implementing, interpreting and reporting on surveys of public servants. We hope this evidence can inform governments seeking to improve their existing regular government-wide employee surveys, as is the case in many OECD countries. We also hope this evidence can enable governments which have yet to introduce surveys of public servants to leapfrog to best practice from the get-to. We recommend such governments consult the range of toolkits on the [Global Survey of Public Servants toolkit](#) site. The toolkits of the Global Survey of Public Servants – which was co-founded by the two editors of this book, along with a range of practitioners and academic colleagues– build on and incorporate much of the evidence reviewed in this section.

Government Analytics through External Assessments: Part 4 of the Book

Part 4 of the book turns to select data sources available to undertake government analytics through external assessments, understood as assessments by those outside government (rather than public servants or administrative data collected by government organizations themselves). The section provides guidance on four such external data sources: household survey data, citizen survey data, service delivery indicators and, finally, anthropological methods. These data sources illustrate the possibility of government analytics through external assessments but, of course, do not cover the full range of microdata for external assessments. Enterprise surveys of businesses, for instance, can provide insights on topics such as bribery or government regulation (World Bank, 2023). With that caveat in mind, what can the volume chapters tell us about how to do government analytics using external assessments?

Government Analytics Using Household Surveys

Chapter 27 by Baig, Hasnain, Mukhtarova and Rogger (2023) details how to use household survey data for government analytics. Household survey data is a readily available data source in many countries. In particular, national statistical authorities frequently collect labor force (and related household) surveys which are broadly consistent across time and developed using globally standardized definitions and classification nomenclatures. Governments can leverage this data to gain insights into the public sector workforce, which administrative of public servant survey data do not provide. In particular, such data allows governments to explore and compare public and private sector labour markets (as labour surveys comprise both populations), as well as labour markets in different regions of a country or over time. Figure 8, reproduced from the chapter, presents the differences in labor market features for Indonesia. The role of public sector employment in the formal sector varies from 15% of paid employment to 60%,

implying substantial economic vulnerability of some regions to changes in public employment practices and policies.

Figure 8. Sub-national patterns in public sector employment in Indonesia



Source: Baig et al. (2023)

Baig et al. (2023) show how such comparisons provide a wealth of insights into the input side of the public administration production function. To cite just three examples: Labour force data analytics enable governments to understand gender pay and employment differences between the public and private sector, and whether the public sector promotes gender equality in employment both in absolute terms and relative to the private sector. It helps governments assess pay competitiveness, providing answers to whether the public sector pays competitive wages compared to the private sector to attract talent while not crowding out private sector jobs. Household and labor force survey data can also shed light on the skills composition of the public sector workforce with respect to the private sector and identify in what areas the government is competing most intensively for skills with private-sector actors.

In short, such data can importantly complement payroll, HRMIS and public servant survey data to provide a more complete diagnosis of public pay and employment. To facilitate access to these analytics, Baig et al. (2023) also highlight the freely available [Worldwide Bureaucracy Indicators \(WWBI\)](#) - a set of indicators based on labour force survey data from over 200 countries by the World Bank to assess public and private labor markets and their interaction across the world.

Government Analytics Using Citizen Surveys: Lessons from the OECD Trust Survey

Chapter 28 by Brezzi and Gonzalez (2023) turns to government analytics using citizen surveys. Citizen surveys can help governments shed light on (certain) outcomes in the public administration function. In particular, they can capture the outcomes of public governance as perceived and experienced by people, through nationally representative population samples. For instance, citizen surveys are used in many countries to measure satisfaction with widely used public services (such as tax administrations, schools or hospitals).

As Brezzi and Gonzalez (2023) show, they can also be used to understand broader government outcomes. In particular, Brezzi and Gonzalez (2023) showcase the potential of such surveys for government analytics using the example of the OECD's Survey on the Drivers of Trust in Public Institutions (OECD Trust Survey). The survey measures trust of citizens in government and captures their expectations of and experiences with public institutions around key drivers of trust. These include

the competence of public institutions – including access to public services and their quality, as well as reliability; as well as the perceived values of public institutions – including integrity, openness to involving citizens, and fairness in the treatment of citizens.

Brezzi and Gonzalez (2023) showcase how governments have used evidence resulting from the survey to develop concrete actions for strengthening institutional trust. They also provide guidance for other governments wishing to apply this international benchmark on measuring trust in public institutions, following the [OECD Guidelines on Measuring Trust](#).

Government Analytics Using Measures of Service Delivery

In chapter 29, Andrews et al. (2023) go beyond this book's core focus on public administration to the frontline of service delivery and introduce Measures of Service Delivery (MSDs). The MSDs are (currently) focused on education and health. Mirroring this book's approach to conceptualize government analytics along the public administration production from inputs to outcomes, MSDs provide objective measurements of not only service quality (e.g. absenteeism of medical doctors, test results of students in school) but the entire process involved in delivering frontline public services (e.g. including input and process measures such as medicine availability; management practices in schools).

As such, the MSDs offer a granular view of the service delivery system, providing actionable insights on different parts of the delivery chain: from the physical infrastructure to the knowledge of frontline providers. These can be usefully viewed as 'outcomes' of the administrative environment embedded in government agencies under which these frontline providers fall. Measurement of these different factors of production allows practitioners to map out, conceptually, how each part of the production chain is fairing, and where improvements can be made, both at the individual provider level, as well as part of the wider production function for government outlined in figure 1. The MSDs also provide action-oriented visualizations of these indicators, enabling practitioners to design their educational policy in an intuitive and evidence-based approach.

Andrews et al. (2023) provide a roadmap to interested practitioners to produce MSDs, from design, implementation, and analysis to dissemination. For instance, they underscore that developing service delivery indicators requires considering and defining relevant dimensions of quality in a public service, and relevant inputs, with a premium on defining indicators according to policy objectives and resource constraints. Akin to the discussions in chapter 25 and 26, Andrews et al. (2023) also underscore the important to link MSDs directly to stakeholders who have the ability to enact change in the delivery system. Many of the steps involved in the analytics of core public administration are thus mirrored in the analytics of service delivery.

Government Analytics Using Anthropological Methods

Finally, the last chapter in the book, by Hoag, Heyman, Asdal, Reinertsen and Hull (2023) returns to Bridges and Woolcock (2023)'s call for embedding qualitative studies in government analytics. It considers how government analytics can be undertaken through an anthropological approach, a powerful means of collecting qualitative data. Anthropologists are most commonly associated with immersive, ethnographic methods such as participatory observation, and Hoag et al. (2023) apply that lens to studying public administration. As they underline, "anthropologists are motivated by an abiding concern with empirical rigor--a refusal to ignore any sort of data or to content oneself with a single view of an entity as multi-dimensional as a bureaucracy". Doing so risks government analytics overlooking factors which shape organizations.

The (anthropological) lens suggests that data collection should approach government analytics by: engaging with the staff who are involved at every level of the organizational, from senior officers to low-level staff and contractors, and among different demographic groups; studying everyday documents; and, watching how officials interact. By observing every part of what public officials do at work in a holistic

way, from their interactions in corridors and meetings to the protocols they observe in their relationships, the analyst undertakes the most holistic data collection strategy feasible.

Such an approach requires analysts to develop relationships with a variety of types of people in an organization and have open-ended conversations about their work and unrelated issues to understand their values and perspectives. It also requires analysts to engage in participant observation to capture activities that may be so routine they go unnoticed by public officials and are not self-reported in surveys. Moreover, it requires analysts to collect the widest practical range and amount of qualitative and quantitative data, even if it cannot be easily standardized. Finally, it requires analysts to study not just data, but also the interactions and microscopic decisions that affect the gap between stated policy goals and the actual work being carried out by public officials – for instance by studying what public officials say and do, including the rationales they draw on for their decisions.

Hoag, Heyman, Asdal, Reinertsen and Hull (2023)’s chapter thus underscores that government analytics can incorporate methods which provides insights into aspects of the public administration function which quantitative microdata cannot. It also brings the book back full circle to the first cross-cutting chapter in Part 1, by Bridges and Woolcock (2023). Bridges and Woolcock (2023) emphasized the importance of a holistic and “balanced data suite.” Part of this “suite” is ensuring that problem analysis in public administration is holistic; that important parts of a problem are not neglected due to the absence of quantitative data and measurement – which in turn puts a premium on qualitative and anthropological methods to complement insights gleaned from the microdata.

Holistic analytics, of course, benefit not only from triangulating different (quantitative and qualitative) methods, but also from triangulating and integrating the analytics of different components of the public administration production function which, as we had argued in this chapter, can be shed light on with a wide variety of data sources. The conclusion of this chapter thus turns to this challenge: how to effectively integrate the different approaches and data sources in the government analytics toolbox to diagnose major challenges in public administration holistically.

Conclusion: Towards an Integrated, Holistic Analytics of Core Challenges in the Machinery of Government

How to do government analytics? As this summary chapter underscores, this book presents a wealth of approaches and data sources available to governments to improve the analytics of the machinery of government, and identify evidence-based improvements. Across 30 chapters, it provides detailed guidance on how to utilize each of these approaches or data sources – from administrative data stemming for government payroll systems, to surveys of public servants, to surveys of citizens, to name a few. Many of these approaches rely on data that governments already collect as part of their day-to-day operations and which can be repurposed for government analytics.

A summary of the approach outlined in the Government Analytics Handbook would be something like this: Frontier government analytics would integrate the analytics of the data sources we have outlined across the Handbook into standard government practice. It would generate them at a scale sufficient to inform the decision-making of individual managers. And it would make them easily accessible to those managers across government organizations and departments. For instance, dashboards integrating data sources and updating in real-time would provide managers with comparisons for their staffing issues, process quality, the perceived quality of management practices, and so on. They could keep tabs on outputs and outcomes, from task completion and case productivity to external assessments from citizens. Comparative data would allow them to benchmark themselves against other government organizations, or where appropriate, other countries. Managers would be capable of understanding the limitations and strengths of different analytics. The result would be a transformational change towards leveraging data to strengthen public administration.

We hope this book inspires governments and scholars new to government analytics to draw on their readily-available data to undertake rigorous government analytics; and governments already pursuing government analytics to leverage the book's findings and suggestions to further enhance the methodological rigor and impact of their government analytics work for management improvements. As noted in chapter 1 of this book, data analytics to improve management is a staple in private sector organizations; we hope our book inspires public administrations to not remain behind.

Integrating Approaches from Distinct Chapters

As a first step, the (government) analytics of individual data sources detailed in the different chapters in this book can provide important insights into different components of the public administration production function on their own. Once governments have analytical tools for several components (e.g. payroll diagnostics in place, and surveys of public servants), the possibility frontier for government analytics further expands. One important expansion is that the integration of multiple government analytics data sources enables governments to diagnose and address major government challenges holistically (Farooq and Kim, 2023). In some cases, such as customs, such integration is a vital part of measuring mission attainment (Duhaut, 2023). In others, it expands the insights that can be gleaned to beyond those available from individual data sources alone and thus enables a holistic perspective on public administration.

To illustrate, consider how the integration of government analytics data sources detailed in this book can shed light on two key challenges in public administration: corruption and personnel management.

Chapter 8 of this book, by Anderson, Bernstein, Kim, Recantini and Schuster (2023) showcases this integration using the case of corruption. Corruption is, like many other major challenges facing public administration, a multidimensional phenomenon, affecting public administration across its production function. Anderson et al. (2023) map how corruption can be detected in its multiple dimensions using the microdata approaches outlined in the book. Along the production function, corruption can be detected with, first, different input data. For example, payroll data can be drawn on to detect ghost workers (among others); HRMIS data can be drawn on to detect nepotism risks in recruitment, e.g. when family members with similar last names are hired; procurement data can be drawn on to detect procurement fraud and collusion risks (e.g. when organizations grant contracts without competitive bidding); and expenditure data can be drawn on to, e.g., detect off-budget spending at risk of embezzlement.

Second, corruption can be detected in the processes and practices which convert inputs into outputs, and generate norms and behaviors in public administration. For instance, surveys of public servants can measure unethical leadership by superior (e.g. pressures on subordinates to collude in corruption), as well as ethical norms and integrity of public servants themselves (e.g. their perceptions of corruption of colleagues).

Third, corruption can be detected in output and outcome data (e.g. in tax audit case data, or through surveys of citizens querying them about bribery requests from public officials). Understanding at a granular level where in the public administration production in which organization and which department inside government corruption occurs enables governments to identify comprehensive but tailored and evidence-based solutions to curbing corruption.

Using corruption as a thematic focus, Anderson et al. (2023) thus showcases how the approaches presented in this book can be combined and leveraged to holistically diagnose major obstacles to more effective public administrations. This integration of data sources to diagnose major challenges to public administration through government analytics is, of course, not limited to corruption.

Consider, as a second example, civil service management – and how the integration of analytics across the public administration production function can aid better personnel management in government. As chapters 9 and 10 underscore, data analytics of payroll and HRMIS systems can diagnose personnel as an input into the production function. To cite just two illustrative examples: pay equity can be assessed

across groups (e.g. by gender) and institutions, and retention challenges can be pinpointed, by comparing turnover rates for public servants at, say, different ranks or in different regions of the country. Such data can be complemented by labour force survey data, as chapter 27 underscored – for instance to understand whether public sector pay is competitive relative to the private sector, or whether the workforce allocation across the territory is appropriate given the respective number of service users. Other input data – e.g. on budgets – can help understand whether productivity problems might arise from the lack of complementary inputs to personnel in the production function.

Data on processes and practices can then shed light on whether government effectively convert personnel inputs into outputs and outcomes. As Part 2 of this book underscores, surveys of public servants can measure the experience of public servants with management practices, as well as the culture, attitudes and behaviors in public administration which mediate the conversion of inputs into outputs. For instance, is leadership by line managers effective? Are public servants motivated to work hard? Anthropological and qualitative methods – as detailed in chapter 30 – can enrich and contextualize survey responses through participant observation and detailed case study work. As chapter 13 underscored, government analytics can also assess processes converting inputs into outputs through administrative data – to assess, for instance, whether institutions follow due procedure when evaluating the performance of public servants. It can thus complement the experience portrayed by public servants in employee surveys.

Lastly, data on outputs and outcomes can help diagnose and improve personnel management. For instance, as chapter 17 details, data on task completion can help understand where in government public servants are effectively completing tasks, and where not. Case data, as detailed in chapters 14 and 15, can help understand – in public sector organizations which complete cases – differential productivity of public servants more broadly, while surveys of citizens can help understand differential citizen satisfaction and trust with public services across institutions and regions in a country.

Strengthening Public Sector Management Through Government Analytics

At the centre of government are the public officials that navigate the strategic and daily decisions that determine public policy and the effectiveness of public administration. The information public managers have, and the extent to which they use it for running public organizations, drives the efficacy of government. An effective system of government analytics empowers officials to manage government based on evidence of the administration's current realities.

For example, offering wage increases that do not take into account the long-term financial implications risks endangering an agency's capacity for future capital investment. By modelling wage changes along the lines that Tavares et al. (2023) suggest, the consequences of any particular choice are made clear to the decision-maker. By further linking payroll data to outcome data (e.g. case data), such as suggested by Best et al. (2023), the decision-maker can understand whether pay differentials across institutions and parts of the country are cost-effective, allowing them to target pay increases based on evidence of its relationship to service delivery.

By collecting survey data on the quality of management at a scale sufficient to generate credible measures at the unit level, managers can see where their strengths are relative to their peers. They can also identify where they have room for improvement, as can other members of their organization or public service, enabling support systems to be put in place when management fails. The quantitative data enables informed conversations to begin and more targeted qualitative reviews to take place (in line with the discussions in Bridges and Woolcock (2023) and Hoag et al. (2023)).

At a more aggregated analytical levels, linking data from surveys of public servants to task data can help governments understand which (perceived) management practices in government are associated with more effective task completion by public servants, and support their broader dissemination. Linking data from surveys of public servants to payroll data can help offices of personnel management understand which managers and management practices help governments retain public servants and avoid turnover.

Thus, empowering public officials with government analytics can transform the basis for personnel management – and public administration more generally. It enables government decision makers to complement their tacit and practical knowledge about public administration with evidence-based and data-informed insights to improve how the machinery of government is run.

Almost all officials manage, organize or process in ways that could usefully be analyzed as an input to strengthening government functioning. As such, communicating analytical insights to government officials at the time that they are making a decision is a critical link in making analytics impactful (as discussed in Schuster et al. (2023) and Hoover et al. (2023)). One approach is to support decision making through a human resource management dashboard which brings together the distinct data sources a government has available to visualize the strengths and areas for improvement in personnel management to decision-makers in each government institution.

In summary then, the Government Analytics Handbook offers governments and other analysts frontier evidence on good practice for a wealth of government analytics tools and data sources, and pathways to integrate them to diagnose core challenges public administrations face today. By implementing any of the approaches in this book, government or its stakeholders are building a platform for managers and decision-makers to do more with the public sector's finite resources.

Even with 30 chapters, of course, our book does not cover all potential data sources and approaches to government analytics. There will always be new analytical opportunities on the horizon. How government can continuously prepare for a transition to new analytical approaches is dealt with in the third chapter of the Handbook. It argues that to capitalize on the opportunities of analytics, government institutions themselves require reshaping: through enhanced structures for planning; by equipping public sector managers with a greater ability to consume and interpret analytics; and, through the development of a new architecture of analytical units.

Above all, building the culture that binds public administrators and public administration together requires a commitment from senior management and individual officials to using evidence on their own administration in their decision making. As such, we invite all public servants and related stakeholders to capitalize on the insights summarized in this chapter and Handbook, and push forward the quality of management of their administration. The quality of government around the world will be shaped by how its decision makers leverage data to strengthen their administration.

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