

# Government Analytics Using Household Surveys

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## Abstract

The chapter presents a guiding framework for using household survey microdata, readily available to most governments, to develop insights into the structure of the public sector workforce and the qualities of its compensation practices. National statistical authorities frequently collect household surveys with detailed information on labor force participation which are broadly consistent across time and developed using globally standardized definitions and classification nomenclatures. This allows governments unique insights into the public sector workforce not afforded from relying solely on administrative data sets including the ability to juxtapose the demographics and skills composition of the public sector workforce with respect to the private sector and assess the relative equity and competitiveness of public sector compensation practices. The chapter provides illustrations of the insights into public sector employment and wages that can be generated from this framework using examples from the World Bank's 'Worldwide Bureaucracy Indicators' (WWBI). Such insights can inform policy choices related to managing human resources in the public service.

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## Practitioner Points

- Governments routinely conduct household surveys in order to understand the populations they serve, and for targeting public policy and informing policy debates. Moreover, many of these surveys record a dedicated and detailed set of variables on the labor market experiences of people in the country including whether respondents work in the public or private sectors. By collecting comparable data across the two sectors, household surveys provide a foundation for understanding the characteristics of public officials in juxtaposition of their private sector counterparts - not possible through administrative data sources alone. As such, **including precise and coherent indicators of sector of employment in household surveys enables their use in understanding the characteristics of public sector workers.**
- **Given the unique nature of the public sector, time-series and international benchmarks and comparisons are critical for understanding the current state of government functioning.** The precision and consistency with which household surveys are conducted across time opens up the possibility of understanding the longitudinal dynamics of the public sector relative to the private sector. Similarly, ensuring such surveys collect data in line with globally standardized definitions and classification nomenclatures enables comparisons across countries.
- **Setting up household surveys in this way allows government to juxtapose any feature of individuals in the public and private sectors that surveys have collected data on.** Demographic variables allow for an analysis of how gender-related differences in pay vary across sectors, regions, organizations and so

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or those of the Executive Directors of the World Bank or the governments they represent. The approach laid out here leverages the methodological and operational guidelines followed by the Bureaucracy Lab in the construction of the World Bank's Worldwide Bureaucracy Indicators (WWBI), a novel cross-national data set on public and private sector employment and compensation practices. The data set was derived from over 1,000 nationally representative household surveys from 202 countries and territories between 2000 and 2020 providing over 300 granular indicators on the composition, the demographics, and the compensation of public sector workers. However, this chapter goes beyond that effort to showcase how such an approach can be replicated by researchers, development practitioners, and policymakers to gain a better understanding of the personnel dimensions of state capability, the footprint of the public sector within the overall labor market, and the fiscal implications of the public sector wage bill.

on. Assessments of skills composition of the public sector workforce with respect to the private sector identify in what areas the government is competing most intensively for skills with private-sector actors and what that competition is doing to wages.

- Taking household surveys as the foundation of analytics around the equity and competitiveness of public sector compensation practices is a relatively low-cost approach to the analytics of the personnel determinants of state capacity. However, **the usefulness of these surveys is underpinned by the representative nature with which sampling is done and interviews are conducted to ensure that the resulting data provides a robust estimation of labor force participants.** This requires coordination between agencies of public employment and national statistical agencies.
- **Detailed data from household surveys on the distribution and remuneration of public employees can help identify more nuanced, targeted, and politically feasible reforms** that make explicit the difficult trade-offs in employment and compensation policies. Such an evidenced-based approach is necessary as, historically, public sector employment reforms have often been done in the context of economic crises, with a primacy toward blunt, short-term fixes which can have adverse impacts on long-term growth and welfare, and often create distortions and perverse incentives.

# 1 Introduction

Effective management of public sector employment and compensation is a vital activity of governments, with broad implications for fiscal sustainability, public sector productivity, and the competitiveness of the overall labor market. The wages of public sector employees consume a significant proportion of government expenditures. Across the world, government expenditures on employee compensation represent, on average, 30 percent of total expenditures (Hasnain et al., 2019). Spending on public sector salaries comes at the opportunity cost of spending on public sector programs.

At the same time, human resources in the public service are essential providers of government services, the provision of infrastructure, and the effectiveness of regulation (Arizti et al., 2020; Moynihan and Beazley, 2016; Ingraham et al., 2003; Rasul and Rogger, 2018). The size and nature of public sector wages affect the selection, retention, and motivation of public sector workers, which in turn, impacts productivity, the amount and quality of government outputs, and public service provision (Finan et al., 2017).

These questions do not matter simply because they impact the quality of government functioning. The public sector is a large employer, accounting for, on average, 37 percent of global formal employment (Baig et al., 2021). Changes in government wages are likely to produce significant effects on the national labor market and the overall economy, including potentially crowding out recruits in the private sector (Behar and Mok, 2013). In many low- and middle-income countries, especially those experiencing fragility, public sector employment is the core ingredient of the political settlement and wage bill reforms have immediate and often severe implications for political stability, peace, and security (Gifford, 2006).

There are thus several important questions about the public sector workforce that governments regularly need to address. What is the appropriate level of employment in the public sector as a whole, and for essential workers like public administrators, teachers, and doctors in particular? Does the public sector pay competitive wages compared to the private sector to attract talent while not crowding out private sector jobs? Does the public sector promote gender equality in employment both in absolute terms and relative

to the private sector? And are public sector pay and employment practices contributing to robust and dynamic labor markets at the national and regional levels?

Answering these questions requires high-quality micro-data on public sector employment and compensation and comparable data for the private sector. Utilizing household surveys as a source of information on public employment offers certain advantages over administrative data. These are often routinely collected by national statistical organizations for informing broader policy goals and thus represent a cost-effective tool for government analysts to utilize. Household surveys provide a rich, consistent, and regularly updated set of variables for a variety of worker characteristics in the public and private sectors that enable robust, controlled comparisons between the two groups. Such surveys allow data to be drawn from the public and private sectors in a common manner. Thus, these data often represent a richer source of insights than are available from administrative data alone.

This chapter is targeted towards government officials, development practitioners, and researchers who aim to gain a better understanding of the structure of the public sector labor market and its implications for the overall labor market. It begins by introducing the advantages of this survey-based framework and key areas for caution. It showcases the main features of the methodology and presents guidance for conducting analysis to delineate trends from these surveys. It goes on to provide guidance on how improvements in the design and conduct of labor force surveys allows for even more granular analysis. Finally, it illustrates the breath of insights that can emerge from a household-survey-data-founded study of public administration. The approaches outlined here are a natural complement to those presented in Chapter SHRM, trading off granularity of data with comparability with the private sector.

## 2 The Power of Using Household Surveys for Government Analytics

Nationally representative household surveys, collected by national statistical authorities, are some of the most professionally conducted surveys in the world, and are frequently supported or improved through consultations with multilateral organizations data teams which possess substantial experience in such exercises. By collecting data on a representative sample of the whole or some subset of the population, such surveys provide a window into the lives of those on which data was collected. When surveys collect data on whether respondents work in the public or private sectors, they provide windows into life in those sectors.

This chapter will focus on employment-related variables in such surveys, and as such on the labor force modules in household surveys. When these modules are the dominant concern of the survey, the survey is typically classed as a ‘labor force survey’. In much of the rest of the chapter, we will use these terms interchangeably. However, most of the principles of the discussion carry over to other elements of standard household surveys, such as consumption patterns drawn from consumption modules.

### 2.1 The Strengths of a Survey-Based Approach

Governments routinely rely on household survey sources to generate headline indicators of the health of labor markets and of the overall economy. Insights emerging from these surveys are often used in the design of a wide array of economic and social policies. For example, information on the share of employed (and unemployed) individuals within the labor force frequently have direct consequences on the monetary and fiscal policies of the government. Unemployment rates are often used as proxies for the vitality of the labor force and are used – in combination with inflation rates – in determining interest rates by central banks.

The quality of the data makes them an attractive foundation for government diagnostics of relative labor market characteristics and dynamics. Specifically, utilizing nationally

representative labor force survey data to characterize public and private labor markets offers five unique advantages for governments and analysts over other sources.

First, labor force surveys provide a rich, consistent, and regularly updated set of variables for a variety of worker characteristics in the labor market. Given the investments governments have made in methodological rigor, effective implementation, and quality assurance, these surveys are one of the richest sources of information on population characteristics available. Household surveys provide coherent descriptions of the composition of individuals within households, their demographics and qualifications, their consumption behaviours, the nature and sector of their participation in the labor market, detailed indicators on the industries and occupations they are engaged within, and their salaries and other sources of compensation (including in-kind payments, government assistance programs, and social-security benefits).

Second, labor force surveys undertake the same measurement approach across the public and private sector labor markets. This is a unique source of advantage of these surveys for measuring state capacity since this data is simultaneously collected for workers in both sectors from the same sample frame in a coherent manner. Administrative data sources (while being a potentially more accurate and detailed measure of employment and wages in the public sector) only include information on public sector employees and at times only for the employees of a particular ministry or organization. It is extremely unlikely that any singular administrative data set would cover not only workers employed across a diverse set of economic activities (from agriculture, mining, manufacturing, and the services sector) but also include information on both public and private sector labor force participants.<sup>1</sup> Even if this does exist, such data will rarely be consistent with administrative data from other countries, complicating international comparisons.

Third, the granular nature of the underlying data ensures that labor market models are based on representative data sourced from across the economy. These surveys often sample thousands of employed individuals and are based on a meticulously designed sampling

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<sup>1</sup>There are notable exceptions to this statement such as the Brazilian Ministry of Labor and Employment's 'RAIS' dataset which contains information about employees and business for 97% of the Brazilian formal market.

frame based on national census data, allowing for a close and accurate approximation of local labor markets. This reduces the assumptions on which analysis is based – the data is allowed to speak for itself – and allows for a decomposition by characteristics of workers where sample sizes are sufficiently large.

Fourth, household surveys may represent a more complete view of the public sector workforce than even administrative data sets allow. Public sector administrative data are often too restrictive in terms of defining who are included in their measurement. For example, contractual workers have become an essential part of the public sector workforce, working alongside permanent staff in the promulgation of regulations and the delivery of social services. In many developing countries, they also represent a sizeable proportion of the public sector education and healthcare workforce. However, they are not counted as formal public employees in many administrative systems. That is often the reason for their contractual status. Given that contract workers are often exempt from budgetary limits on spending, their recruitment allows ministries to circumnavigate budgetary conditionalities against overspending on personnel.

This impairs the ability of governments to assess the true size of the public sector workforce. Further, given that these data sets are often unique to individual public sector organizations, this determination of who does or does not constitute a public sector worker may differ across organizations. Both of these factors would bias any estimation of the size of the public workforce which weakens the ability of governments to track wage bill spending. Survey data, on the other hand, are not limited by this distinction. Given that they are collected directly from individuals who can elaborate on their sector employment, surveys can allow for a better determination of the size and structure of the public sector workforce.

Finally, household survey data is typically collected with research and diagnostic objectives in mind. Administrative data sets are collected for a variety of non-statistical reasons such as human resource management, program administration, or other regulatory or enforcement purposes. Therefore, administrative data in their “raw” form and may not be suitable for statistical analysis.



## 2.2 Areas to be Cautious in a Survey-Based Approach

It is important to also point to the caveats associated with the use of survey data. The ability of the labor force surveys as a tool for generating insights into the nature and organization of public sector human resources is only possible with a rich, complete and consistent collection of data on labor force participants in general, and the public sector workforce in particular. Given the self-reported nature of household surveys, respondents may not be able to fully articulate or comprehend the nuances within their responses around their nature of employment. While these surveys are designed and extensively piloted before their promulgation with particular care being paid to how questions may be interpreted to ensure quality of responses, there may be lingering imprecision within variables that define individuals as working in specific sectors.

Utilizing a more broadly defined public sector identifier is likely easier for respondents to accurately answer and allows for a more comprehensive comparative analysis between the public and private sectors. However, this may then make the definition of public sector included in the survey unfit for particular purposes. It is often difficult to differentiate between, for example, federal and state employees or those that are employed within specific ministries as opposed to those employed within state-owned-enterprises.

The second area for caution is the representativeness of respondents of the underlying population of public and private sector workers. Labor force surveys are, by definition, a sample of the working age population. When designing the sampling frame, surveys often strive to ensure a representative sample in terms of age, gender, racial and ethnic demographics. Some surveys aim to sample a representative share of employed and unemployed individuals and those not active in the labor force. However, they rarely if ever explicitly attempt to ensure a balanced sample of public and private sector workers. As such, the analyst must assess whether the sampling approach might have biased data collection towards one or the other sector's employee's, or changed the nature of measurement in either sector.<sup>2</sup>

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<sup>2</sup>To counteract these two concerns, governments can pay particular attention to limiting the presence of these biases in two ways. First, they can ensure that the selection of respondents is based on high-quality census data that guarantees that the sample selected is a good representation of the overall population of the country, and more importantly is a realistic representation of labor force participants in the public

## 3 Setting Up the Analysis

### 3.1 Capitalizing On Current Household Surveys

What are the features of a survey necessary for it to be useful for government analytics? The answer to this question will be determined by the specific analysis the analyst is intending. This chapter therefore follows the requirements of an analytical framework used by the World Bank in understanding public and private sector labor markets in the development of the Worldwide Bureaucracy Indicators (WWBI). The WWBI is a unique cross-national data set on public sector employment and wages that utilizes global repositories of household survey data from 202 economies to present a globally consistent and analytically rigorous set of indicators across five categories: the demographics of the private and public sector workforces; public sector wage premiums; relative wages and pay compression ratios, gender pay gaps; and the public sector wage bill.<sup>3</sup>

WWBI indicators on public employment track key demographic characteristics including the size of the public sector workforce (in absolute and relative numbers), the age of their workforces, and distributions of employees across genders, industries, income quintiles, and academic qualifications. Variables on compensation capture both the competitiveness of public sector wages (compared to the private sector) as well as wage differentials across industry or occupation of employment, genders, education, and income quintiles within the public and private sectors as well as pay compression ratios in public and private sectors.

What features of a survey make it eligible for inclusion in the WWBI, and more broadly are useful features for the analytics of public and private labor markets? Since the WWBI focuses on national aggregates, the survey must be representative at the country level (rather than, for example, just urban areas). Correspondingly, the enumeration of the survey used in analysis must have taken a sampling approach that attempts to represent

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and private sectors. Second, they can look to surveys that include tens of thousands (or even higher) number of respondents to ensure that any potential weakness in sample selection is alleviated through a large sample size.

<sup>3</sup>Further details on the construction of the WWBI are available in a technical note along with the corresponding data here. WWBI data is displayed on this dashboard and underlying analytical code has been made available on Github.

each unit of observation across the country equally. Beyond the WWBI, if the analyst is only interested in public sector labor markets in urban areas, the survey should have appropriately sampled within the requisite conurbations of the country.

A second set of requirements relate to the size and composition of surveys that were included in the WWBI. Specifically, attention was paid to the sample sizes for major categories of respondents. The ability of the WWBI to properly characterize the public and private sector workforces is dependent on the underlying surveys possessing large enough samples of these two categories of workers such that any estimates would approximate the demographic and compensations of the actual labor forces which they model. Within the WWBI framework, surveys with fewer than 200 observations for either labor market or comprising less than five percent of all employed individuals within a survey were excluded from analysis. More broadly, any survey should be judged on its likely ability to make statistically valid inferences on the underlying population.

Third, the survey should have a sufficient sample size for key variables so as not to be dropped by the WWBI's quality filters. There are three sets of variables we use for the WWBI presented in Figure 1. If a survey does not include any of the variables shaded in green presented in Figure 1 or has over 40 percent missing/miscoded observations for any of those variables, the survey is disregarded. For surveys that are missing any of the variables shaded in blue or have greater than 40 percent missing/miscoded observations in any of those variables, the specific set of variables related to that module are excluded. The gray variables are additional variables that are not universally used in the construction of the WWBI variables, so we do not require them. However, those related to sampling are required if sampling weights were used. Finally, the unshaded variables are frequently used to investigate outliers and so are useful to have if available.<sup>4</sup>

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<sup>4</sup>The thresholds used by the WWBI are a product of empirical investigations into the robustness of the indicators to different levels of missingness. More details are provided in various technical reports of the distinct versions of the WWBI.

<b>META DATA VARIABLES</b>
Survey ID
Country ID
Year of survey
Month of the interview
Household ID
Individual ID
Household sampling weight
Strata
Primary sampling units ID
<b>DEMOGRAPHICS</b>
Household size
Gender
Age
Urban/Rural
Education module application age
Ever attended school
Attending school
Years of education
Level of education (No education, primary, secondary, tertiary)
<b>LABOUR MODULE</b>
Labor module application age
Labor status <ul style="list-style-type: none"> <li>• Employed</li> <li>• Unemployed</li> <li>• Non-in-labor force</li> </ul>
Employment status <ul style="list-style-type: none"> <li>• Paid Employee</li> <li>• Non-Paid Employee</li> <li>• Employer</li> <li>• Self-employed</li> <li>• Other, workers not classifiable by status</li> </ul>
Number of additional jobs
Sector of activity (public v. private) <ul style="list-style-type: none"> <li>• Public sector, Central Government, Army, NGO, State owned company</li> <li>• Private</li> </ul>
Industry classification (Minimum 1 digit level but <u>3 digit</u> level required for industrial decomposition)
Occupational classification (Minimum 1 digit level but <u>3 digit</u> level required for occupational decomposition)
<b>WAGE MODULE</b>
Hours of work in last week
Last wage payment

**Figure 1: Variables required for inclusion of survey into WWBI**

The availability of variables outlined in Figure 1 provides the analyst with a basic setup for labor market analysis. Many such analyses look to compare contemporary results with comparisons over time or across countries. This requires the availability and harmonization of variables across surveys. The WWBI aims to produce statistics that can be compared across time and space, and thus faces issues of the classifications of

employees, the definition of the public sector and the formulation of wages.

The classification of employed individual, paid employee, and public paid employee is based on labor and employment status and the type of sector. Definitions for total, paid, and formal employment are based on the ILO's International Classification of Status in Employment (ICSE), making the WWBI and ILOSTAT databases cross-compatible (fundamental differences in survey coverage, representation, sample size, and timing notwithstanding). According to the ICSE, total employment is defined as: "Persons in employment are defined as all those of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit. They comprise employed persons 'at work', i.e., who worked in a job for at least one hour; and employed persons 'not at work' due to temporary absence from a job, or to working-time arrangements (such as shift work, flextime, and compensatory leave for overtime)" (ILO, 2022). Paid employment refers to a subsection of total employment and includes only salaried workers and excludes, individuals employed as unpaid or own-account (commission-based) employees, employers, and those that are self-employed. Formal employment is a further subset of paid employment and counts those who are employed in formal occupations (possessing written contract, or having access to benefits like health insurance, pensions, or union membership).

A globally harmonized definition of the public sector is hindered due to issues of comparability emerging from the heterogeneous definition of public employees across countries. To avoid this, the WWBI, as a guiding principle, utilizes the broader definition of 'public sector' as opposed to the 'general government' as defined by the IMF's Manual on Government Finance Statistics (GFS). Specifically, the public sector consists of all institutional units controlled by the central and subnational governments as well as public corporations that are engaged in a market-based activity. Utilizing this broader definition allows for a cleaner comparison across national surveys.

To make wage data as comparable as possible across surveys, the WWBI denotes the income associated with the occupation of employment used in the analysis only (which the individual dedicated most of their time in the week preceding the survey) and excludes

bonuses, allowances, and other in-cash/-kind payments from the same job as well as all additional sources of income (from other jobs) or investments and transfers. Due to the almost complete lack of information on taxes in most household surveys, the wage from primary job is not net of taxes. For all those with self-employment or owners of own businesses, this corresponds to net revenues (net of all costs excluding taxes) or the amount of salary withdrawn from the business.<sup>5</sup>

Wage information in the surveys is reported in each country's local currency units, with a diverse array of periodicity. Great care should be taken to identify the exact frequency of income for each individual within the surveys and convert all wages to weekly (or a common unit of) wage after accounting for varying levels of hours worked to ensure credible comparisons across individuals and groups. Additionally, to control for the effect of possibly spurious outliers, the wage variables in the WWBI are 'winsorized' by limiting extreme values in the survey data at the top 0.01 percent level.<sup>6</sup> More broadly, analysts may want to be cautious with wage information that seems like an outlier from the general distribution of a particular survey.

Overall, to be useful for government analytics, existing household surveys should have sufficient coverage of the population and relevant variables, be of sufficient size, and where comparisons to international surveys are required, have appropriately harmonized questions with international standards. Fitting these, individual country efforts can always be integrated into existing indicators such as the WWBI or compared to relevant surveys in other countries of interest.

## 3.2 Extending Data Collection

What if appropriate household surveys do not exist? Government, independent organizations, or even the individual analyst, may be in the position to create and field such a survey. In many instances, project teams from the World Bank have run large nationally representative household surveys themselves to collect information to aid policy guidance.

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<sup>5</sup>Certain surveys do include information on work benefits, such as health insurance and social security, but these are not monetized and cannot be added to wages to provide an estimate of total compensation.

<sup>6</sup>Winsorizing or winsorization is the transformation of statistics by limiting extreme values in the statistical data to reduce the effect of possibly spurious outliers.

In India, a private sector organization, the Centre for Monitoring Indian Economy complements the government's own labor force survey. By operating the “world’s largest household panel survey” with over 2 million individual respondents covering 236,000 households three times a year, the frequency of up-to-date labor market data for government and other stakeholders is increased.

Household surveys that are optimized for government analytics could solve the issues with representative sampling identified above by targeting populations of public and private sector workers in a way that ensures equal probability of inclusion. Such sampling could be done at the subnational level and targeted at those sections of the labor market where government is particularly prevalent or is aiming to emphasize recruitment. Information typically not collected by household surveys but of substantial interest to those aiming to understand public sector labor markets could be collected, such as on perceptions of the public recruitment process at different levels of government and how features of the public sector (such as perceived wage and pension benefits) affect respondent’s wider labor market choices. Finally, sector variables, such as what specific parts of the government a respondent works in (or its private sector comparator) would allow for analyses that are more precisely targeted at particular job categories.

## **4 Insights Emerging from Household Surveys**

Such a systematic utilization of labor force data can allow for the delineation of unique stylized facts on public sector employment and compensation that can provide valuable insights for governments. This section provides illustrative examples of insights into the (relative) nature of government labor markets emerging from household surveys.

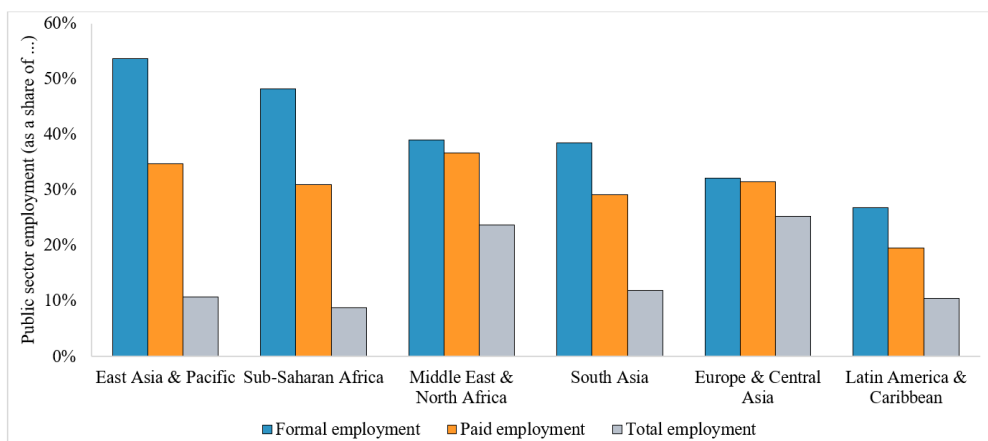
### **4.1 The Size of the Public Sector in the Overall Labor Market**

A foundation stone of government analytics is the size of the public sector as a share of the national, regional or local labor market. This topic relates to questions about the appropriate size of government and its impacts on private sector labor markets.

The WWBI reveals that the public sector is a major source of employment in most countries; often the single largest employer. More specifically, the public sector accounts for an average of 16 percent of total employment and over 30 and 37 percent of the paid and formal employment respectively. The first metric measures the overall labor market footprint of the public sector while the latter two are more precise measures of the public sector’s relative size within the salaried and formal segments of the labor markets.

The size and importance of the public sector varies extensively by country income and region (see Figure 2). While less than 9 percent of the total labor force of the average nation in sub-Saharan Africa is employed in the public sector, the governments of the Middle East and North Africa employ a quarter of the entire labor force there. This difference is even more stark when looking at formal employment. Such comparisons can be done at the sub-national level, and allow the government to formulate a sense of how ‘imposing’ its employment is as a part of the total stock of formal jobs.

These basic statistics are an illustration of the wealth of information contained within household surveys that can help governments understand the importance of the public sector not only as a provider of essential public services but a key determinant of the health of labor markets which can help practitioners make more informed policy decisions.

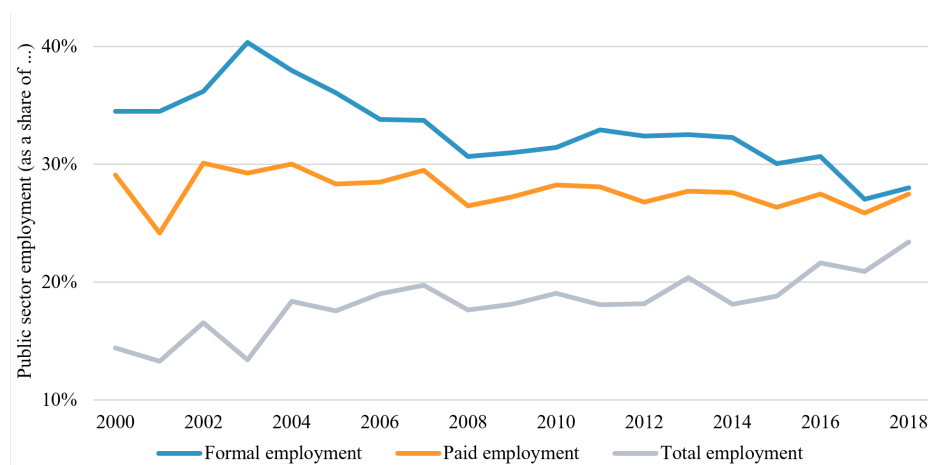


**Figure 2: The public sector is a large employer globally with large regional differences; Source: WWBI**

Further, tracking these indices over time can help governments understand how the share of the public sector has evolved over time. Figure 3 illustrates that for the world as a whole, a convergence is taking place in terms of the relative size of the public sector.



While the public sector’s share within total employment has increased, public employment as a share of formal employment has steadily declined over the 18-year period studied. The former is likely due to the fact that as countries develop, their public sectors are called upon to provide more and increasingly complicated services. Conversely, the fall in the public sector’s importance within the formal labor force is in part driven by the increased penetration of formal contracting and benefits within the private sector. Regional analysis shows that the relative importance of the public sector within formal employment fell faster and further in middle-income countries than in high- or low-income countries, both of which experienced relatively slower rates of growth of labor force productivity and per capita incomes (Cho et al., 2012).



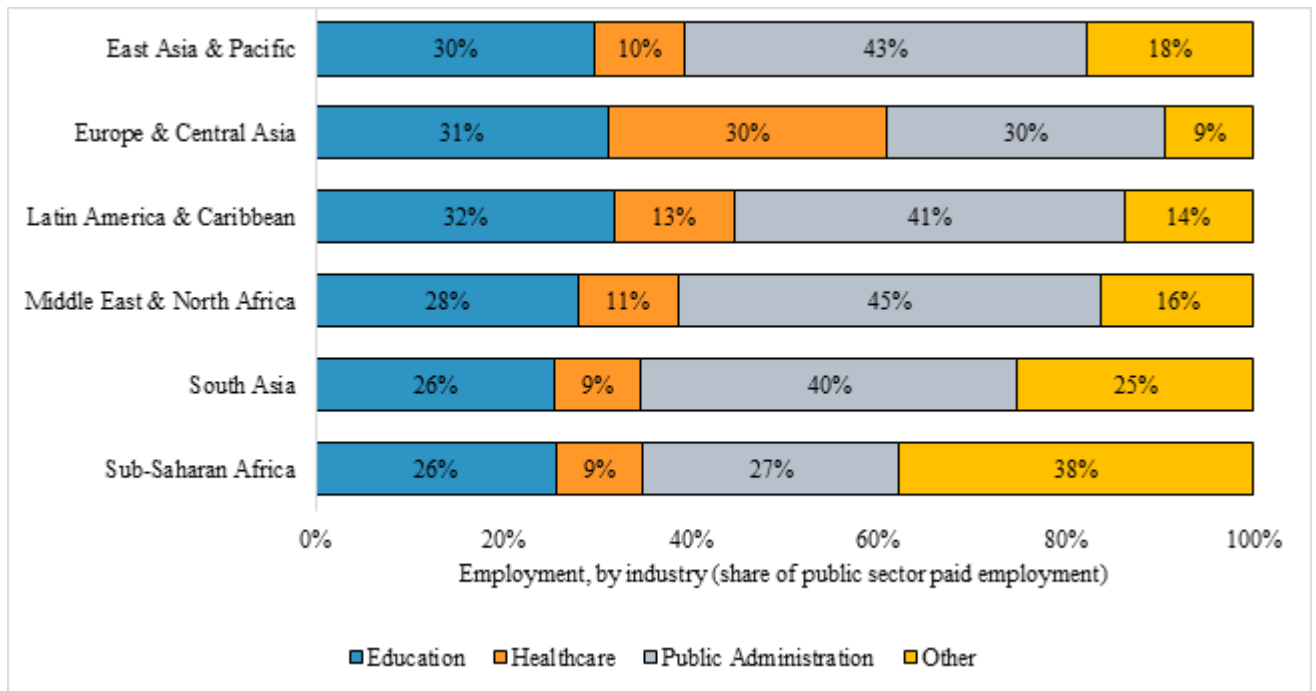
**Figure 3: Convergence in the relative size of the public sector workforce over time; Source: WWBI**

Moreover, household surveys allow policy practitioners to further disaggregate public employment by industries. Countries often have unique legal and occupational classifications of public sector employees complicating cross-national comparisons. In some countries, all government employees are classified as civil servants, meaning they enjoy distinct legal protections. In others, only management and policy staff are categorized as civil servants, with others, particularly service delivery staff, enjoying fewer privileges and are governed by labor codes similar to private sector employees.

The WWBI reveals that the public administration workforce (which includes individuals responsible for the general administration of the government; the provision of defense, justice, police, and foreign affairs; and the management of compulsory social security) is

the single largest segment of public sector workforce in most countries. On average, 35 percent of the public sector workforce is employed in public administration, followed by the education and healthcare sectors which employ, on average, 30 percent and 19 percent of the public sector workforce, respectively. Together these three industries account for over 80 percent of all public sector employees (Figure 4). The oversized nature of the healthcare sector within the Europe and Central Asia region is driven primarily by the extensive public health systems within countries in the EU-27 group.

Additionally, the “Other” category accounts for public sector employment in all remaining walks of economic activity, ranging from construction and infrastructure, the provision of public utilities, or workers employed within SOEs other than those involved in public administration, education, or healthcare provision. Here, countries within the Sub-Saharan Africa region are a clear outlier which is driven by large public sector penetration in the mining, manufacturing, and services sector. Given the relatively lower levels of economic development in many countries within the region, this points to the important role that the public sector plays in countries underdeveloped private sectors. Still, while there may not exist a universal formula for the ideal makeup of the public sector workforce, household surveys can allow governments to benchmark the organization of their public sector workforce across peer countries or even historically to track their evolution.



**Figure 4: Public administration is the largest segment of public employment;**  
**Source: WWBI**

Education and healthcare workers are essential in a country’s ability to meet their Sustainable Development Goals for adequacy and universality of healthcare coverage and education provision. The share of the public sector devoted to the provision of social services differs with country incomes. Looking closely at the education and healthcare workforce through labor force surveys helps explain the importance of the public sector in the provision of these services. Globally, over three-fourths and two-thirds of the education and healthcare paid workforce are employed in the public sector respectively (Figure 4). This is in part driven by the attention that governments across the world place on the provision of education and healthcare as mandated by the Sustainable Development Goals (SDGs) and partly due to the limited capacity within the private sector to satiate national demand for these service.

Both these segments of the workforce have seen significant attention in the aftermath of the COVID-19 pandemic as frontline education and healthcare providers, academics and researchers, epidemiologists, public health experts, and engineers have been an essential bulwark against the public health crisis and their importance and contribution cannot be overstated. Household surveys can shed light on the role that the public sector education

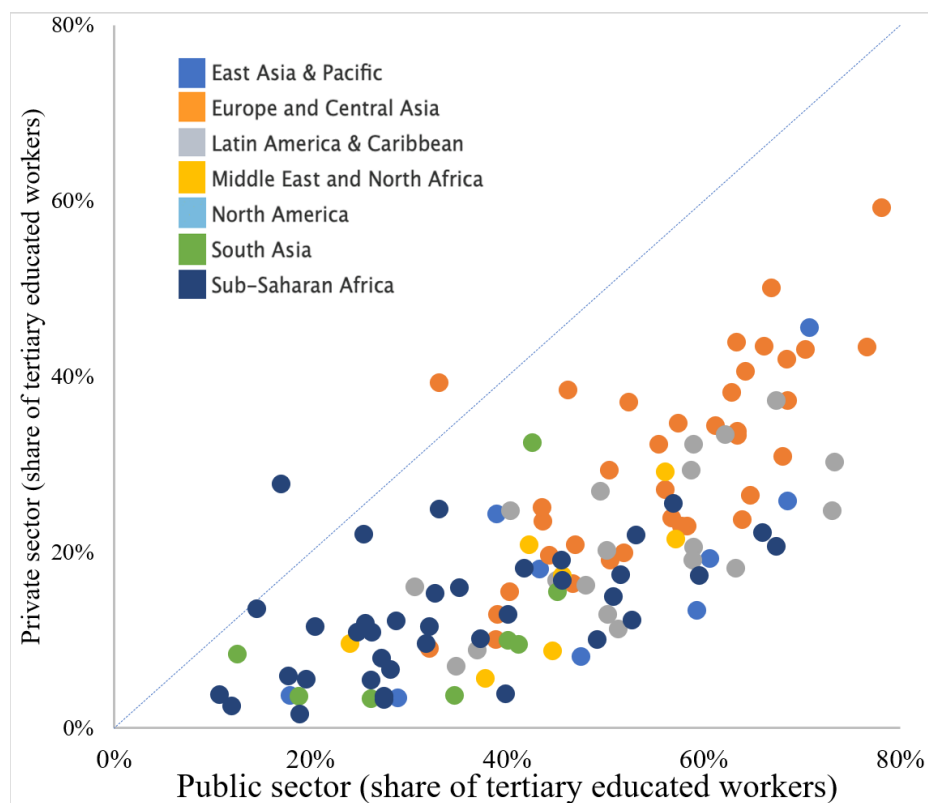
and healthcare workforce plays within these two sectors. The WWBI finds substantial variation by region (as illustrated in Figure 5). While over 91 percent of the education and 73 percent of the healthcare workforce in the Europe and Central Asia region are employed in the public sector, the Latin America and the Caribbean region employs just under 66 percent and 52 percent of these workers respectively.



**Figure 5: Most education and healthcare workers are employed in the public sector; Source: WWBI**

The public sector is an important employer for workers with tertiary degrees. Given the particular focus that household surveys place on collecting information systematically on the academic qualifications of workers in the labor force using globally harmonized measures of educational attainment, these offer a window into the skills make up of the public and private sector work forces. Looking at data from the WWBI, which tracks the qualifications of workers internationally, we can see that the public sector has a higher proportion of workers with tertiary levels of education. Forty-seven percent of public sector workers have a tertiary degree compared to 21 percent in the private sector (Figure 6 provides a dot plot of countries in the WWBI, comparing the national shares of tertiary educated workers in the public and private sectors). These differences between public and private sector workers have implications for any comparative analysis between the two labor markets, especially public-private wage differentials.

The proportion of public sector workers with tertiary education varies by country income levels. In low-income countries, 19 percent of public workers have either no or only primary education, while in high income countries, this share is negligible. A high proportion of low-skilled workers points to the public sector serving a social welfare function. A corollary to this high proportion of low-skilled workers is a high proportion of clerical or support jobs. At the other end of the education spectrum, the share of employees with a tertiary degree has increased globally by around 20 percentage points in both sectors over the past decade, but the public sector continues to employ more workers with degrees.



**Figure 6: Public sector workers are better educated; Source: WWBI**

By generating comparative information on the two sectors, possibly over time, regions and across countries, household surveys allow government analysts the capacity to understand the broad features of the public sector labor market and the role of the public sector in various national labor markets. A growing body of literature confirms this ability and the importance of the public sector in employing high-skilled workers (Gindling et al., 2020; Tummers and Knies, 2013; Grindle and Hilderbrand, 1995). Labor

force surveys are thus well positioned to enable coherent international comparisons that provide benchmarks to assess a country's current state and dynamics.

## 4.2 Understanding Gender Discrimination

The public sector is an important source of formal employment for women. The public sector's large labor market footprint means that it can be a strategic leader in changing norms and behaviors and promote greater equality in employment in the overall labor market. However, understanding the current state of women's participation in differential labor markets requires detailed information on the quality of gender representation in the public and private sectors.

In many developing countries, the public sector in general and the education and healthcare sectors in particular have a long history of being two of the few options for formal employment available to females (Yasin and Langot, 2018). Globally, females represent 46 percent of the public sector workforce compared to 33 percent in the private sector (Figure 7 provides a dot plot of countries in the WWBI, comparing the national shares of public and private sector workers who are women). While men outnumber women in the private sector in all 130 countries for which data are available, women outnumber men in the public sector in 55 countries.

Female representation in the public sector is strongly correlated with country incomes. A large body of literature finds a U-shaped relationship between female employment in the private sector and economic development (Goldin and Polachek, 1987; Goldin, 1995).<sup>7</sup> Labor force surveys included in the WWBI help provide evidence for a positive and significant relationship between female participation in the public workforce and country income. Multiple factors influence female participation rates in the labor force.

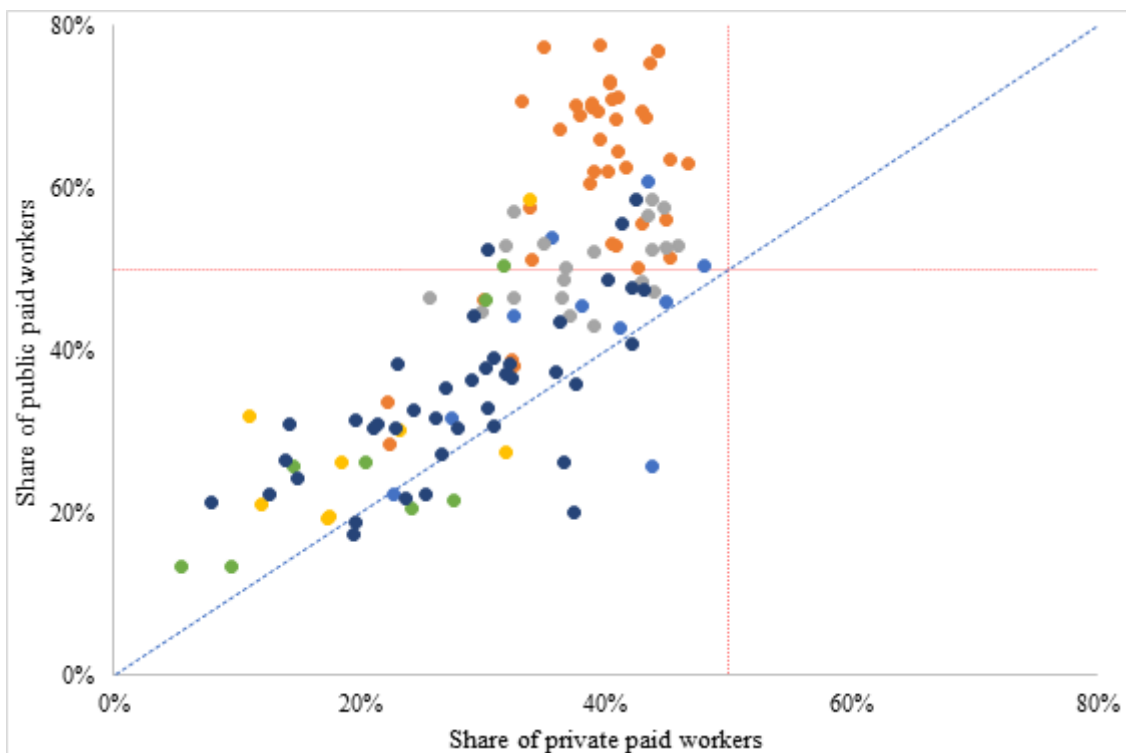
<sup>8</sup> A growing body of literature confirm the positive relationship between fostering more representative bureaucracies (including through female participation) and improved social and economic outcomes across a wide spectrum, including reductions in gender-based

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<sup>7</sup>Female participation is the highest in low-income countries, falling as countries industrialize, and increasing again at high levels of economic development as the services sector grows.

<sup>8</sup>see (Jayachandran, 2021) for a rich discussion of this literature.

violence (Johnston and Houston, 2016), improvements in student performance (Zhang, 2019), and public sector productivity (Park, 2013; Andrews et al., 2005).



**Figure 7: The public sector employs more women than the private sector;**  
Source: WWBI

### 4.3 The Appropriateness of Public Sector Wages

Public sector wages are an important determinant of personnel quality and motivation, and therefore, a key determinant of state capacity. However, what is the appropriate level and structure of these wages? Answering this question requires an assessment of who makes up the appropriate comparator group for public sector workers. The first option is to directly compare the wages of public and private sector workers within a particular country given that the most likely outside option to employment in the public sector is the corresponding private sector. Estimating public-private wage differentials within-country has been explored in a very large academic and policy literature.<sup>9</sup>

The second approach involves comparing the wages of public sector workers in one country with those of similar workers in other (comparable) countries. Given that these are

<sup>9</sup>see (Bales and Rama, 2001; Bargain et al., 2018; Campos et al., 2017; Christophides and Michael, 2013; Coppola and Calvo-Gonzalez, 2014; Gibson, 2009; Lausev, 2014)

the closest counterparts to one country's public sector workforce, this is another important method for estimating whether public servants in one country are over- or under-paid. These comparisons are particularly useful in the case of industries or occupations with transferable skills, such as healthcare workers who migrate internationally or workers in clerical or managerial positions who rotate within the public sector.

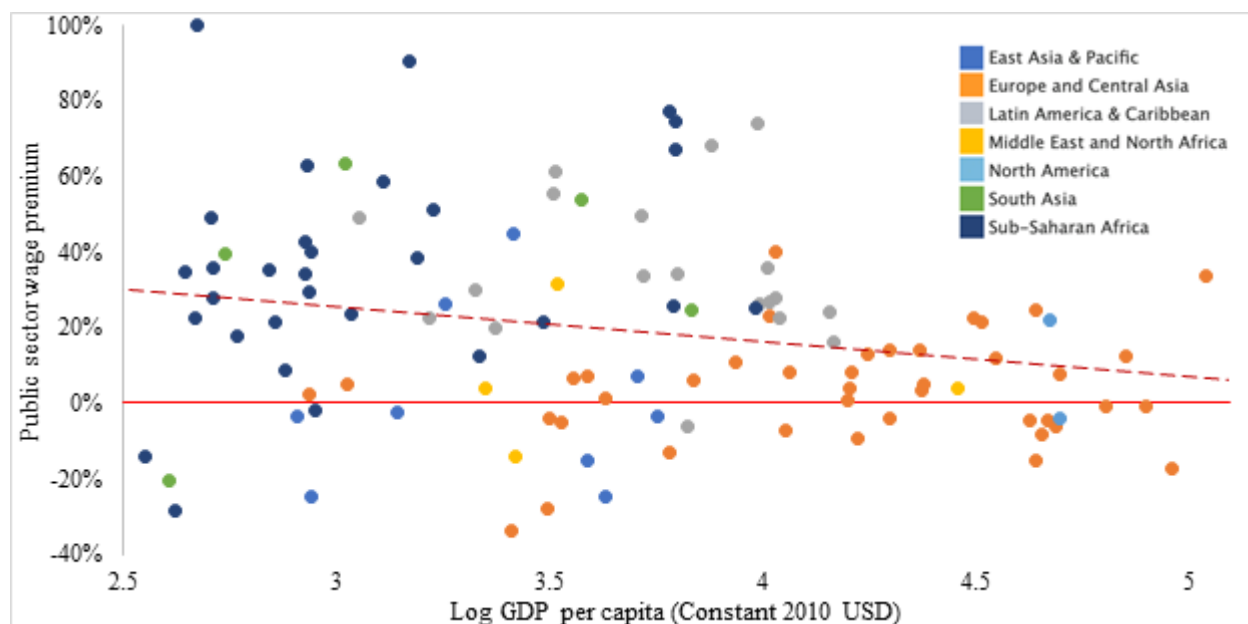
A third option is to compare individuals performing different tasks or employed in different occupations within the same country's public sector. This may be useful where public servants are able to move across the service from one organization or region to another.

Household surveys enable each of the above approaches, and such analysis has been undertaken in the WWBI. The data set indicates that public employees in most nations receive a wage premium compared to their counterparts in the private sector. Figure 8 shows the premium when the public sector is compared to all private sector salaried employees, irrespective of the type of job and controlling only for worker characteristics (including sex, age, levels of education, and location). Public sector workers have approximately 19 percent higher basic wages (excluding allowances and bonus payments) across the 111 countries for which household surveys were sourced, with 80 countries having a positive premium. There is considerable heterogeneity in the size of that premium across countries, varying from a penalty of 33 percent to a premium of 100 percent. The size of the premium is negatively correlated with country incomes, a finding corroborating academic studies that report higher premiums for developing countries (Finan et al., 2017).

It is important for the government to understand how wage premia are distributed across worker groups. The public sector wage premium is not uniform and varies by personnel characteristics. The magnitude of the public sector wage premium depends on an employee's educational qualifications and is lowest for tertiary educated officials. The main reason that tertiary educated individuals earn a low or no premium compared to private sector workers is due to the ability to earn greater wages in the private sector. Similarly, the large wage premium for females in the public sector has greater implications



for the large gender pay gaps that exist in the private sector.

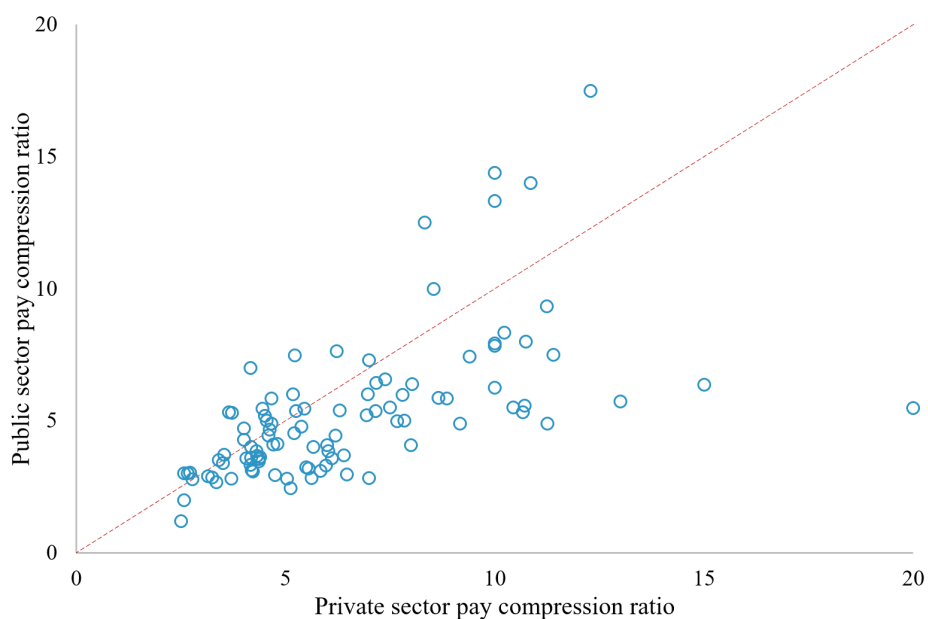


**Figure 8: Public sector workers receive a wage premium compared to the private sector; Source: WWBI**

While the wage differentials between typical public and private sector workers presented above are worthy of attention from public officials in terms of their impact on the competitiveness of wages into the public sector, the public sector workforce represents a specific subset of the national labor force as employment. Public sector workers are concentrated within a handful of industries (public administration, education, and healthcare) and certain occupational groups (including managerial, professional, and clerical occupations). Therefore, a second equally important element of public sector wage structure for government officials are the differences in wages for workers in different segments of the public sector workforce. Studies have shown that workers compare their wages to their peers in an organization, just as they do to the private sector, and wage differentials that are not perceived to be justifiable can be demotivating (Borjas, 2002). Additionally, wage equity—whether staff in similar jobs, with similar skills and similar performance are paid equally—impacts worker motivation and productivity and can be a major driver of the wage bill.

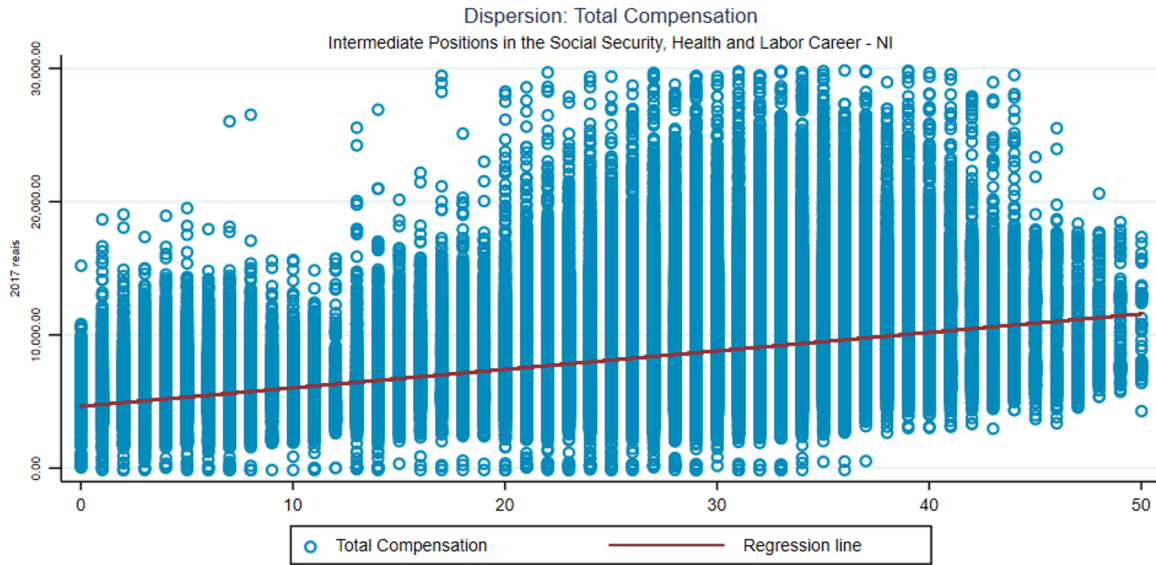
Wage dispersion is generally higher in the private sector than in the public sector. One common metric is the wage compression ratio which is the ratio of the 90th percentile

wage to the 10th percentile wage in the salary distribution. This ratio is lower in the public sector for 70 out of 99 countries for which there is data in the WWBI (Figure 9). The average wage compression ratio for the public sector across 101 countries is 4.9 compared to 6.3 in the private sector. The lower dispersion in the public sector reveals a tradeoff between equity and pay competitiveness at the top of the salary distribution that governments manage. Such information can help public sector managers determine new wage schedules aimed at attracting and maintaining a cadre of high-skilled functionaries in the public sector.



**Figure 9: Public sector employees experience a flatter pay compression ratio;**  
**Source: WWBI**

Household surveys are also able to provide information on the degree of unexplained variation within wages for individuals employed within similar occupations in the public sector. Figure 10 shows that the variation within gross pay received can vary ten-fold for workers with similar levels of experience, which is largely a result of non-performance related payments and not basic pay. While these differences may, in part, be due to personnel demographics (age, gender, or educational qualifications) or by the nature of work (job family, industry, or scale), this does point to public sector wages being weakly associated with the experience of the workers. Still, these wage differences across employees performing similar tasks and of similar grade but working in different locations or organizations can potentially act as distortions in the workforce.



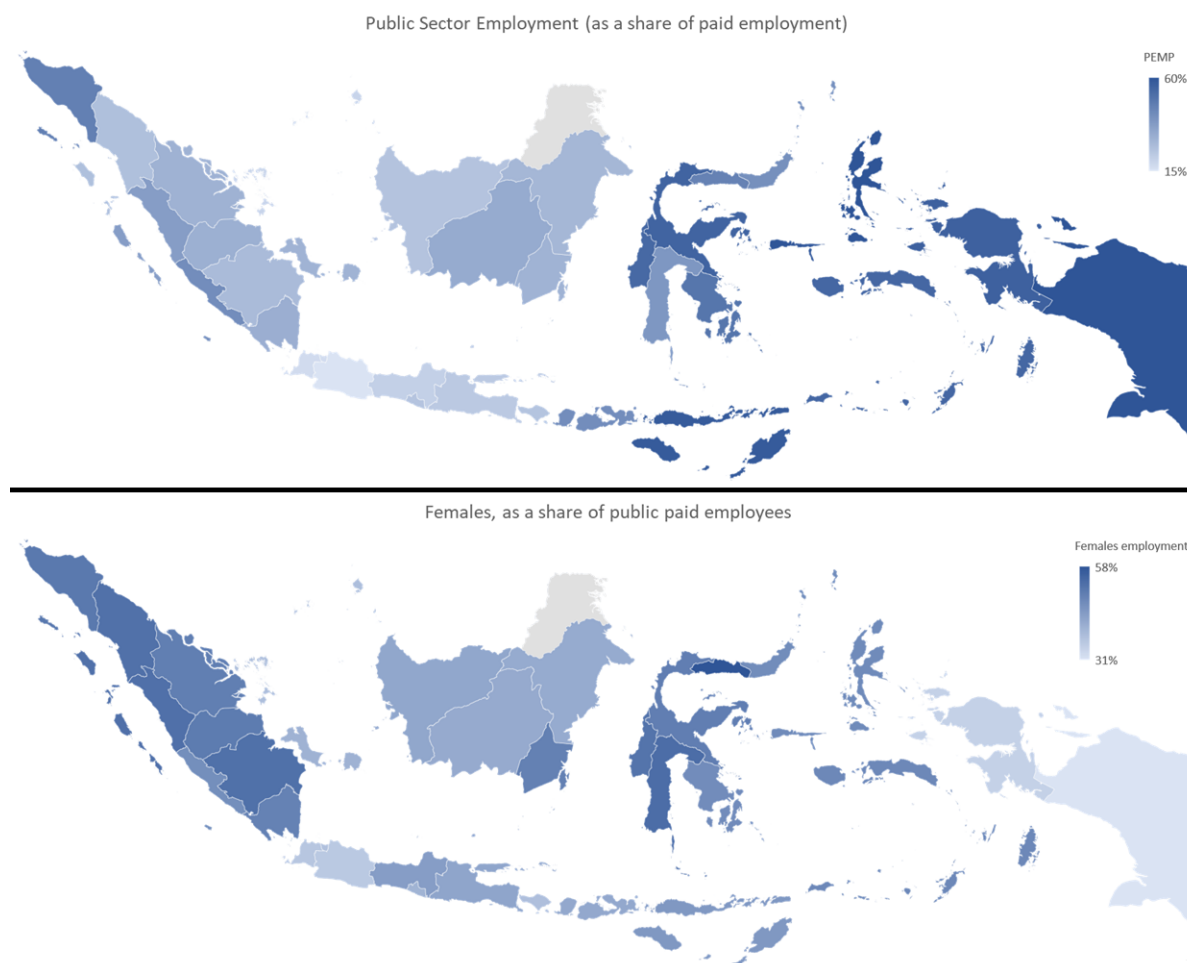
**Figure 10: Pay inequity in the Brazilian public sector; Source: World Bank 2020; Note: Each dot is an employee; the horizontal axis is years of service; the vertical axis is wages**

#### 4.4 Understanding Regional Variation

To further illustrate the power of household surveys, where sample sizes are sufficiently large and survey sampling was appropriately stratified, this analytical approach can be replicated at sub-national levels. As an example of this approach, the team has applied the methodology to analyzing public and private sector labor markets at the provincial level in Indonesia.

Two variables from this effort are illustrated for Indonesia’s provinces in Figure 11. These efforts allow for a closer understanding of regional disparities in the scale, composition, and compensation of the public and private sectors across administrative division within countries. In the case of Indonesia, for example, the public sector comprises almost 60 percent of paid employment in the eastern provinces of East Nusu Tenggara, North Maluku, West Papua, and Papua compared to less than 15 percent in the western provinces (Figure 11: Top panel). The female share of public sector employment (which stands at 44 percent at the national level) is mostly concentrated in the eastern and central provinces (Figure 11: Bottom panel). Stylized facts like these can help shed light on many aspects of the nature of public and private labor markets across subnational

units within a country.



**Figure 11: Sub-national patterns in public sector employment in Indonesia;**  
Source: Author elaboration of household survey data

## 5 Conclusions

We have presented a microdata-based approach for governments to improve their understanding of the public sector workforce and labor markets. Such understanding helps in the development of empirically-grounded public service compensation and employment strategies. We have demonstrated how government analysts can use existing household surveys to generate novel insights into government and how these lead to insights that can allow policy-makers to make better fiscal choices. As such, the range of data that should be included for consideration in human resource management systems outlined in Chapter HRMIS includes household surveys. Capitalizing on household surveys for

government analytics provides a powerful complement to payroll analysis (as described in Chapter SHRM) and broader budget analytics.

Such analytics matters for effective management of the state, but it also matters for the impact of the public sector on private sector labor markets. Given the size of the public sector, public sector compensation should be designed in cognizance of its influence on the broader labor market. While public sector wage-setting mechanisms do not mechanically respond to market forces, they should be carefully designed to consider the distributional aspects of wages. Policy makers need to ensure that public sector wages remain competitive enough to attract and retain high-quality public sector workers while not creating disequilibria in private sector labor markets through queuing and crowding effects. Under an optimal compensation policy, public sector wages will be competitive without being distortionary, and there will not be any shortage of skills in either sector.

We have used a series of examples from the World Bank's 'Worldwide Bureaucracy Indicators' to demonstrate how the use of household survey data can help policy-makers gain insight into the current and future state of their government's employment and compensation policies. This approach enables researchers, development practitioners, and policy makers to answer some of the most important questions on the appropriate level and distribution of employment in the public sector; the equity, transparency, and market competitiveness of public sector wages; and their impact on fiscal sustainability, the labor market, and service delivery.

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