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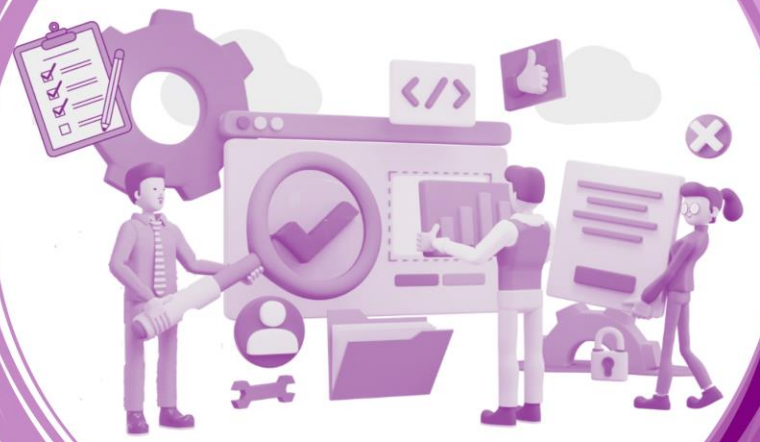
Government Analytics and R Training:

Strengthening Public Sector Reporting and Data Analysis



January 13 – January 17, 2025

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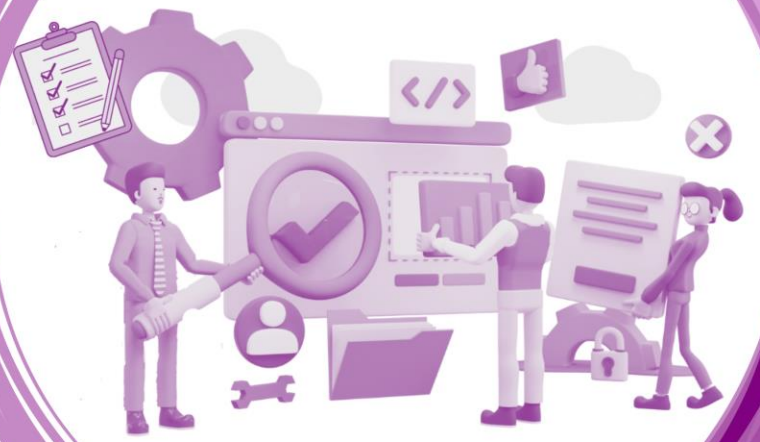
What is Government Analytics and Why it Matters

María Reyes Retana



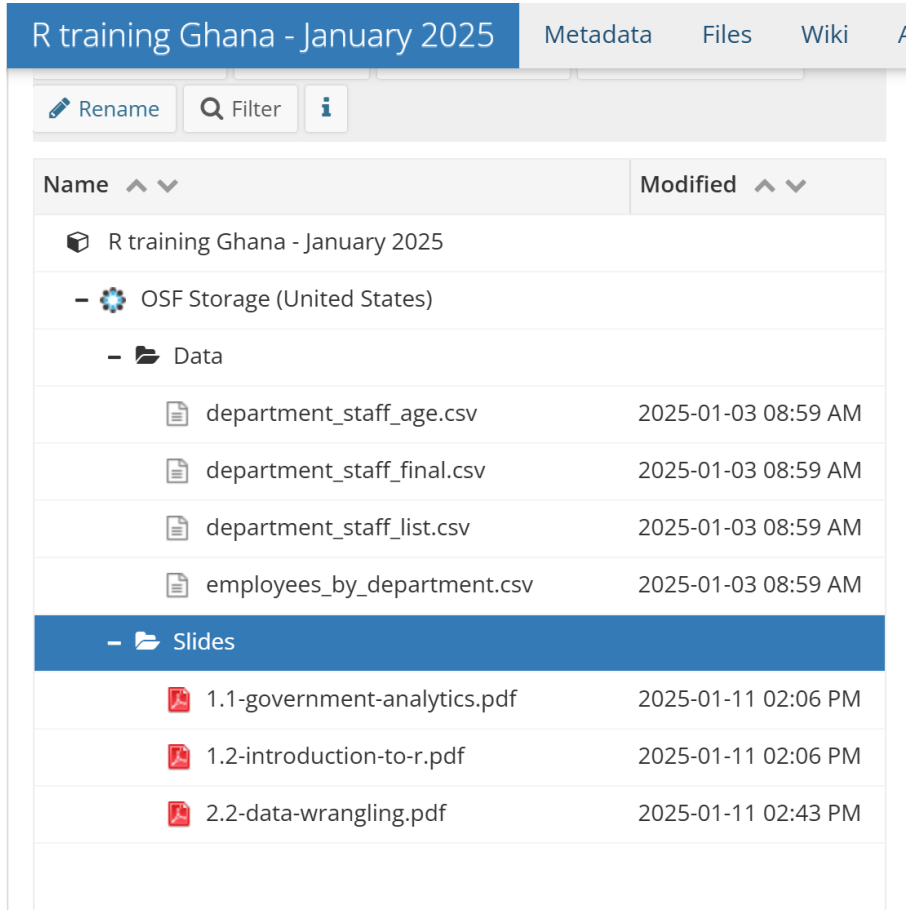
Before we start …

Take a minute to answer the baseline test

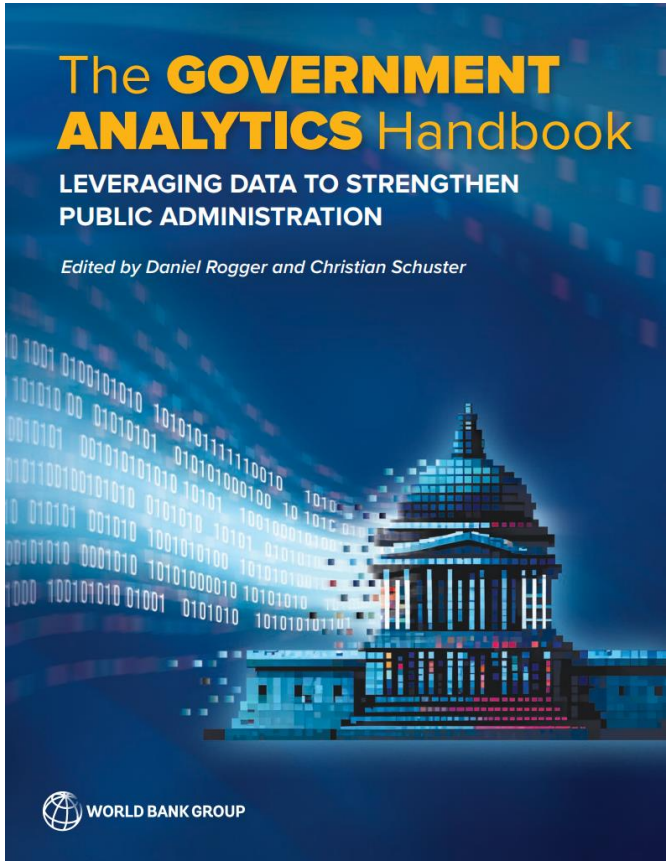
https://survey.wb.surveycto.com/collect/government_analytics_ghana_training?caseid=

Training materials

https://osf.io/r3fn5/



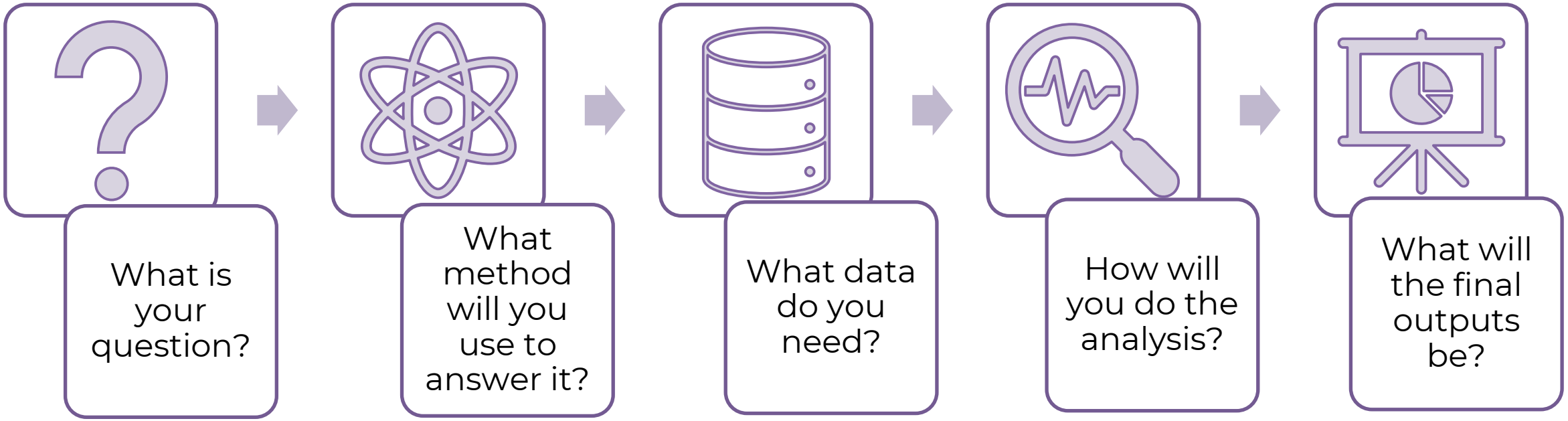
https://www.worldbank.org/en/publication/government-analytics



Session 1 Structure

Part 1	Structure of the Course
Part 2	What is Government Analytics
Part 3	Why Government Analytics Matters
Part	Why Government Analytics is Possible: Data Infrastructure

Lifecycle approach to credible research



- **Following best practices for transparent and reproducible research at all stages increases efficiency and credibility**

- **We will follow this lifecycle, and learn how to apply it to our work. Today we will focus on: What is your question?**

Structure of the course/Lifecycle approach to credible research

Day	Key Focus	Lifecycle Question	Session 1 (Theory & Discussion)	Session 2 (Code / Application)
Day 1	**Introduction to Government Analytics & Framing**	**What is your question?**	**Introduction to Government Analytics**	**Introduction to R**
Day 2	Data Wrangling & Repurposing Existing Data	What data do you need? What method will you use?	Identifying and Repurposing Data, Discussion on Data Sources	Data Wrangling in R
Day 3	Descriptive Analysis & Tabulation for Reports	How will you do the analysis?	Discussion on Annual Reports/How this can apply to my work	Summarizing & Tabulating Data in R
Day 4	Data Visualization & Final Outputs	What will the final outputs be?	Discussion on Annual Reports/How this can apply to my work	Creating Visualizations & Exporting Outputs in R
Day 5 (Optional)	Q&A session			

We are here to learn together.

If you have questions, please always ask.

Data has transformed how governments design, implement and evaluate policies

Examples: household surveys, firm surveys, RCTs

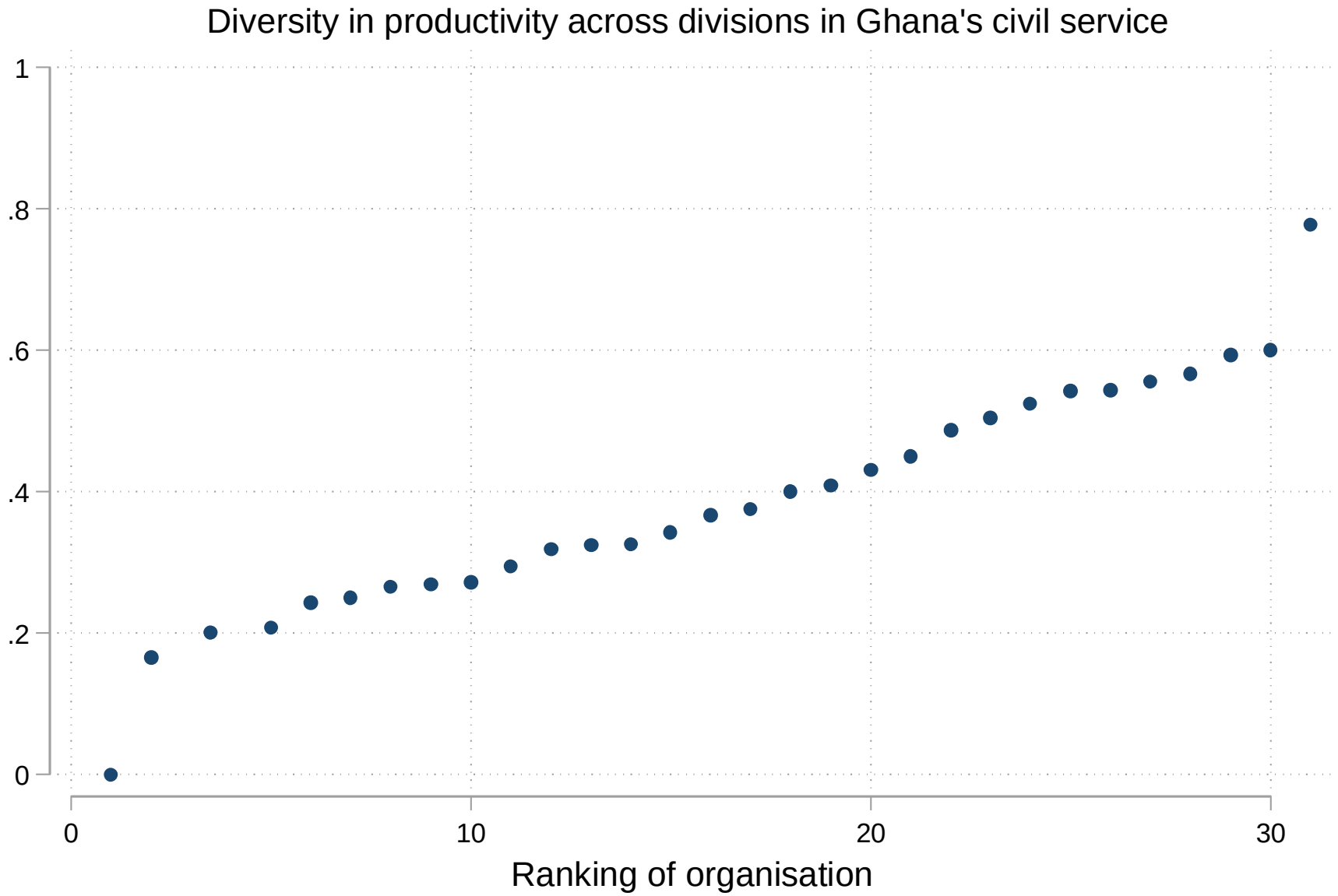
- **Question: Can you think of examples in Ghana where government data has been used to improve policies or processes? How was the data collected and utilized?**

But how about the government administration who is implementing these policies?

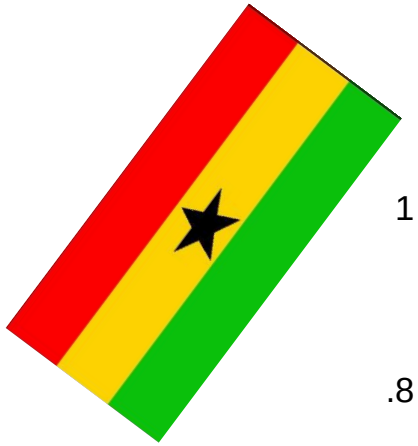
You and your colleagues across service!

Question: How does the government administration matter for how well a policy is turned into services for citizens? What is your experience?

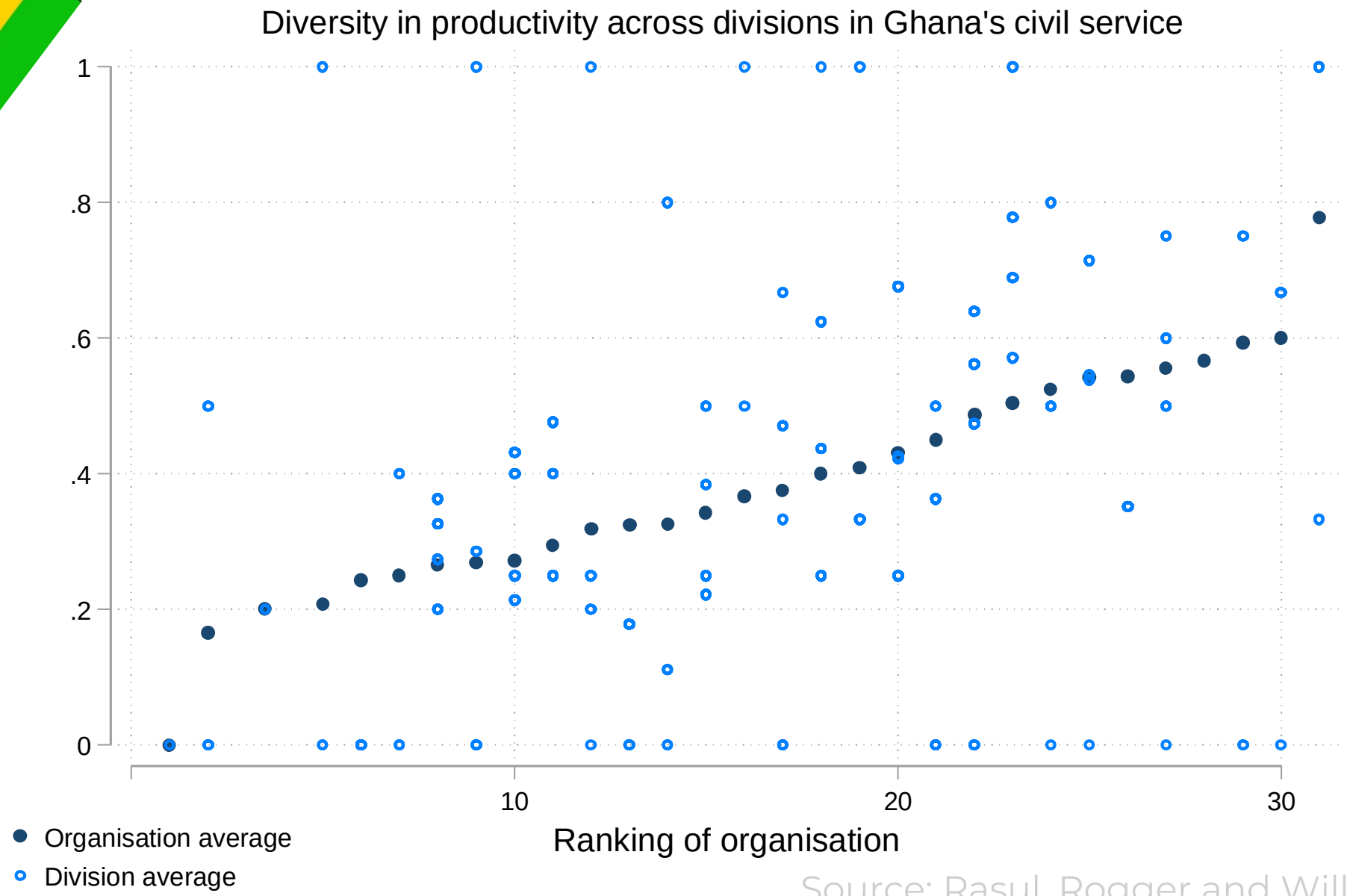
Ghana: Diversity in productivity



Source: Rasul, Rogger and Williams (2017)



Ghana: Diversity in productivity



Source: Rasul, Rogger and Williams (2017)

Course Objective: Learn data practices to assess and improve public administration.

This course will equip you with the skills and tools needed to leverage **your data** for impactful analysis

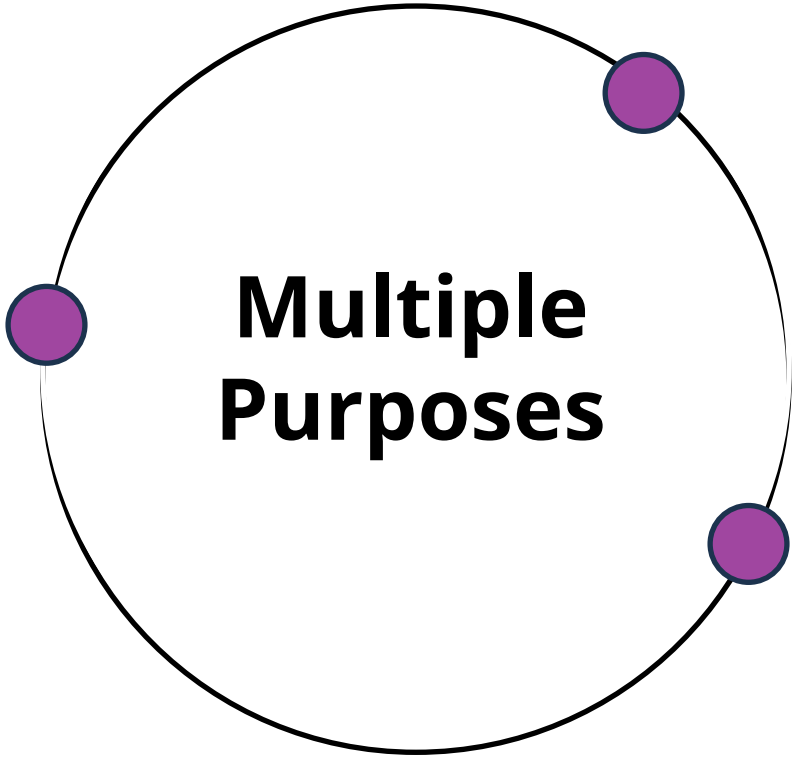
Why government analytics matters

Internal accountability

Strengthens ability of heads of organizations/governments to hold subordinate managers accountable

Learning

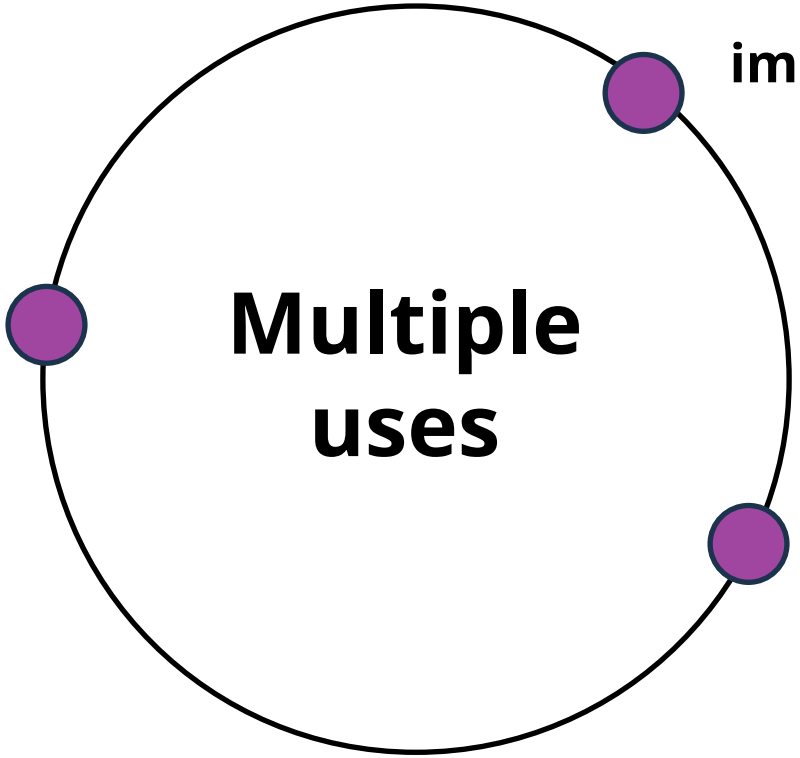
Evidence base to complement managers' tacit knowledge & improve conversations about what to improve



Government transparency

Strengthens ability of public to hold government accountable

Why government analytics matters



Government-wide improvements

Organization-specific improvements

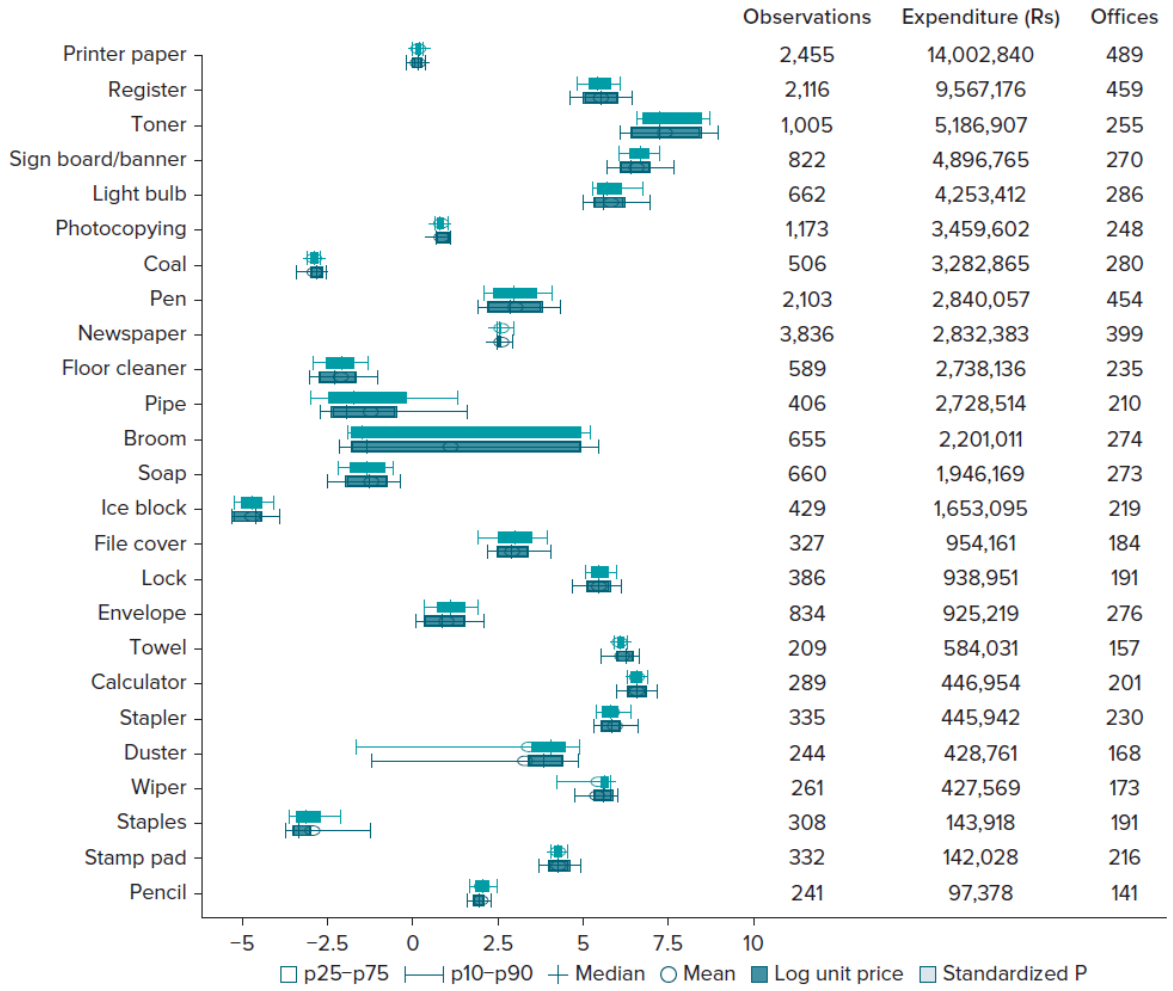
Unit/group-specific improvements inside an organization

Variation between firm performance often due to differences *within* a firm.

(Bloom, Sadun, and Van Reenen 2010; Bloom and Van Reenen 2010)

Like we saw in the diversity of productivity graph

Why government analytics matters: differences between government organizations



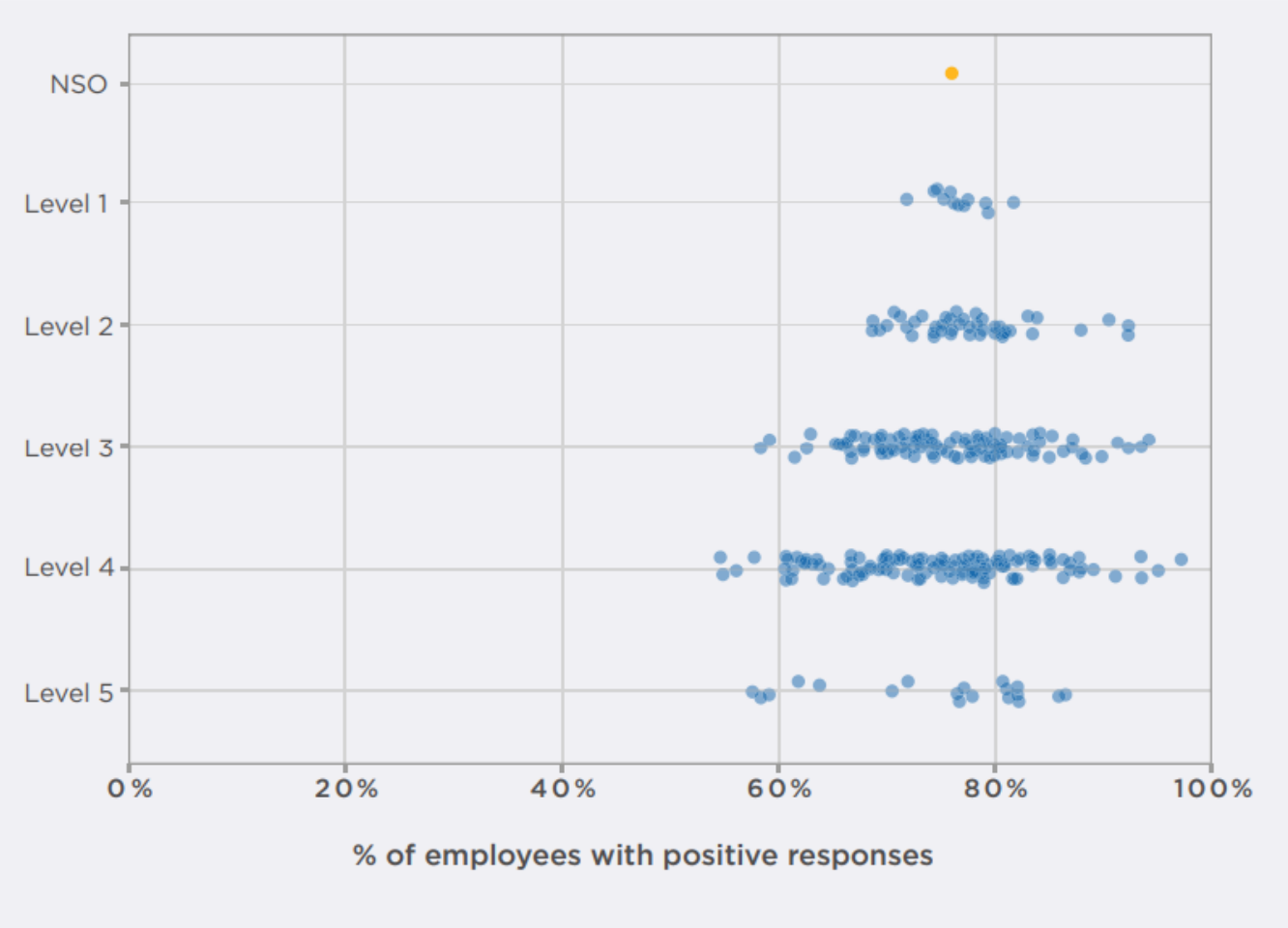
Different government offices in Punjab, Pakistan pay highly varying prices for the same goods.

Source: The Government Analytics Handbook, Chapter 15

Why government analytics matters: large margins for improvement inside government

- **Russia could save $10bn – 15% of total health spending –** if bottom-quartile procurement officials paid as little for same goods as top-quartile procurement officials (Best, Hjort, and Szakonyi 2017)
- **Nigeria could have 1/3 higher likelihood of completing infrastructure projects** if quality of management increased by one standard deviation (Rasul and Rogger, 2018)

Why government analytics matters: differences inside organizations

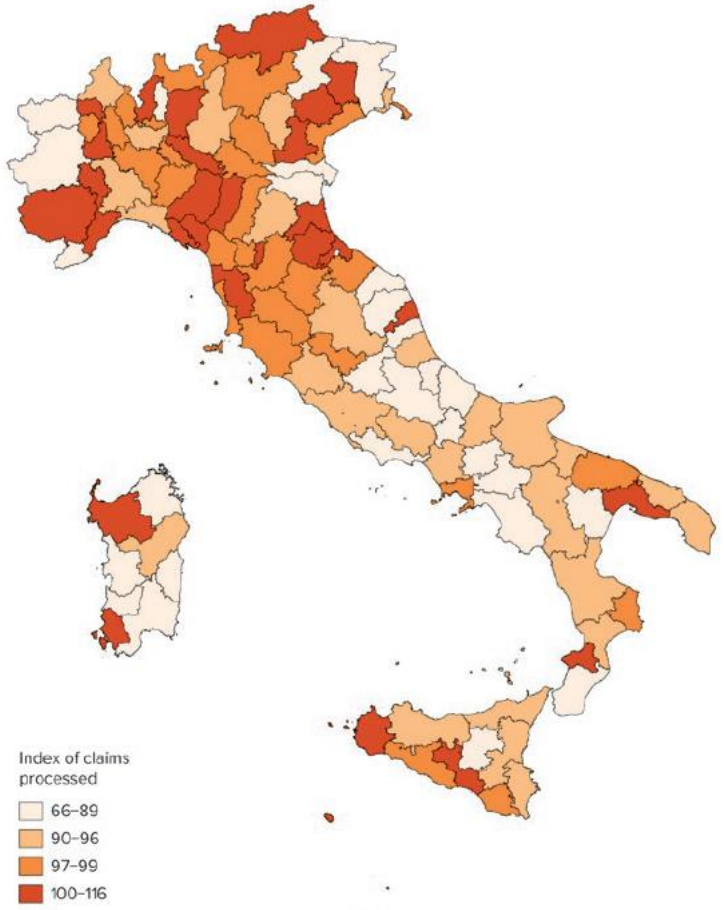


Inside the same organization (a National Statistical Office in Latin America), work motivation varies sharply between different divisions and teams

Source: Mejia-Guerra, Schuster, C., J.A., Meyer-Sahling, J., Mikkelsen, K. and Rojas-Wettig, M. (2023) 'Making National Statistical Offices Work Better: Evidence from a Survey of 13,300 National Statistical Office (NSO) Employees in 14 Latin American and Caribbean Countries' (with) Inter-American Develoment Bank

Why government analytics matters: large margins for improvement inside government

- **Italy's social security claim processing productivity could increase by 7%** by placing best managers in the largest offices (Fenizia 2022)



Why government analytics matters: a distinct approach to state reform

Government analytics offers a distinct, micro data-based approach to enhance state capacity. Measuring the state allows us to manage it better.

Detect areas for improvement, take actions and assess their effectiveness

Helps improve public sector organizations government-wide and one-at-a-time

Draws on range of data sources to assess public administration production function holistically

Question: What are some areas in Ghana's public administration where you think government analytics could make a significant impact?

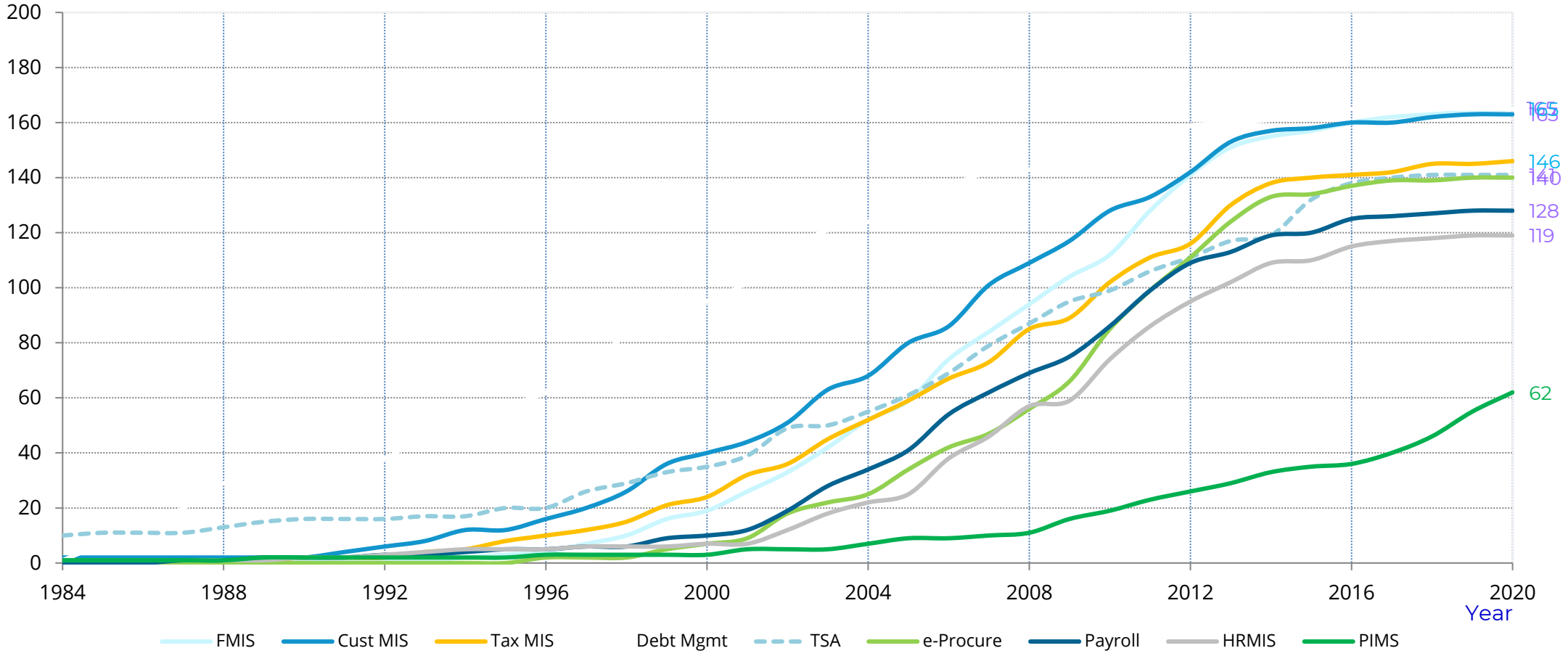
But: is there “enough” data for government analytics?

Governments are record keepers.

Examples:

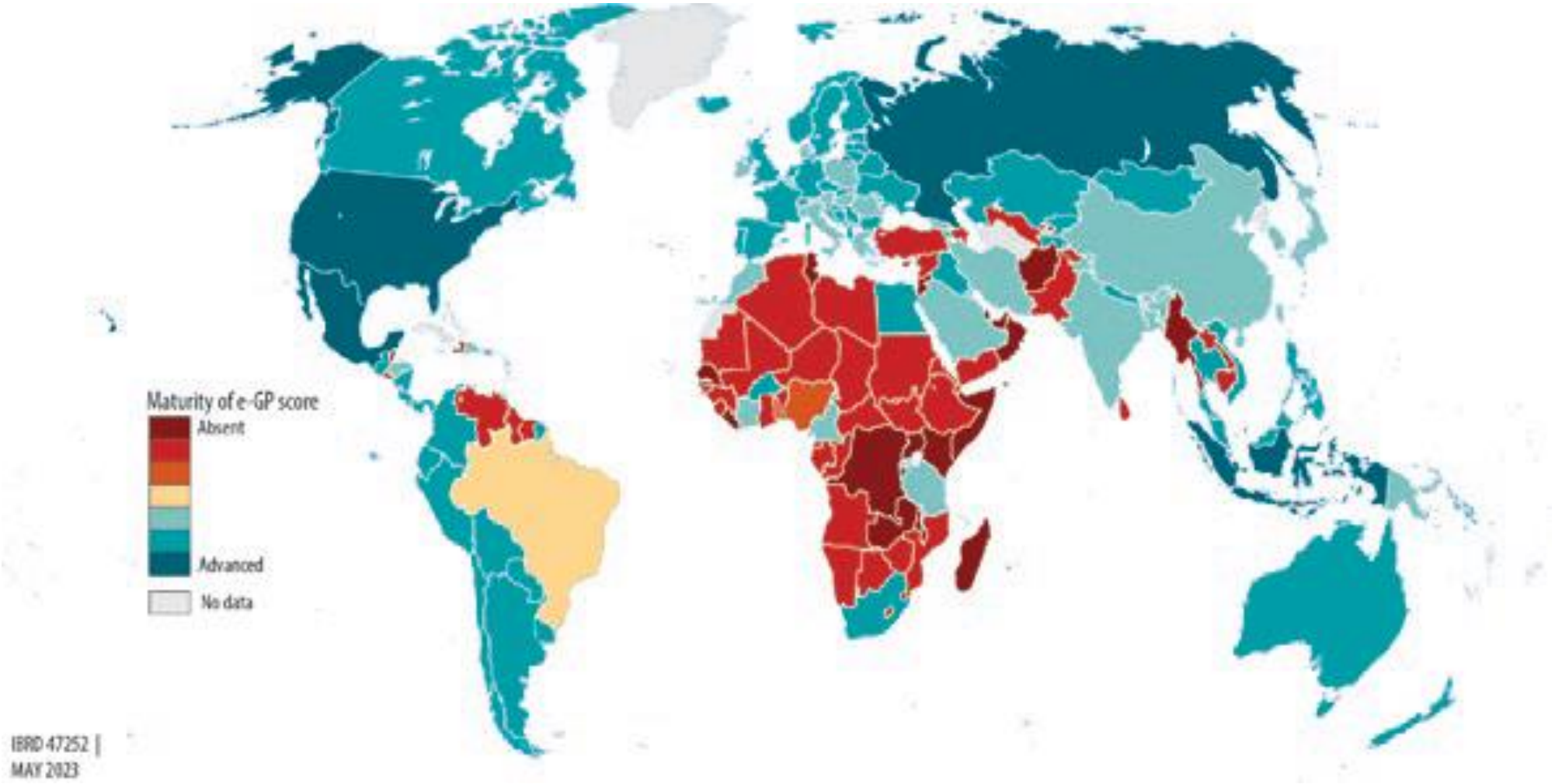
- A time stamp on a social security claim
- A monthly record of salary payments made to a public servant
- A check mark confirming completion of an infrastructure project
- A bid received for the procurement of office supplies

Why Government Analytics is possible:
digitization of government records



Government Analytics repurposes these records as data points

Digitization of government records: example of e-procurement (2020)



Source: The Government Analytics Handbook, Chapter 12

The quality of government analytics depends on the quality of the underlying data infrastructure

- **Digital records often primarily designed to enable government operations—e.g. award of a contract tender—rather than the analytics of such operations**

⇒ **Records need to be repurposed for analytics, e.g. common identifier, secure storage**

⇒ **Data coverage and quality a function of maturity of digitization of records**

(See Handbook Chapter 9)

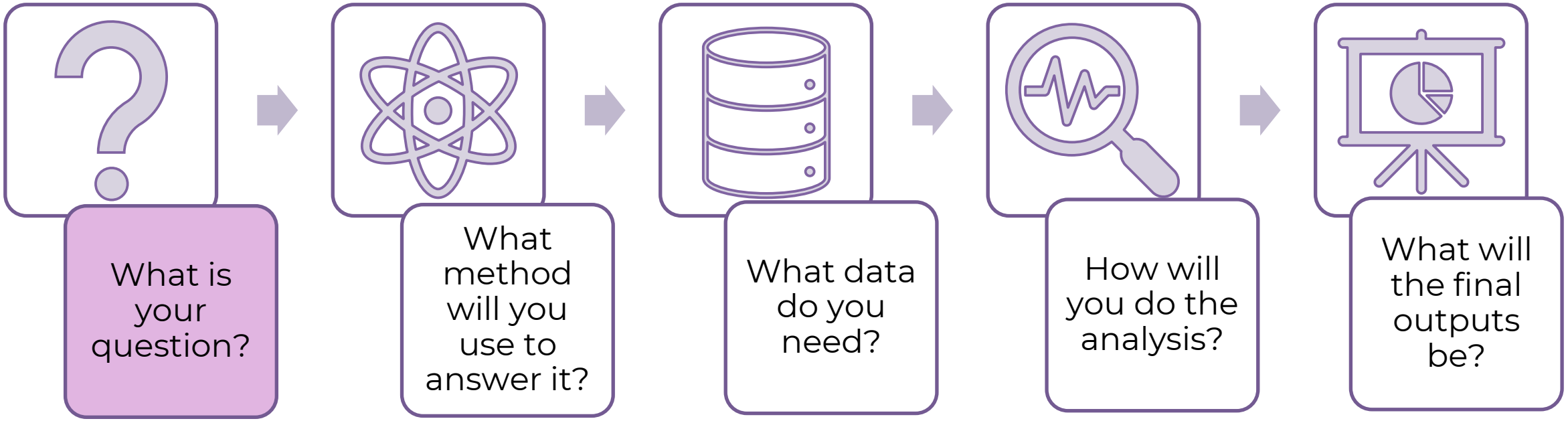
- **Digitization has made it much cheaper and quicker to survey employees, but investments in analytics needed to design, implement and report on surveys**

- **Inherent limits to data infrastructures: not everything that matters in public administration can be measured.**

Conclusion: government analytics…

- Is the practice of leveraging data to improve public administration
- Is a distinct approach to state reform, which can inform both government-wide and institution-specific improvements
- Can foster learning, internal accountability and transparency
- Helps address challenges across the public sector production function
- Matters given the weight of government analytics data sources
- Requires you to identify which data sources matter for your management challenge

Lifecycle approach to credible research



- **Now that we have the foundation on the importance of government analytics. Let's define our question.**

Preparing our Question

1. **Define the Problem:** What is the issue, and why is it important?
2. **Formulate the Question:** Make it specific and measurable.
    - Example: Instead of "How is performance?", ask "What are the trends in monthly revenue collection over the last year?"
3. **Justify the Contribution:** What gap does this analysis fill?
4. **Ensure Actionability:** What decisions or actions will it inform?

Exercise

Enhancing Annual Reports - 10 minutes individually

All our exercises will center on facilitating the annual reports.
Key Question: "What is the main question our annual reports aim to answer?"
Example: "How effectively is the department using resources to achieve its goals?"

1. Locate Key Data and Sources: Identify key data sources used in the latest annual reports (e.g., surveys, admin records).

2. Identify Outputs: List outputs like tables and charts.

3. Evaluate Reusability and Efficiency: Identify repetitive tasks that could be automated in R. (e.g. A table that we use every quarter)

4. Identify a challenge you have faced when working on the annual reports.

Exercise

Enhancing Annual Reports – 15-20 minutes groups and plenary

1. Group Work

1. In groups, discuss the challenges you identified in the annual reports.

2. Look for similarities across reports in terms of data sources, outputs, and reusability (automation in R).

2. Summarize Findings

1. Choose one person from each group to summarize the key challenges and opportunities discussed.

2. Share any common themes or insights that emerged.

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Thank you!