South Africa's Integrated Municipal Finance Dataset (2009-2023/24)

University's of Pretoria Public Policy Hub (PPH) and Chair in Municipal Finance

2 December 2025

Objective of the Project

- To build and validate a **consolidated, research-ready municipal finance dataset** (2009- to date i.e., 2023/24) that integrates financial, audit, grant, and socio-economic indicators, **enabling evidence-based reforms, performance benchmarking, and joint research** to strengthen local government finance and governance in South Africa.

- This is developed through collaboration between the Public Policy Hub (University of Pretoria) and the National Treasury (LG Database and Reporting System & mSCOA Unit)

Description of the Dataset

- This dataset combines the Income and Expenditure Versions 1 and 2 of the National Treasury Municipal Finance Data which are publicly available on *GoMuni – Municipal Data API* (https://lg.treasury.gov.za/ibi_apps/portal/Municipal_Data_API).
- Income and Expenditure Version 1 runs from 2009- 2019 (pre-mSCOA)
- Income and Expenditure Version 2 runs from 2020 – to date (post-mSCOA).

- Important to note: The consolidated dataset is derived from the Statement of Financial Performance (Revenue and Expenditure) (Budget sheets A4, C4), focusing specifically on the operating revenue and expenditure of municipalities. It does not include information on their financial position, cash flows, debtors, balance sheet or any other aspects of financial management.

Harmonising Pre- and Post-mSCOA Municipal Finance Data (2009–to Date)

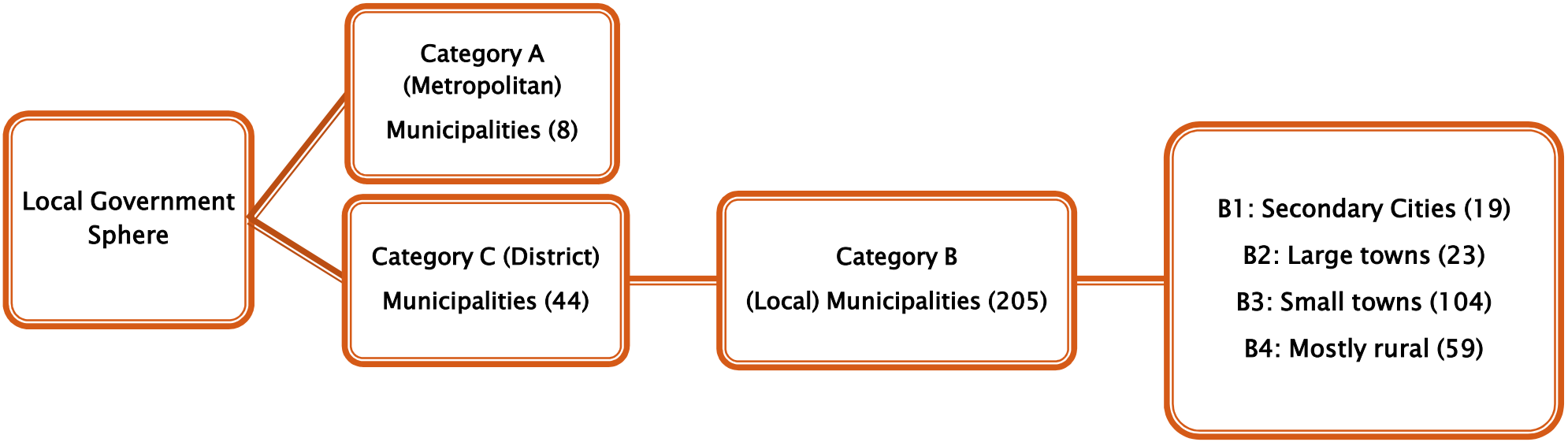
- Differences in Income and Expenditure V1 and V2:
  - Version 1 has more municipalities – specifically 292 municipalities. This was before the 2011 and 2016 demarcations.
  - Version 2 has 257 municipalities.
  - In 2017, the mSCOA reporting framework reform was launched and became effective in 2019. This requires all municipalities to report their finances in a the same format to ensure comparability.
  - Version 1 has 71 variables, while version 2 has 61 variables.
  - Due to the new mSCOA reform, some variables from version 1 ceased, whilst new ones emerged in version 2. In some cases, only the variable names changed.
  - This required the PPH and NT to discuss how to link and match these variables across the 2 versions in order to create a time series from 2009 to 2023 and beyond.
  - After research and discussion with the NT, we managed to match only **26 variables across the 2 versions running from 2009-2023 across 257 municipalities.**

Harmonising Pre- and Post-mSCOA Municipal Finance Data (2009–to Date)

- Importance of the mSCOA reform for South African municipalities:

  - The mSCOA reform has been a transformative milestone for South Africa's municipalities, standardising financial reporting across all local governments to enhance transparency, comparability, and accountability
  - Ultimately, this reform should enable more evidence-based planning, budgeting, and service delivery.
  - **For municipalities, mSCOA compliance should be more than a reporting requirement**: it should empower municipalities to strengthen financial management, improve data quality, and make informed, transparent decisions that build public trust and support better service delivery.

Categories of Municipalities in South Africa



Harmonising Pre- and Post-mSCOA Municipal Finance Data (2009– to date)

Below are some excerpts from the linking and matching process:

Version 2	Version 1
item_label	
Service charges - Electricity	Service Charges
Service charges - Water	
Service charges - Waste Water Management	
Service charges - Waste Management	
Agency services	Agency Services
Interest earned from Receivables	Interest Earned - Outstanding Debtors
Interest earned from Current and Non Current Assets	Interest Earned - External Investments
Dividends	Dividends Received
Rental from Fixed Assets	Rent of Facilities And Equipment
Licence and permits	Licenses And Permits
Licences or permits	
Operational Revenue	Other Revenue
Rent on Land	
Surcharges and Taxes	
Other Gains	
Discontinued Operations	
Sale of Goods and Rendering of Services	
Property rates	Property Rates
Fines, penalties and forfeits	Property Rates - Penalties And Collection Charges
	Fines
Transfer and subsidies - Operational	Transfers Recognised - Operating
Fuel Levy	

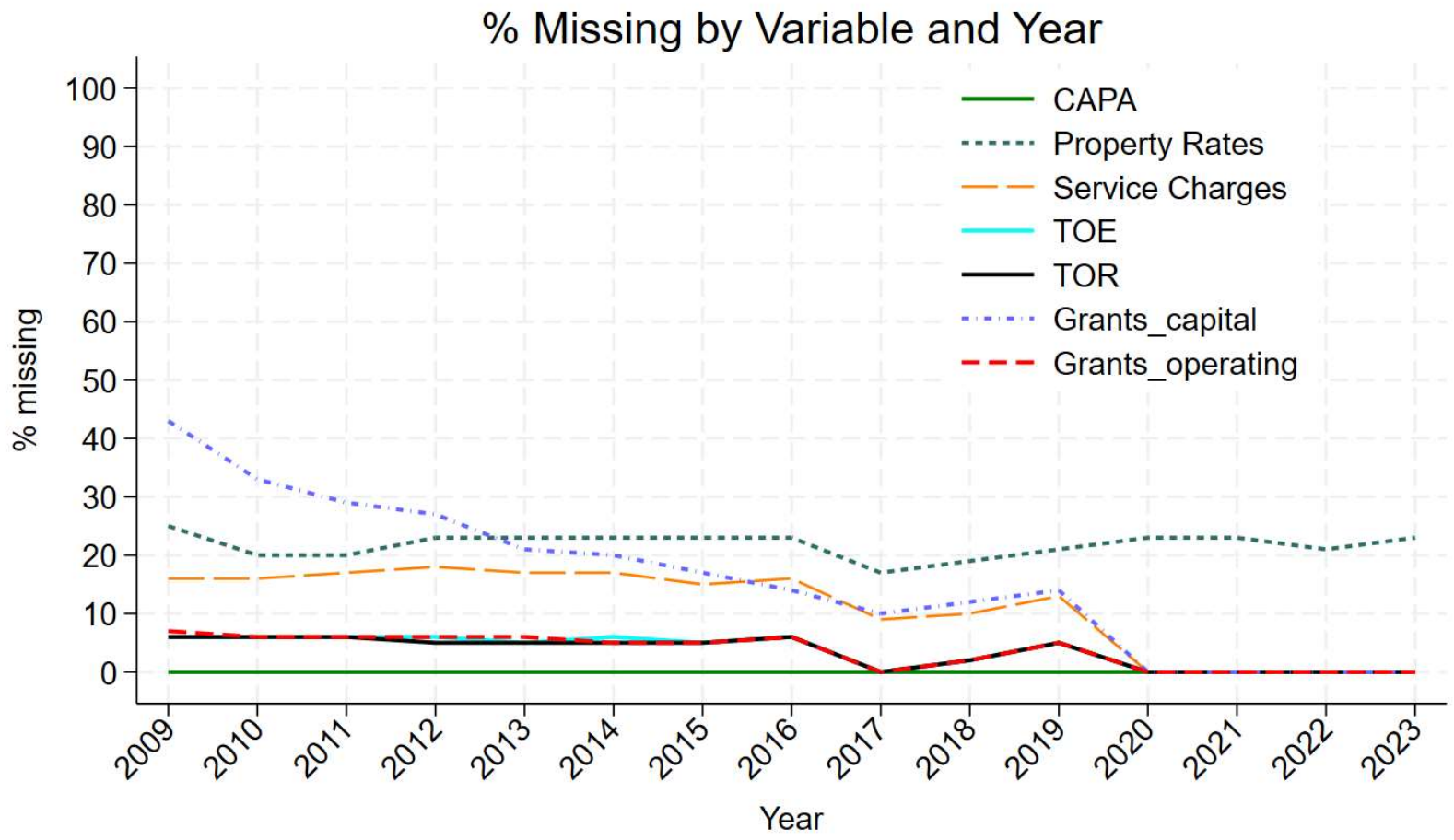
Harmonising Pre- and Post-mSCOA Municipal Finance Data (2009–2023)

Below are some excerpts from the linking and matching process:

Version 2	Version 1	
Gains on Disposalof Assets	Gain On Disposal Of Property, Plant & Equipment	
Employee related costs	Employee Related Costs - Wages & Salaries	
	Employee Related Costs - Social Contributions	
	Less Employee Costs Capitalised	
	Less Employee Costs Allocated To Other Operating Items	
Remuneration of councillors	Remuneration Of Councillors	
Bulk purchases - electricity	Bulk Purchases	
Inventory consumed	Other Materials	
Debt Impairment	Debt Impairment	
Depreciation and amortisation	Depreciation and Asset Impairment	
Interest	Interest Expense - External Borrowings	
Contracted services	Contracted Services	
Transfers and subsidies	Grants and Subsidies	
Losses on disposal of Assets	Loss On Disposal Of Property, Plant & Equipment	
Transfers and subsidies - capital (monetary allocations)	Transfers Recognised - Capital	
Transfers and subsidies - capital (in-kind)		
Income Tax	Taxation	
Intercompany/Parent subsidiary transactions =plus_interests	Plus Interests In Entities Not Wholly Owned	
Share of Surplus/Deficit attributable to Joint Venture		
Share of Surplus/Deficit attributable to Minorities		
Share of Surplus/Deficit attributable to Associate		
Operational costs	Collection Costs	Other Expenditure
Irrecoverable debts written off	Other Expenditure	
Other Losses		

Exploring the Data

Missingness: *Going down i.e. Municipalities are more compliant in submitting data, except property taxes, 20-25% missing every year*



Exploring the Data

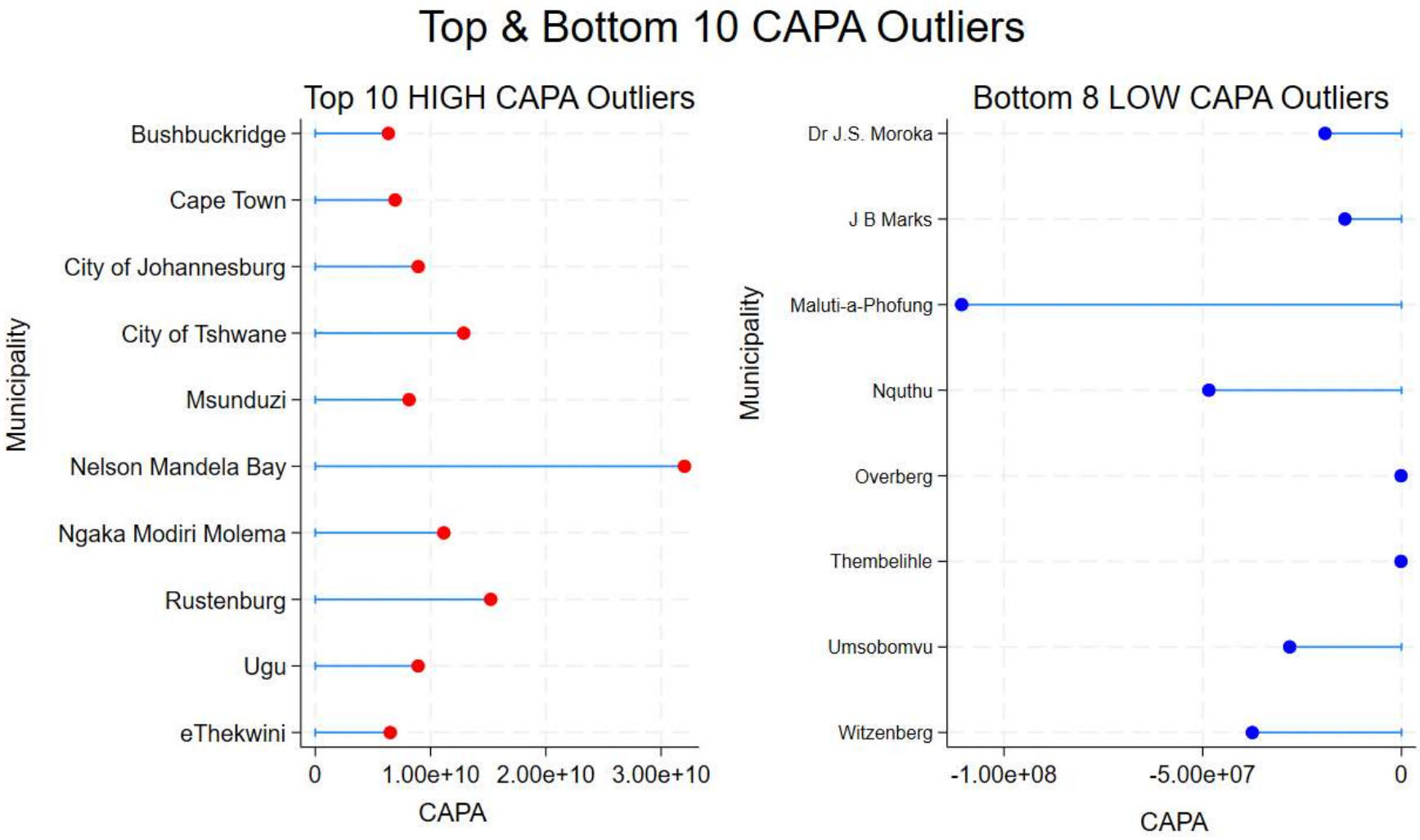
Outliers:

Raw administrative data often contains the following issues:

- Spikes caused by reporting errors
- Zeros in the data means missing values or actual zero amounts? This lack of clarity produces artificially huge growth rates.
- Unexplained negative values when it is not justified, e.g. negative CAPA values.
- Structural breaks from mSCOA transition (ofetn huge jumps from 2020) or merging of municipalities.
- Data-entry mistakes.
- These issues are likely to distort the analysis of performance or drivers of revenue maximisation at the local level

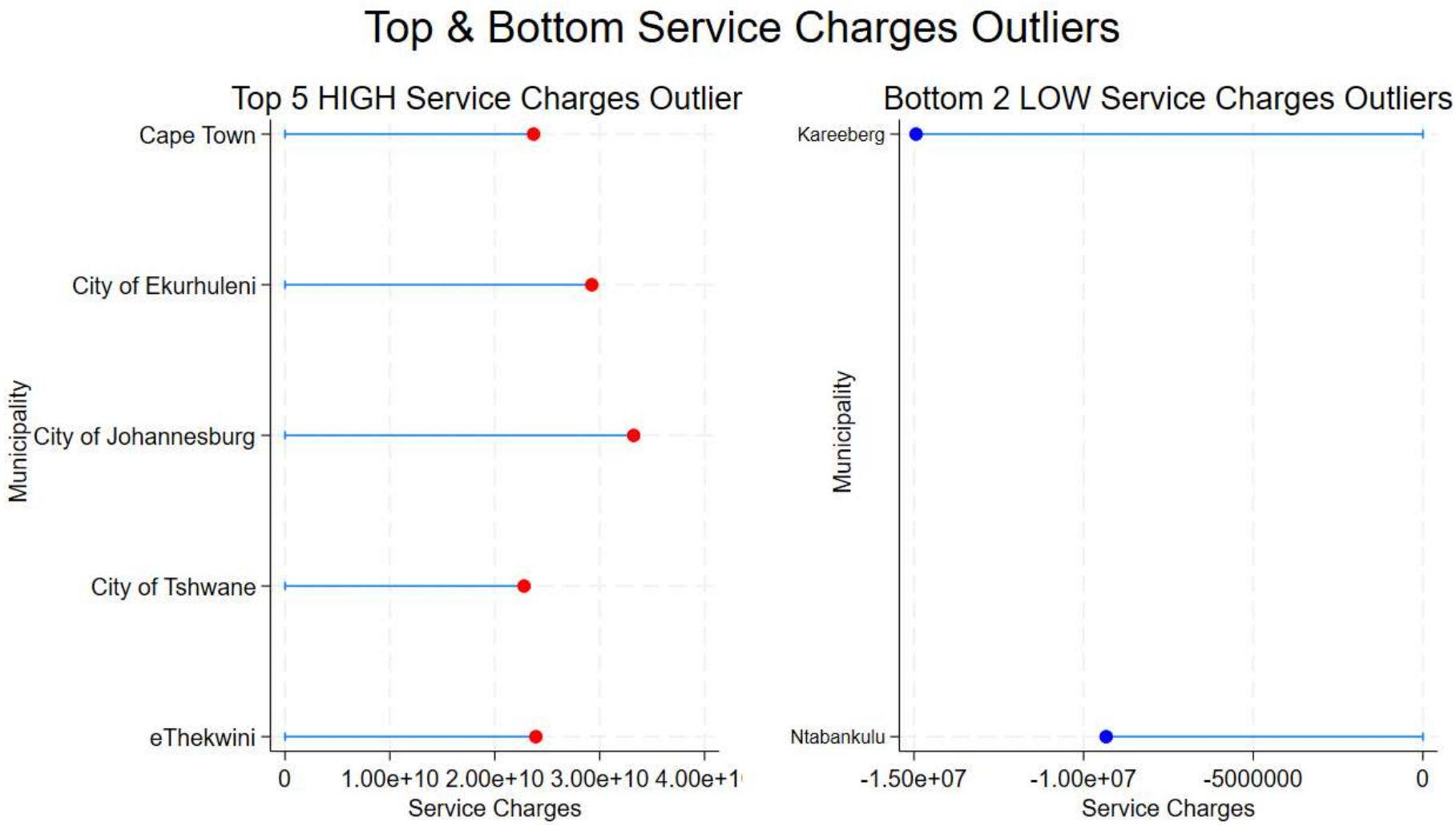
Exploring the Data

Outliers



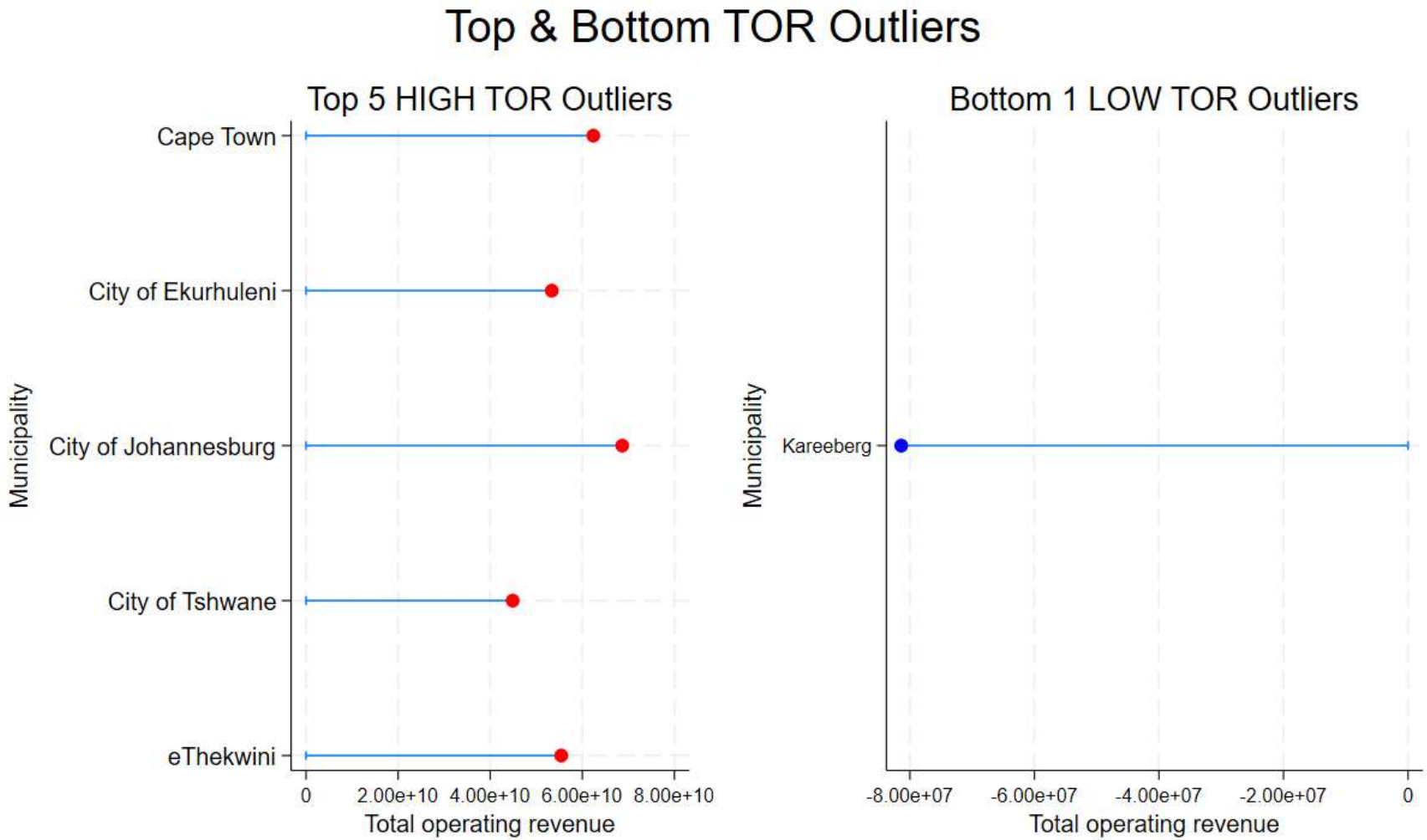
Exploring the Data

Outliers



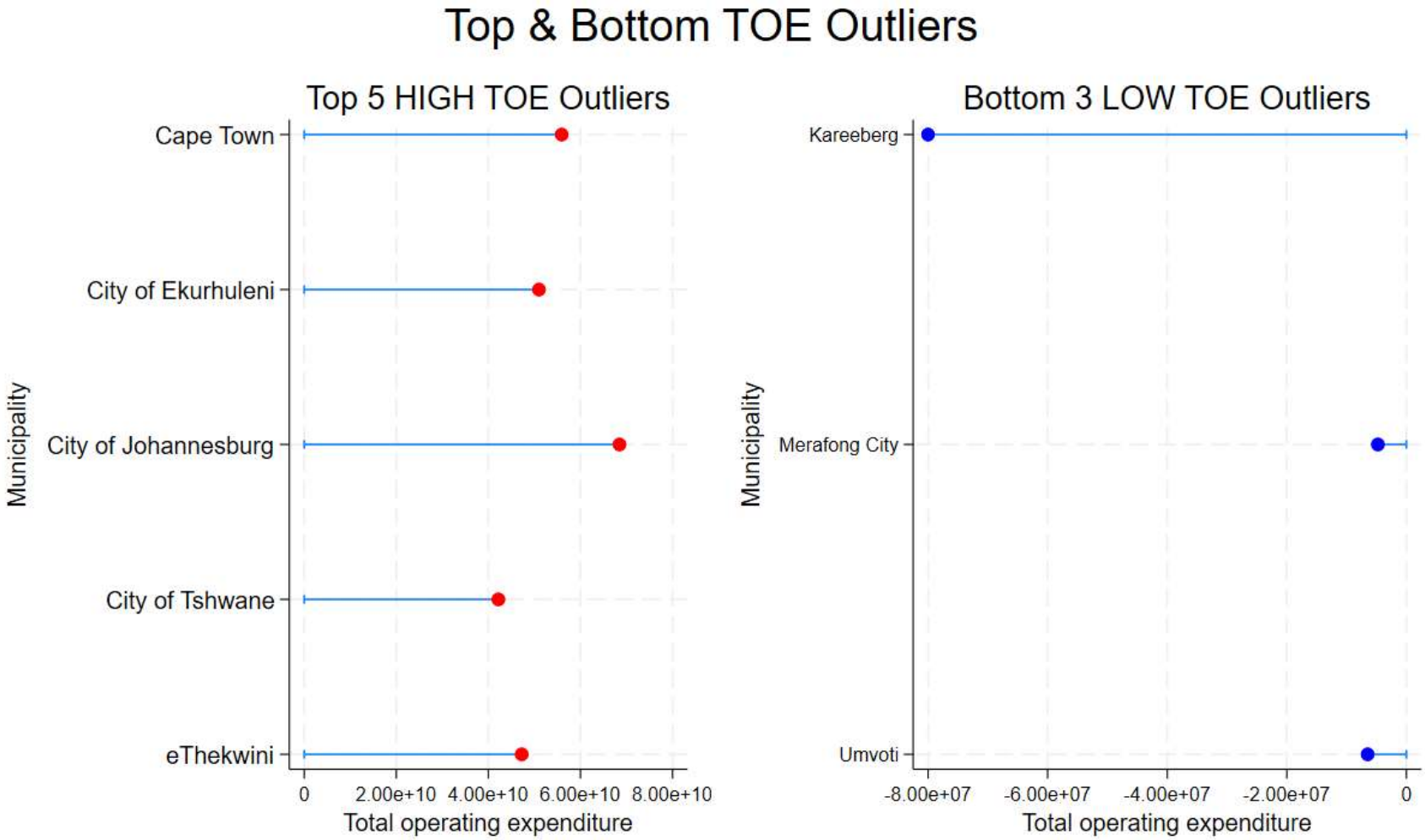
Exploring the Data

Outliers



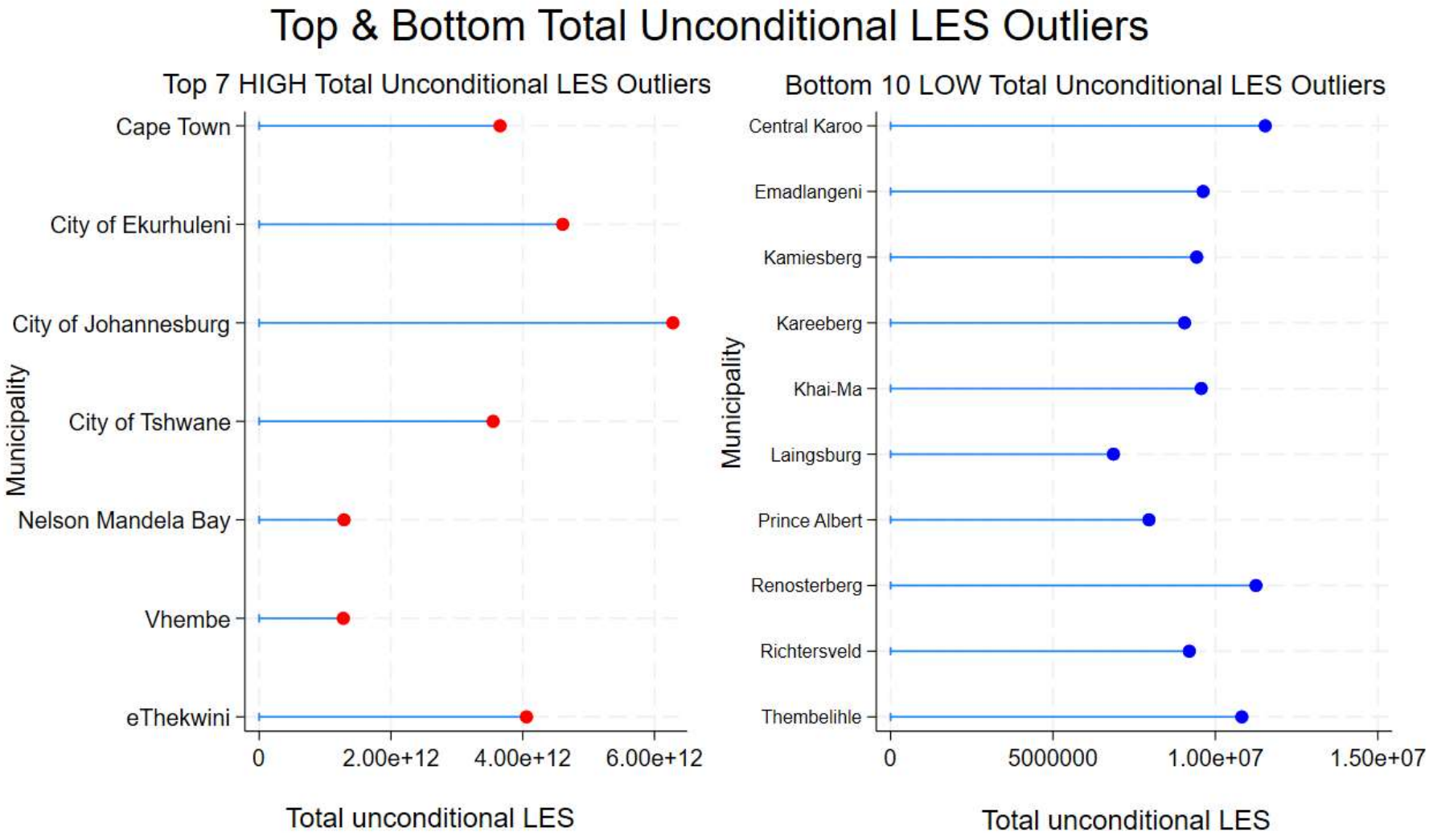
Exploring the Data

Outliers



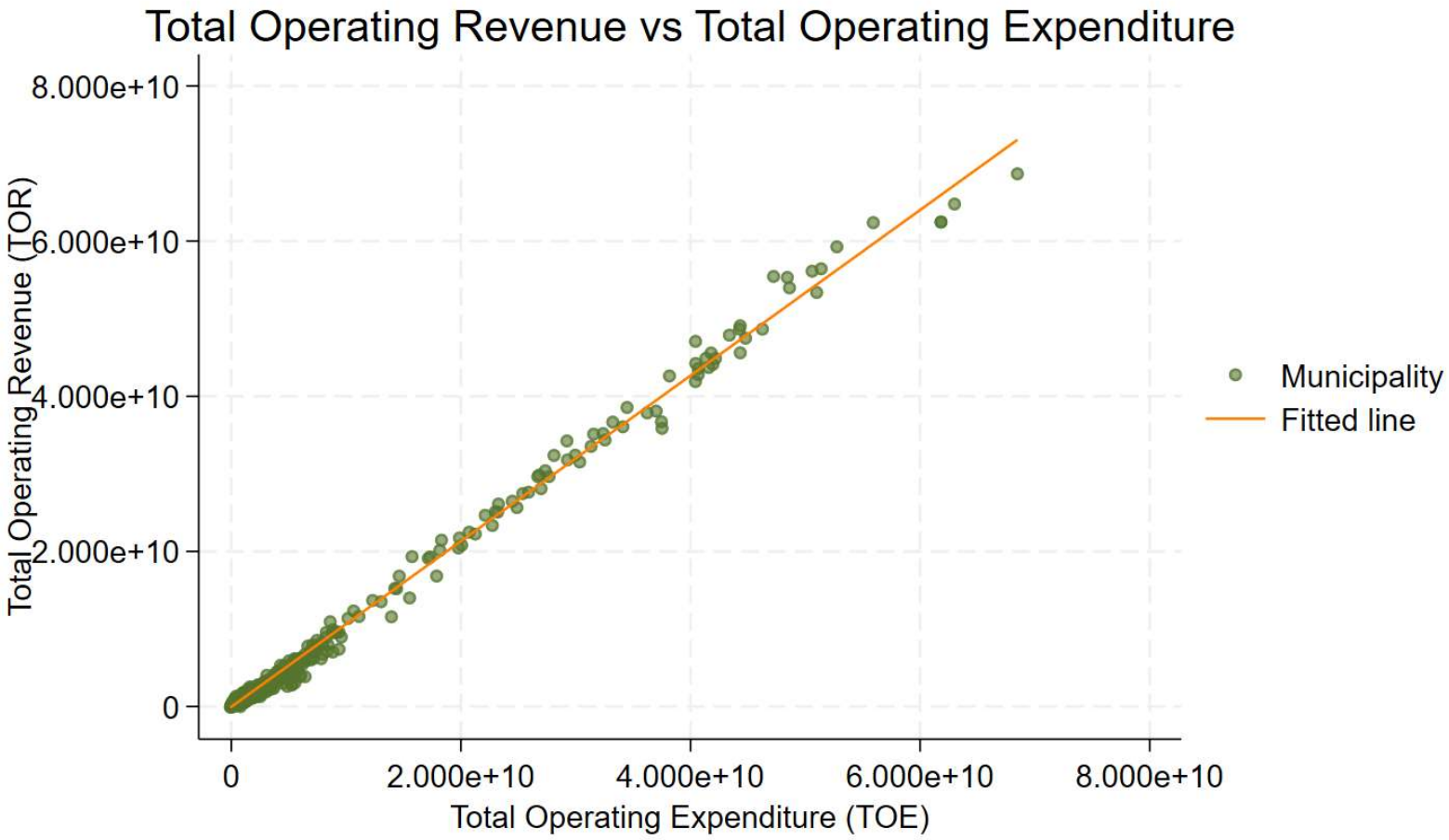
Exploring the Data

Outliers



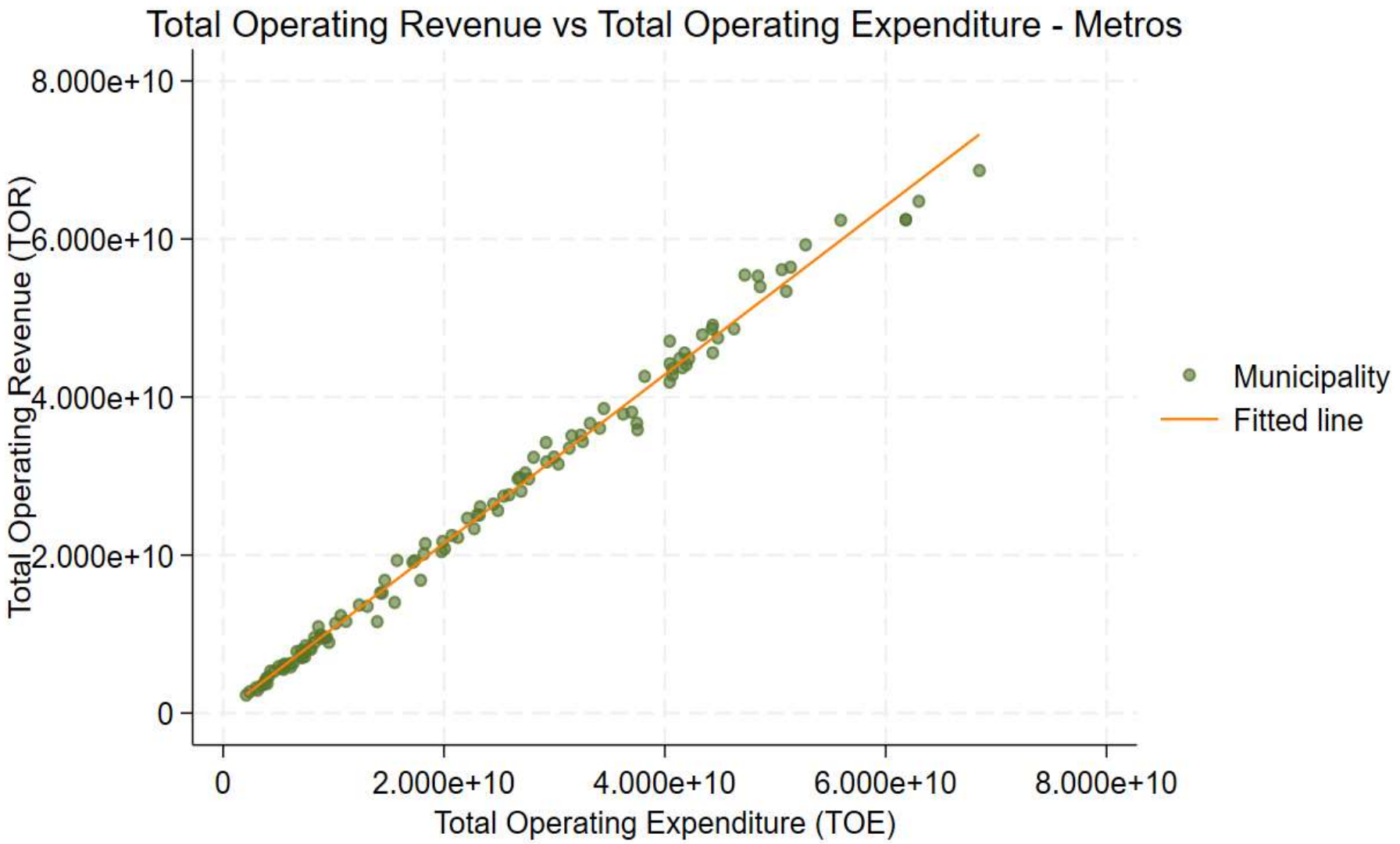
Exploring the Data

Pairwise Correlations, Full sample



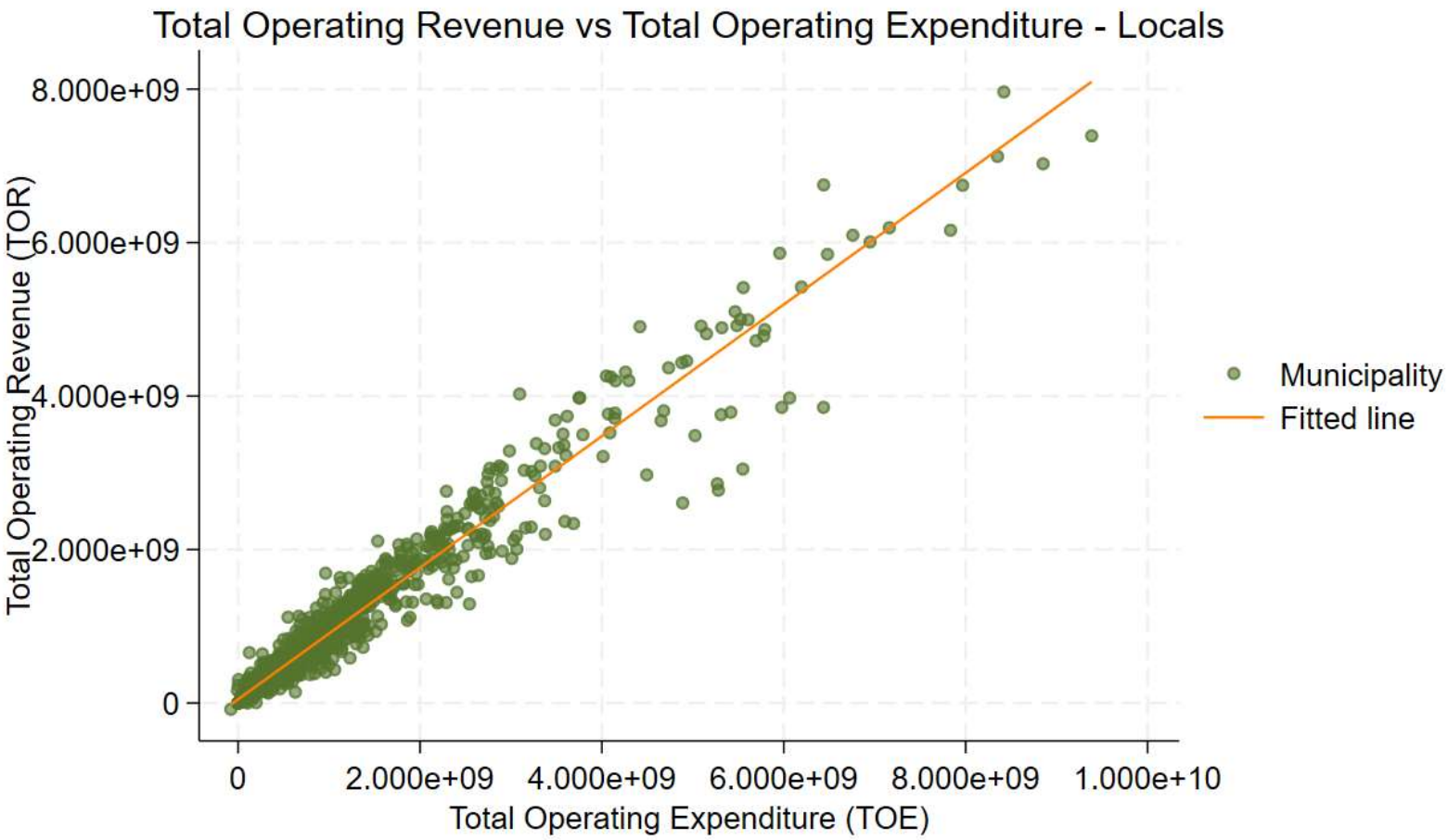
Exploring the Data

Pairwise Correlations, Category A



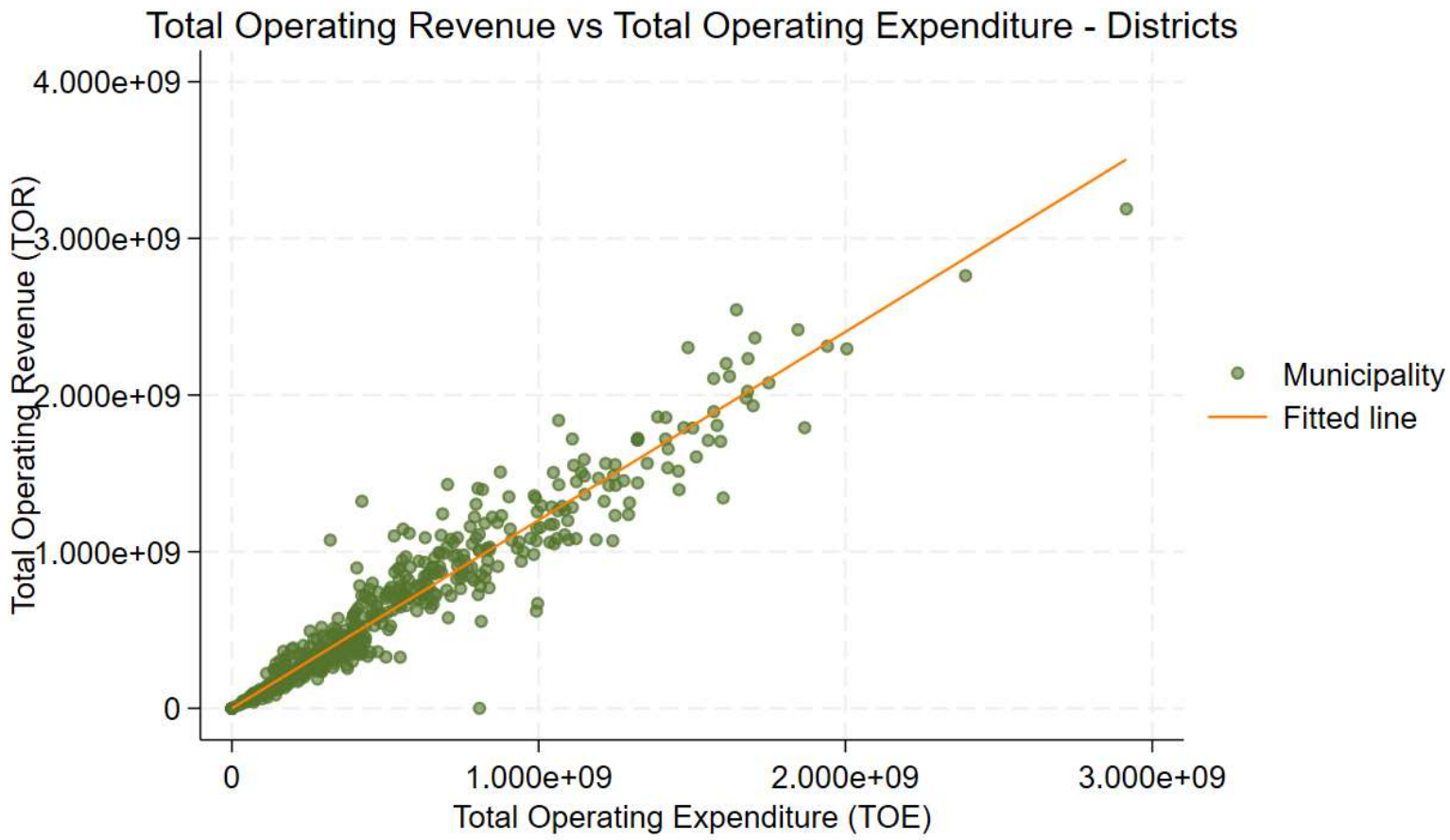
Exploring the Data

Pairwise Correlations, Category B



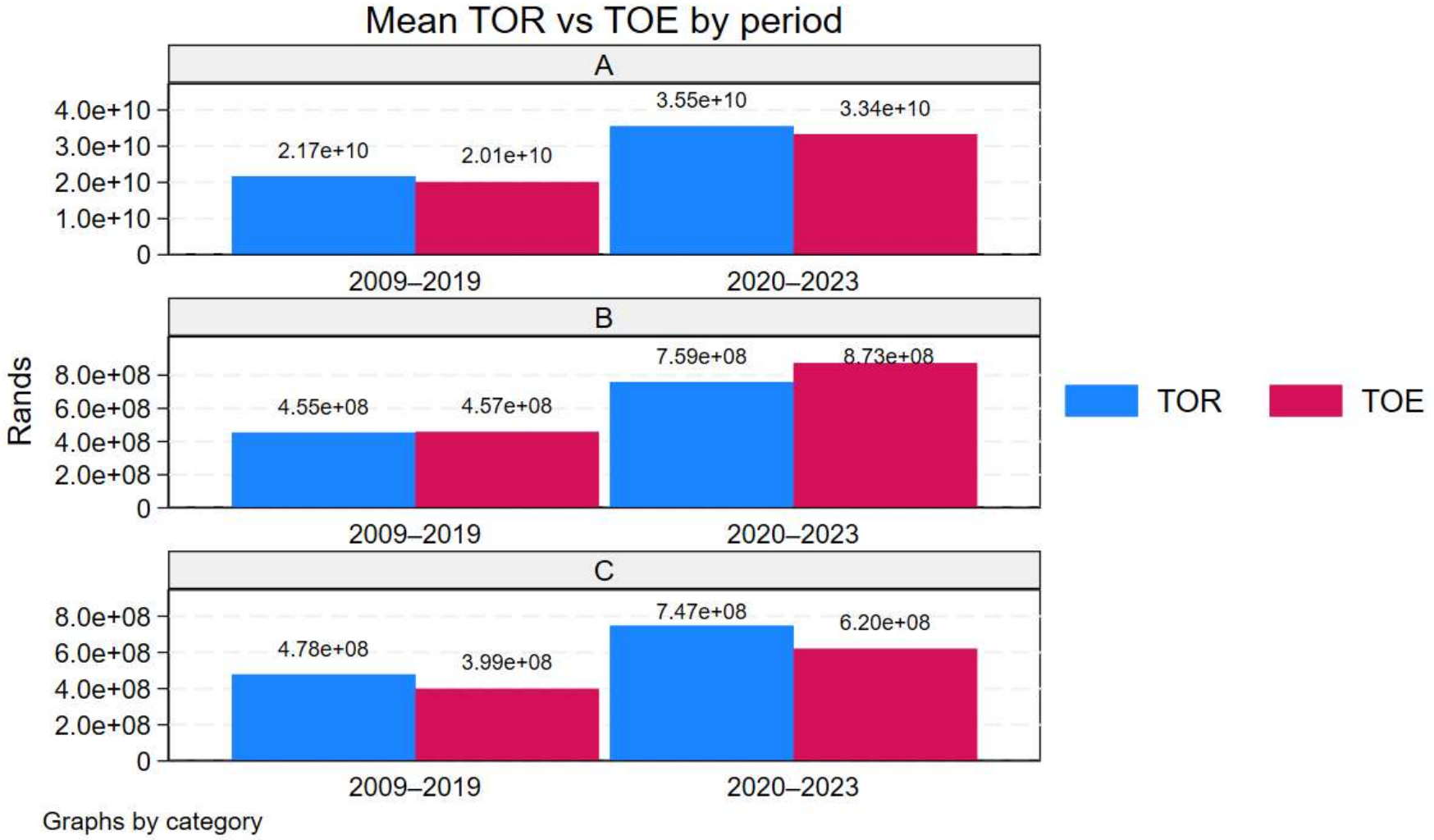
Exploring the Data

Pairwise Correlations, Category C



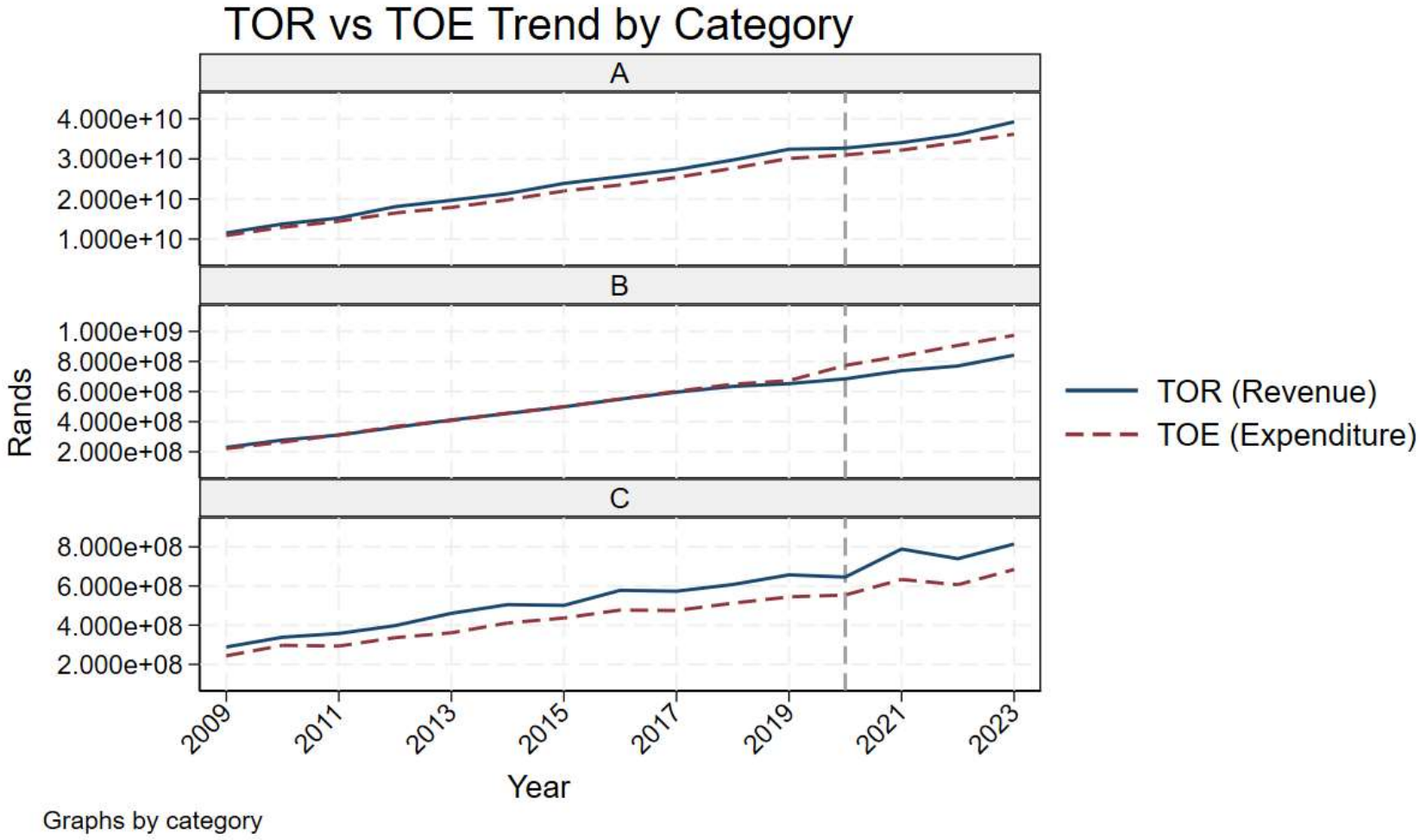
Exploring the Data

Total Operating Revenue and Expenditure



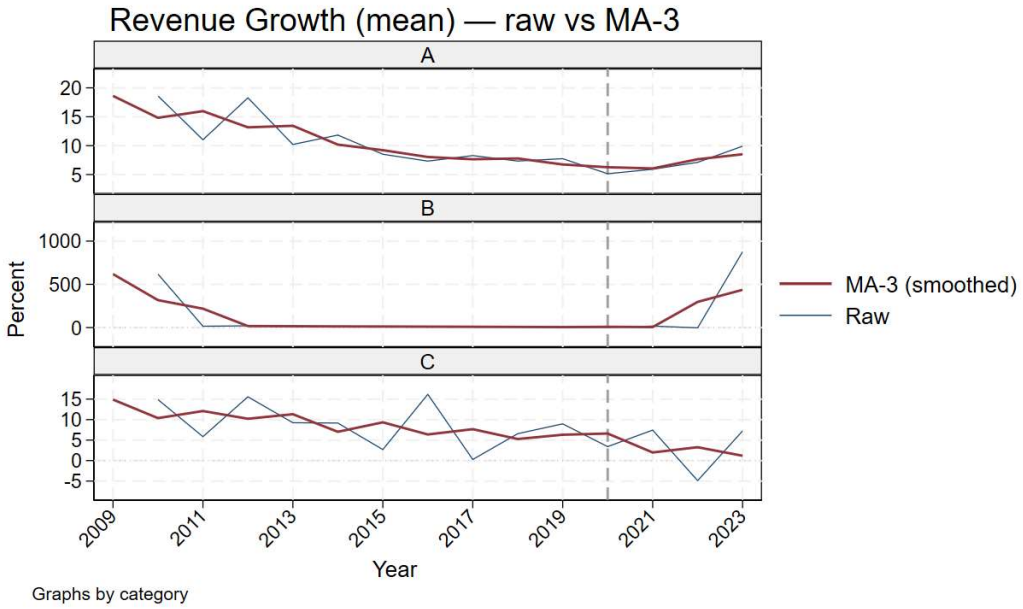
Exploring the Data

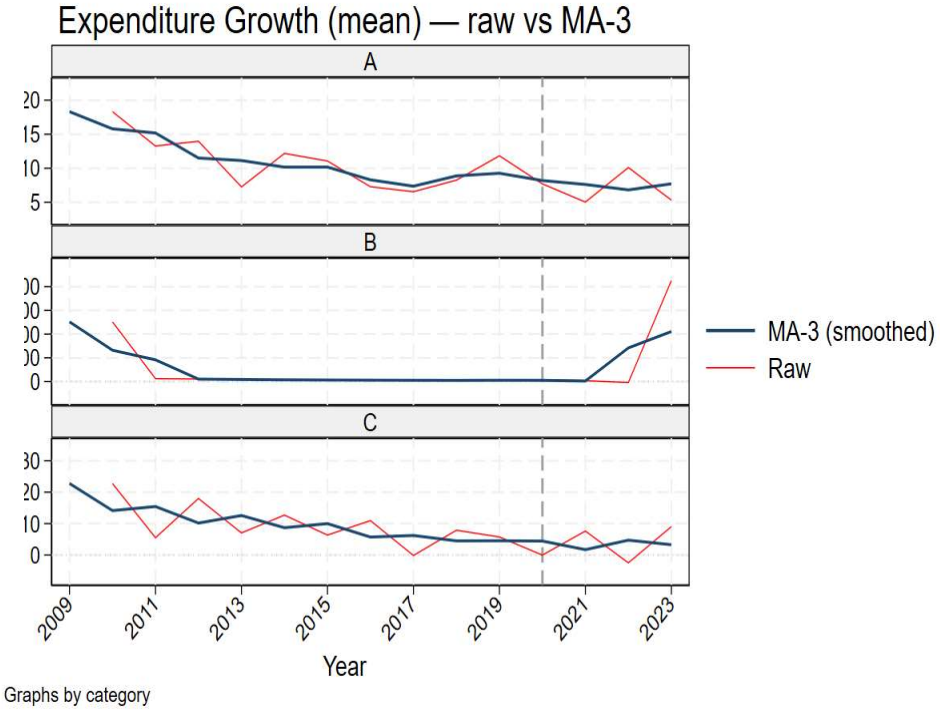
Total Operating Revenue and Expenditure



Exploring the Data

Total Operating Revenue and Expenditure – Growth trends

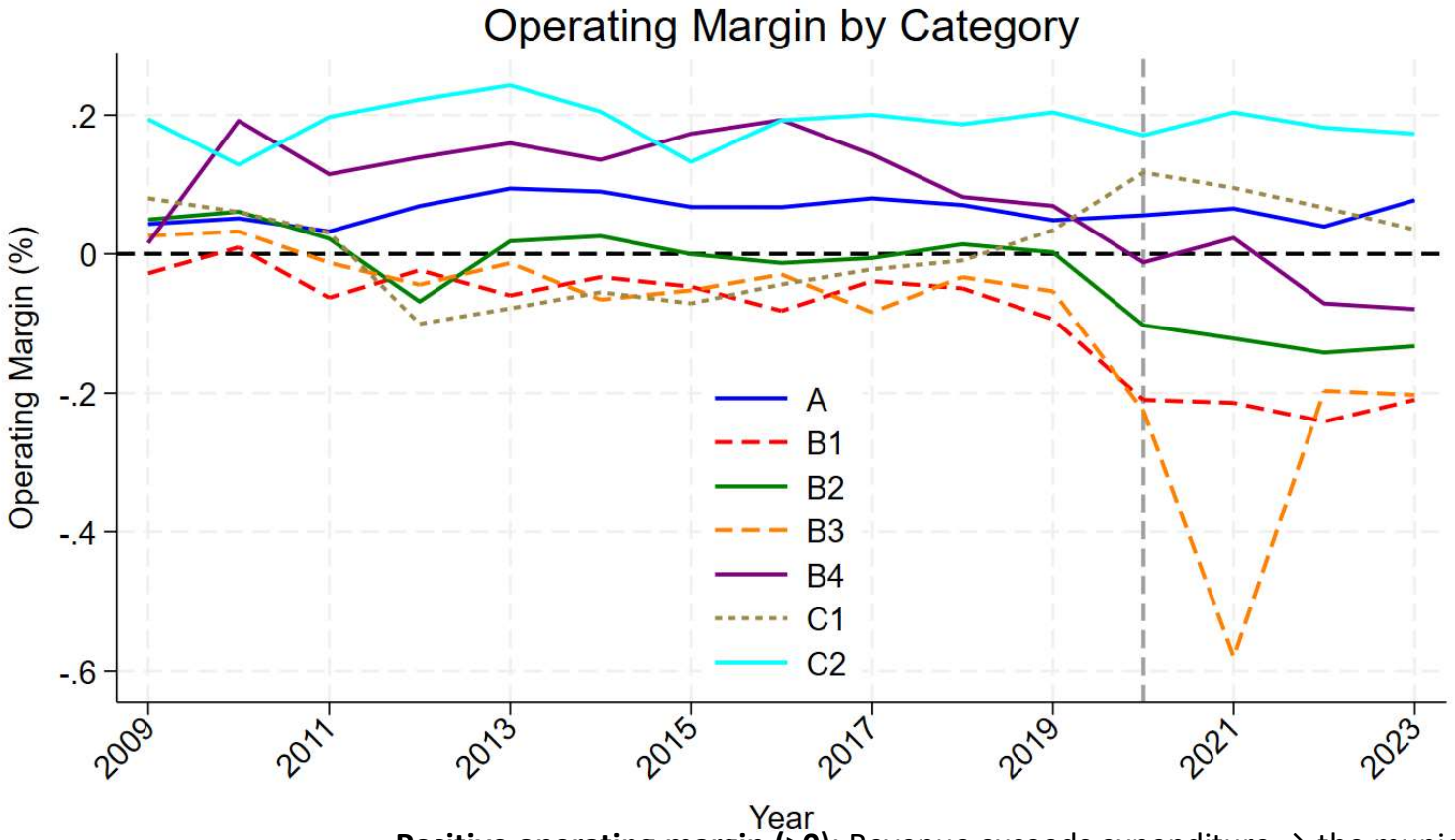




Exploring the Data

Operating margin

This is proportion of revenue left over after covering operating expenses



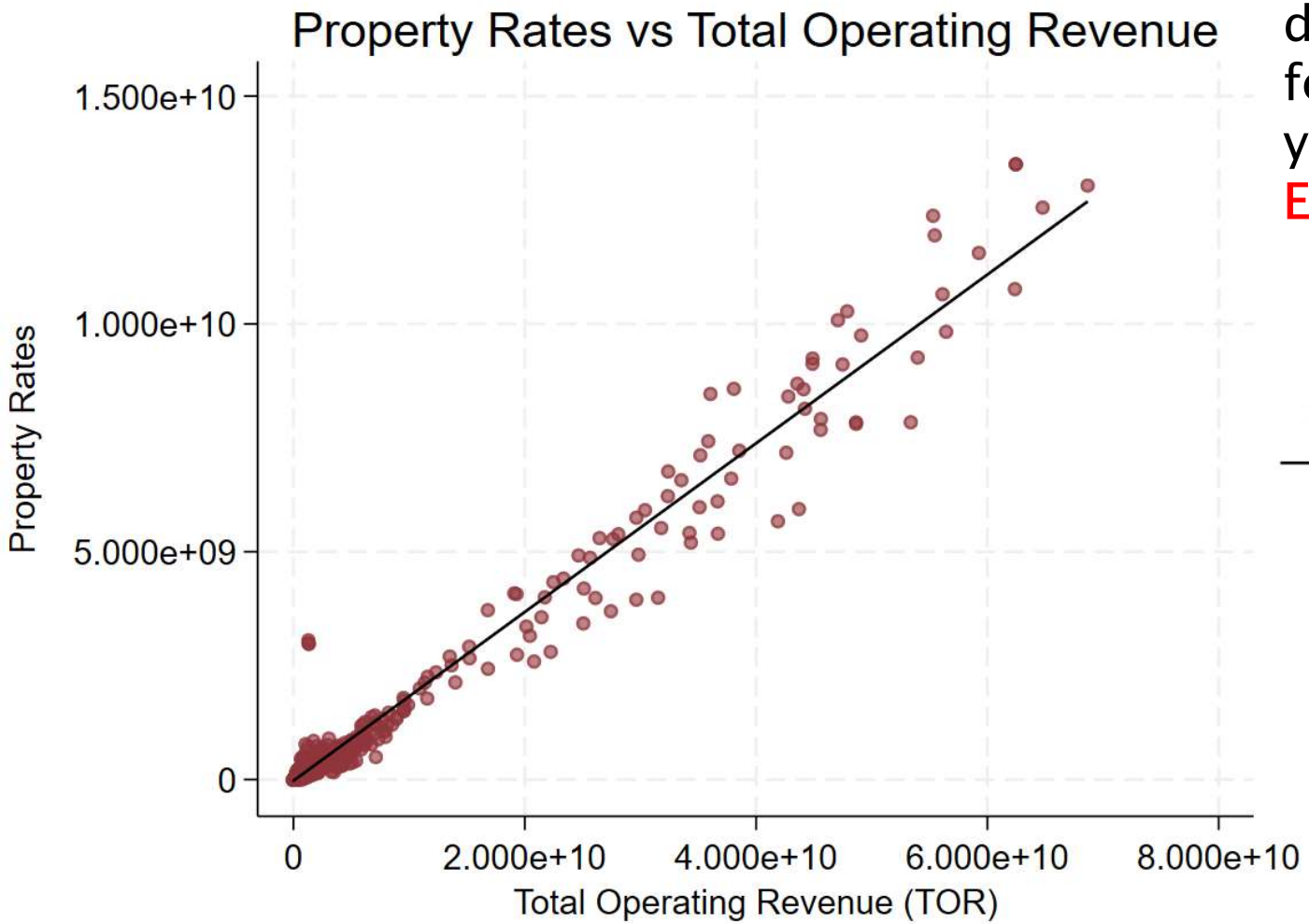
B3 – Data collection issue? Or something happened during that period?

Positive operating margin (>0): Revenue exceeds expenditure → the municipality is generating a surplus, leaving room for debt servicing, CAPEX, or reserves.

Negative operating margin (<0): Expenditure exceeds revenue → the municipality is running a deficit, indicating unsustainable finances unless offset by borrowing or reserves

Exploring the Data

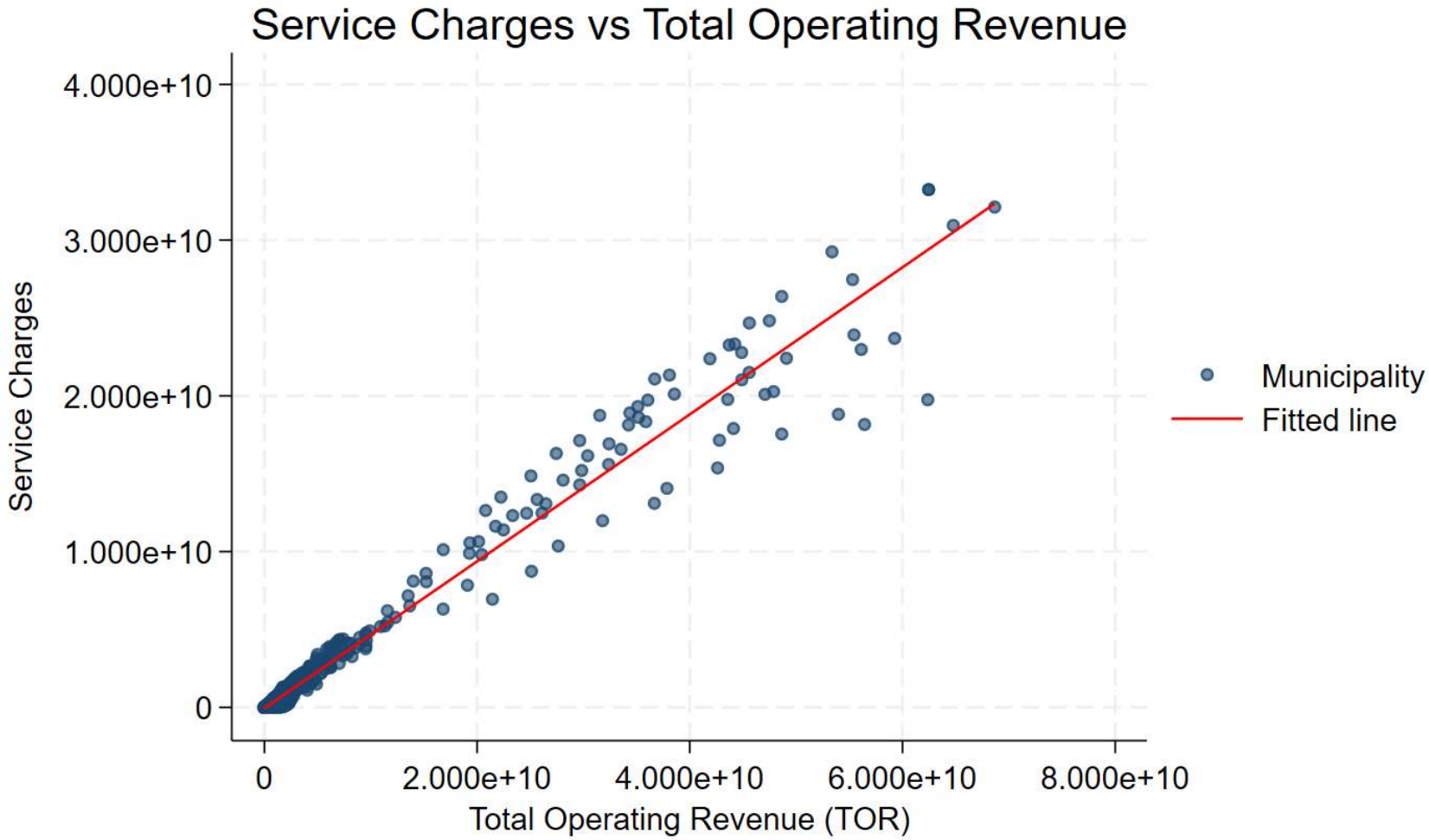
Pairwise Correlations (Full sample, Full time period)



NOTE: we observed that property rates data are available for a few districts for the years 2009–2011. Explanation?

Exploring the Data

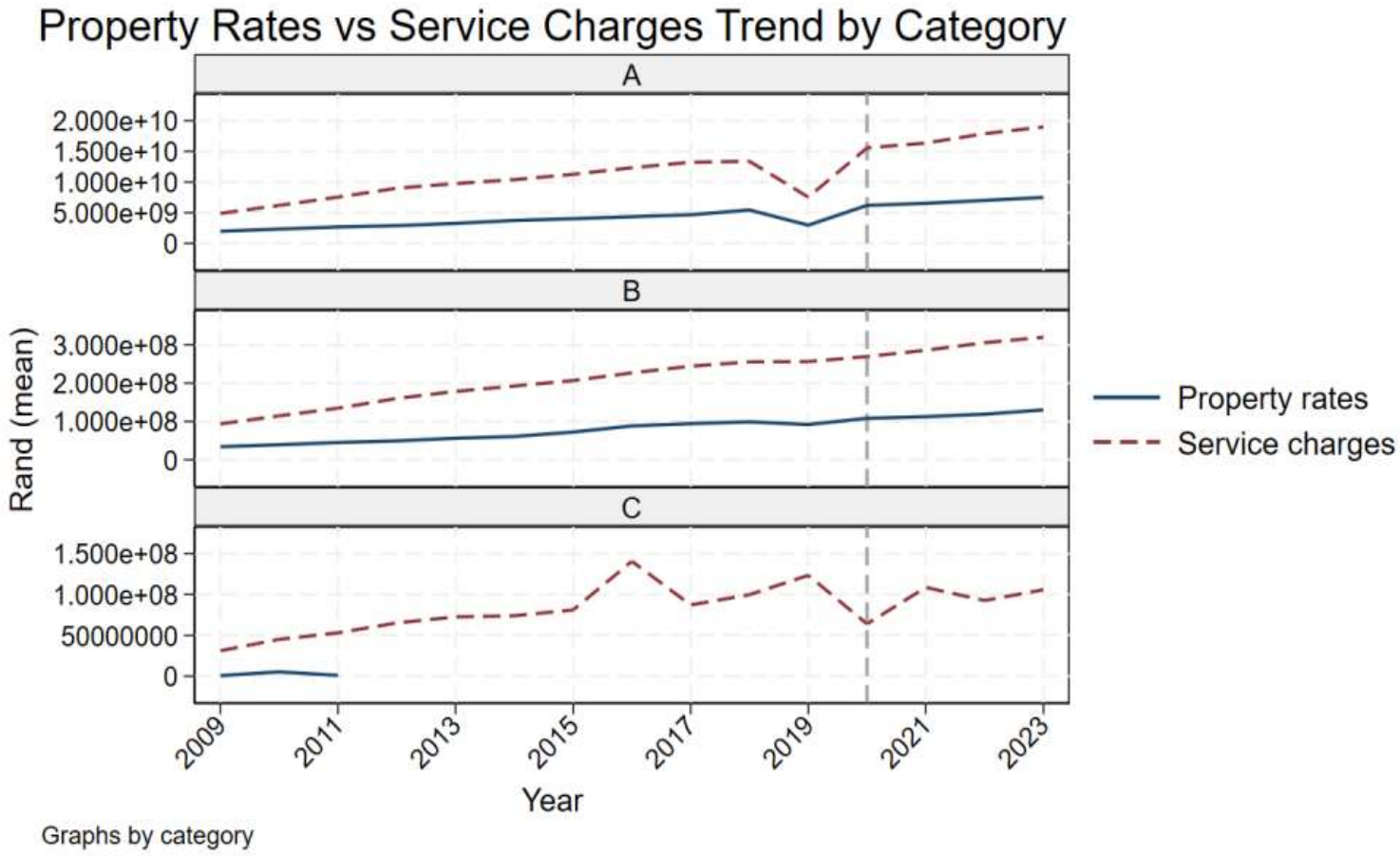
Pairwise Correlations



Exploring the Data

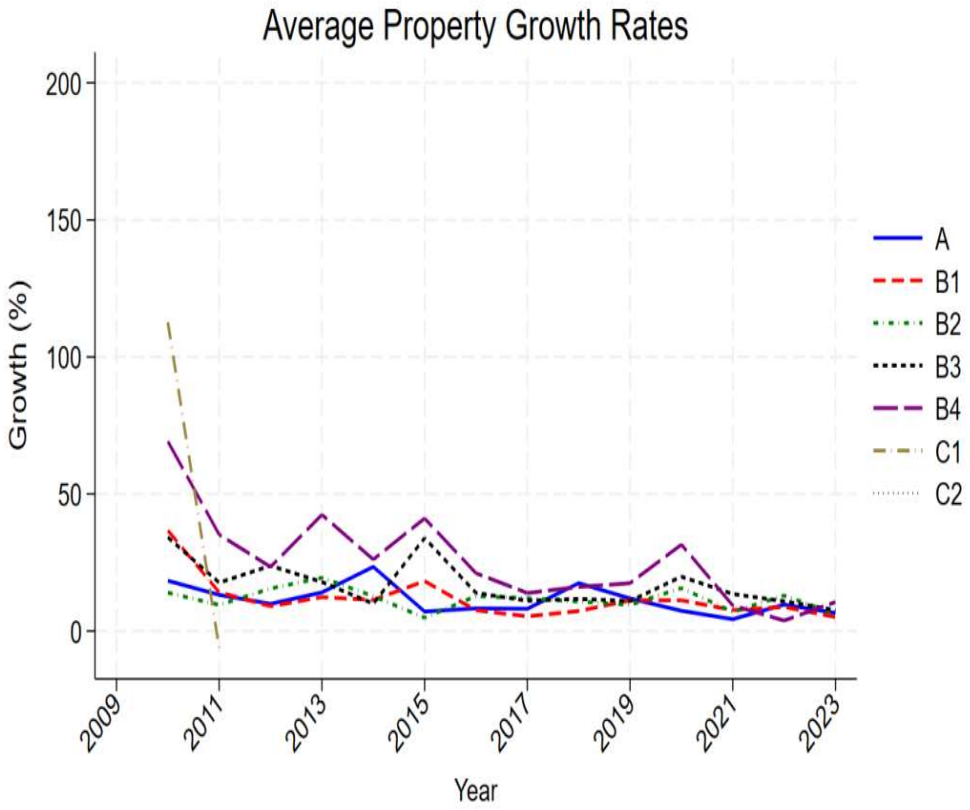
Own Source Revenue

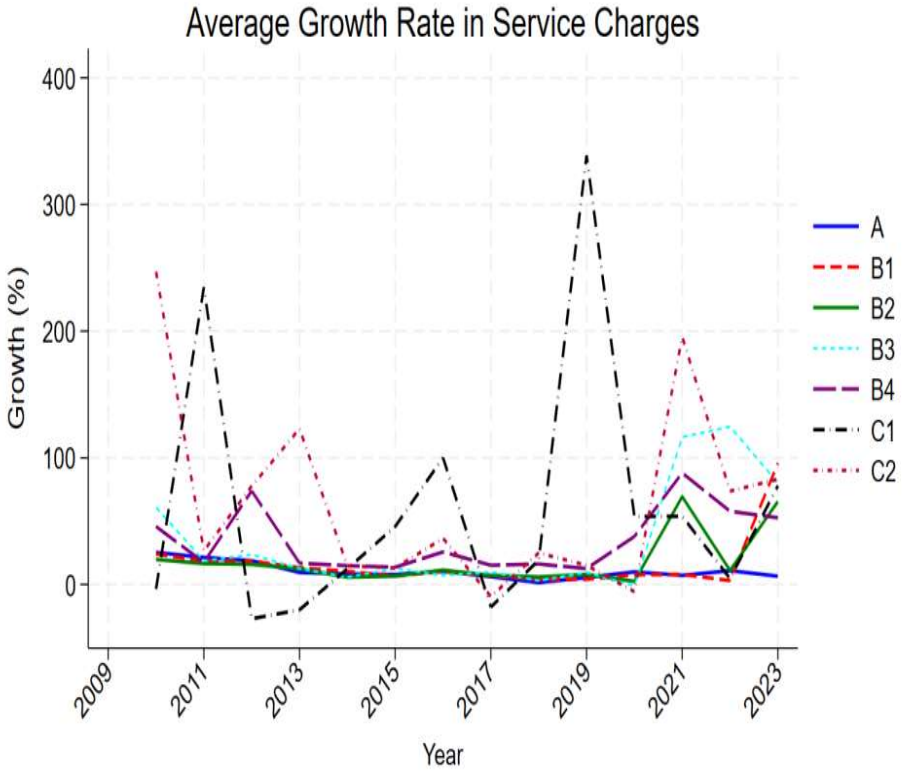
Property rates and Service charges



Exploring the Data

Own Source Revenue

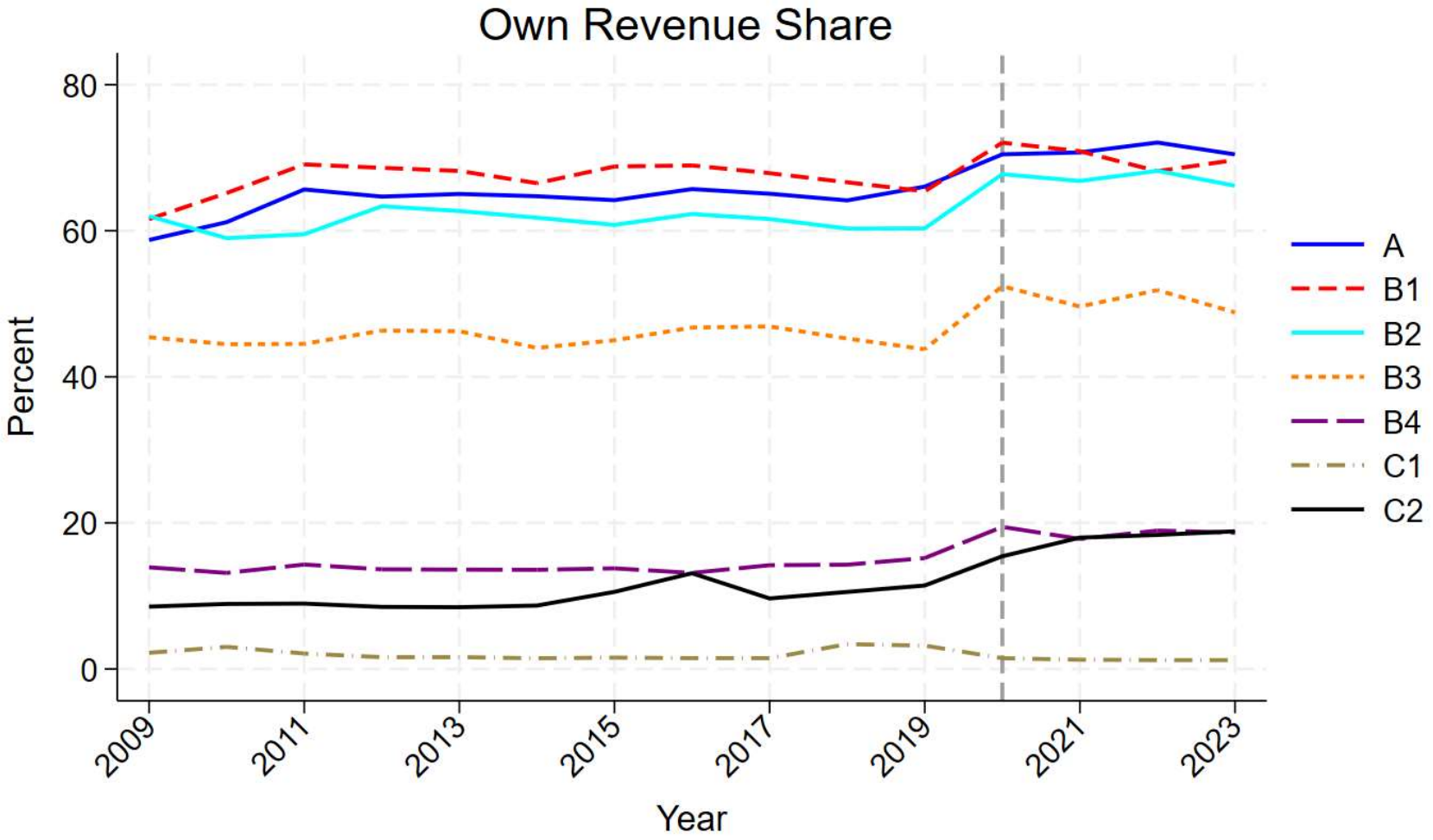




C1 – Data collection issue? Or something happened during that period?

Exploring the Data

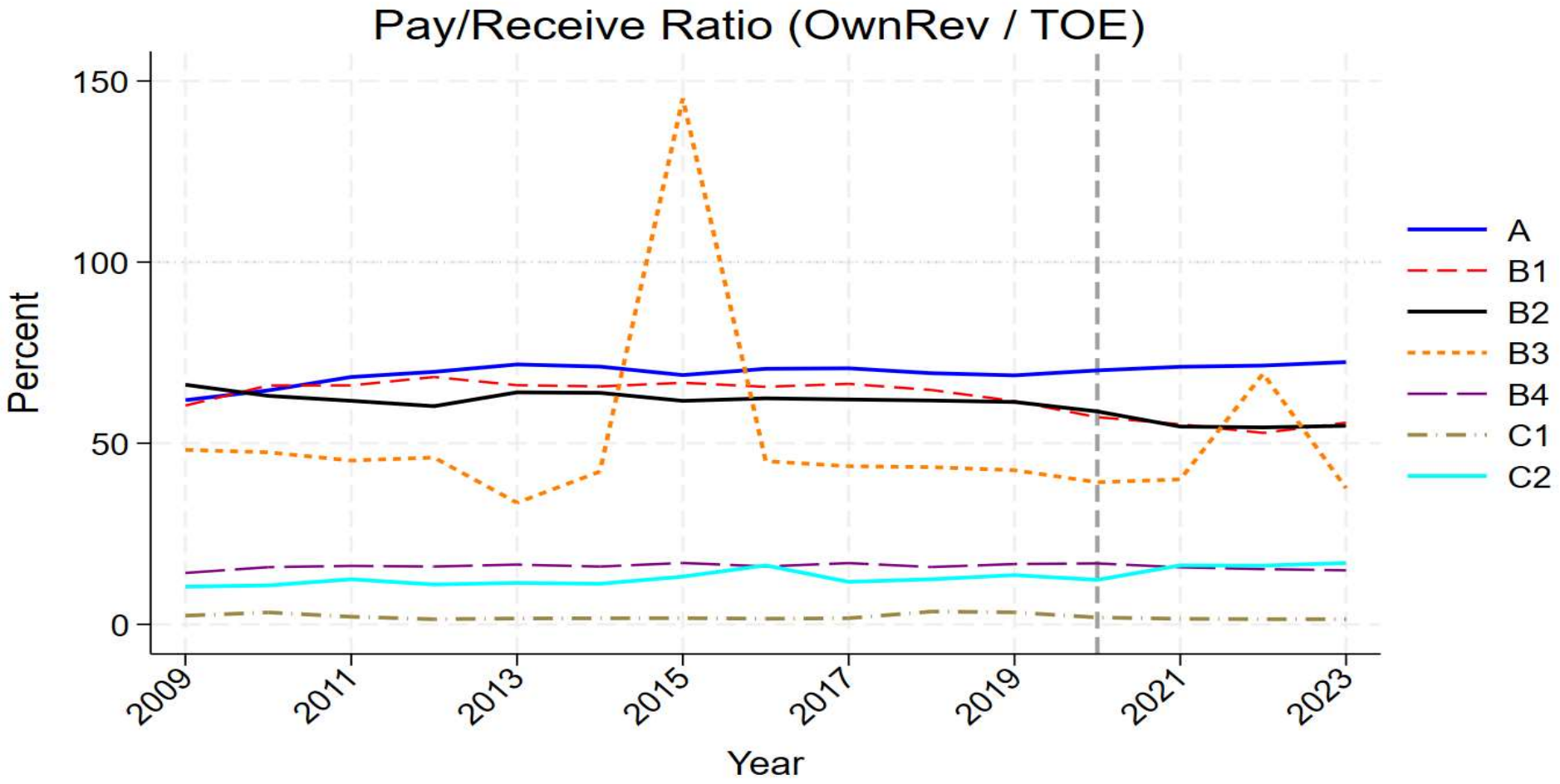
Share of Own Source Revenue in TOR



Exploring the Data

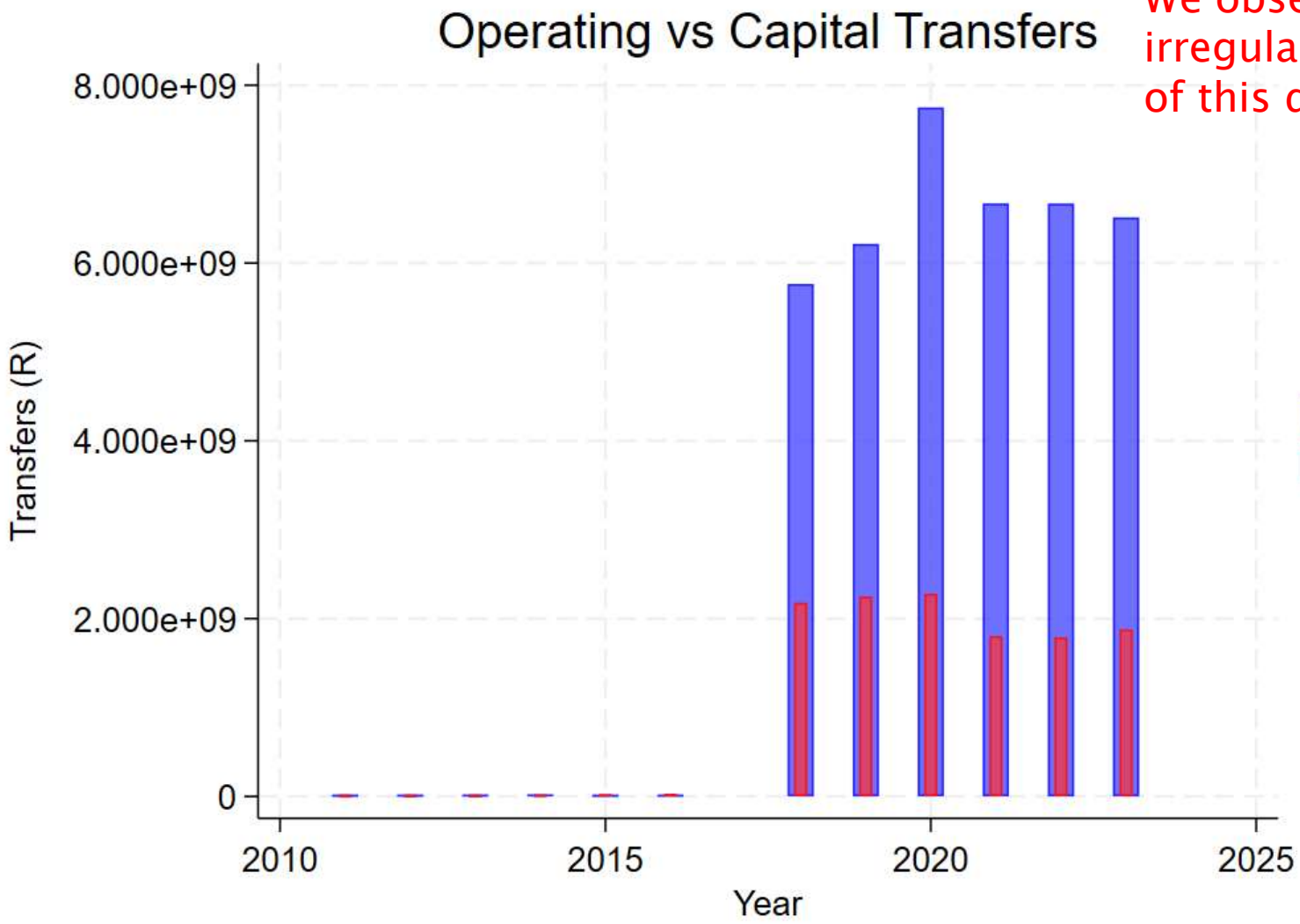
Pay/ Receive Ratio

It measures how much of a municipality's spending (TOE) is covered by its own revenue sources. A higher ratio signals fiscal autonomy, better sustainability, and capacity for service delivery, while a lower ratio highlights vulnerability to intergovernmental transfers.



Exploring the Data

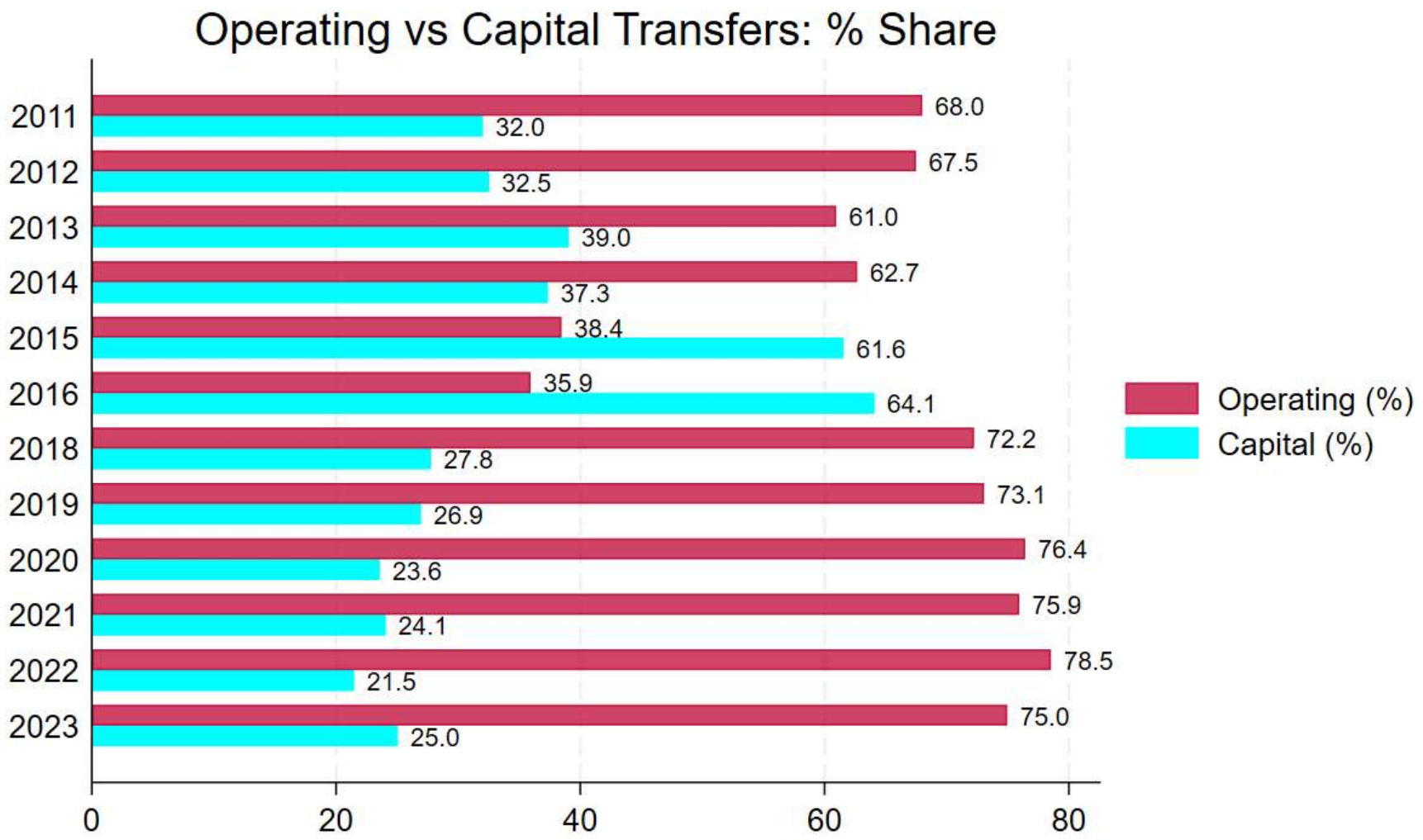
Grants Data



We observe consistent irregularity in the reporting of this data prior to 2017

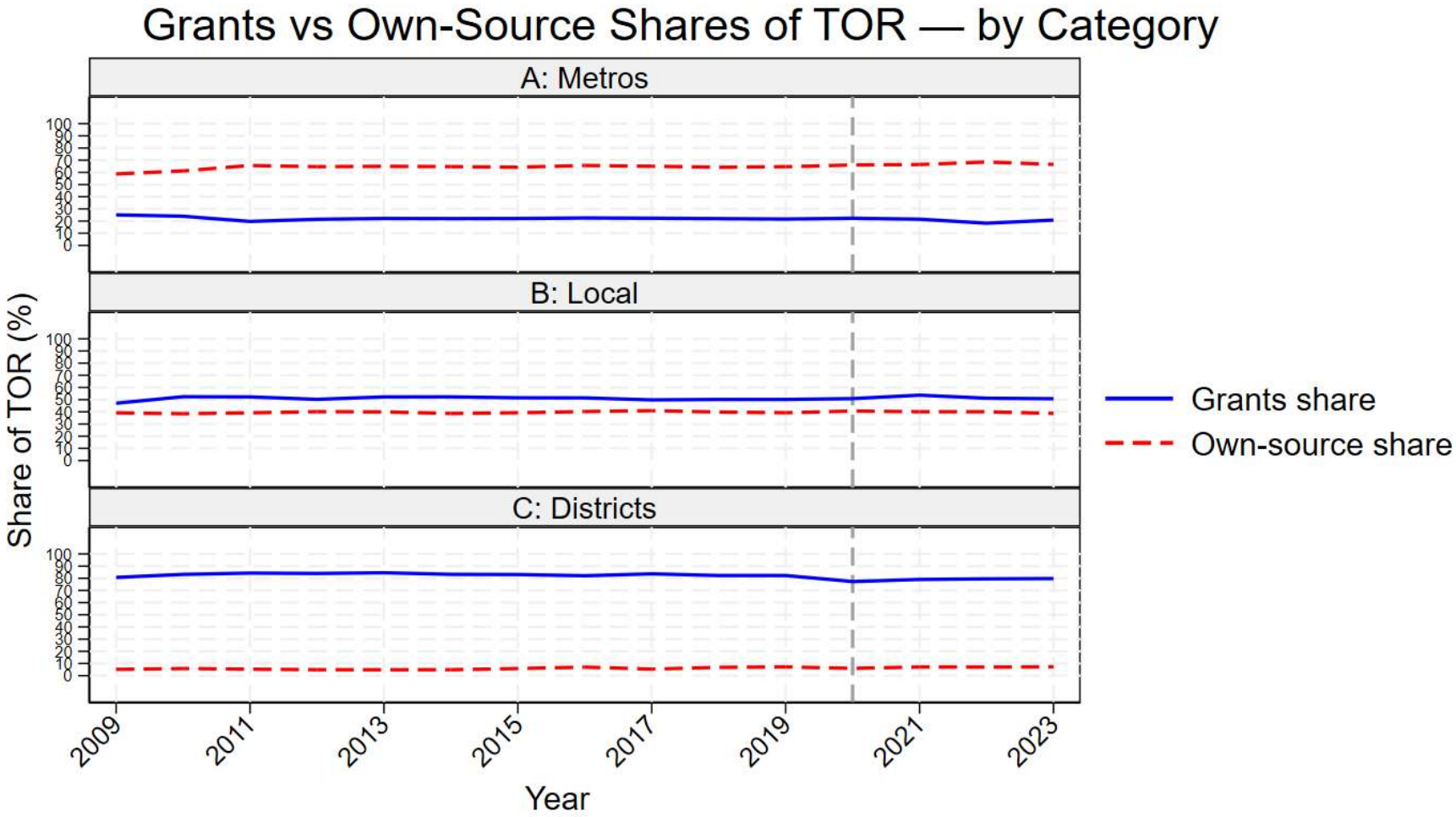
Exploring the Data

Grants Data



Exploring the Data

OSR vs Grants share in TOR

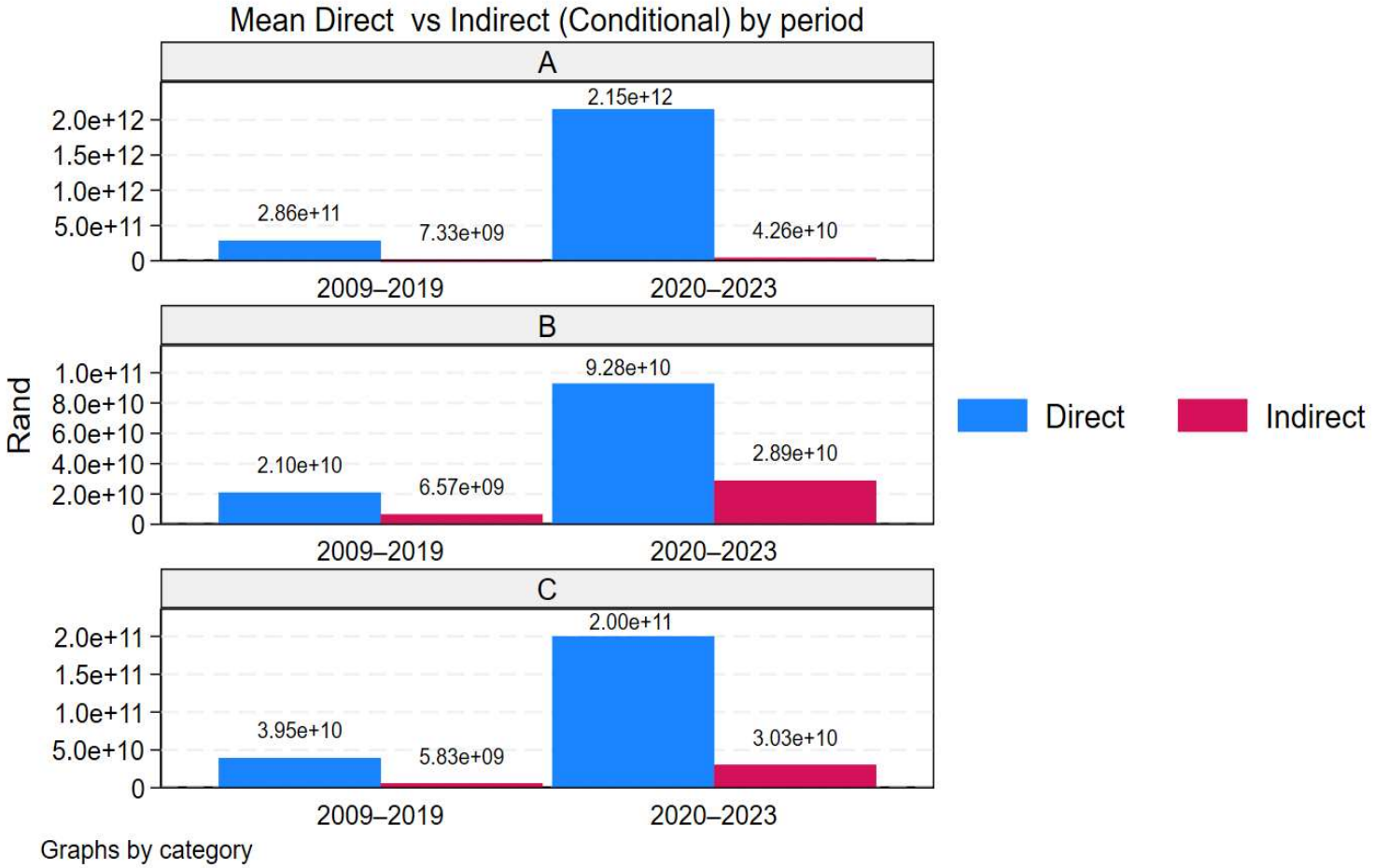


A=Metros; B=Local; C=Districts

Exploring the Data

Grants – *Disaggregated Data received from NT*

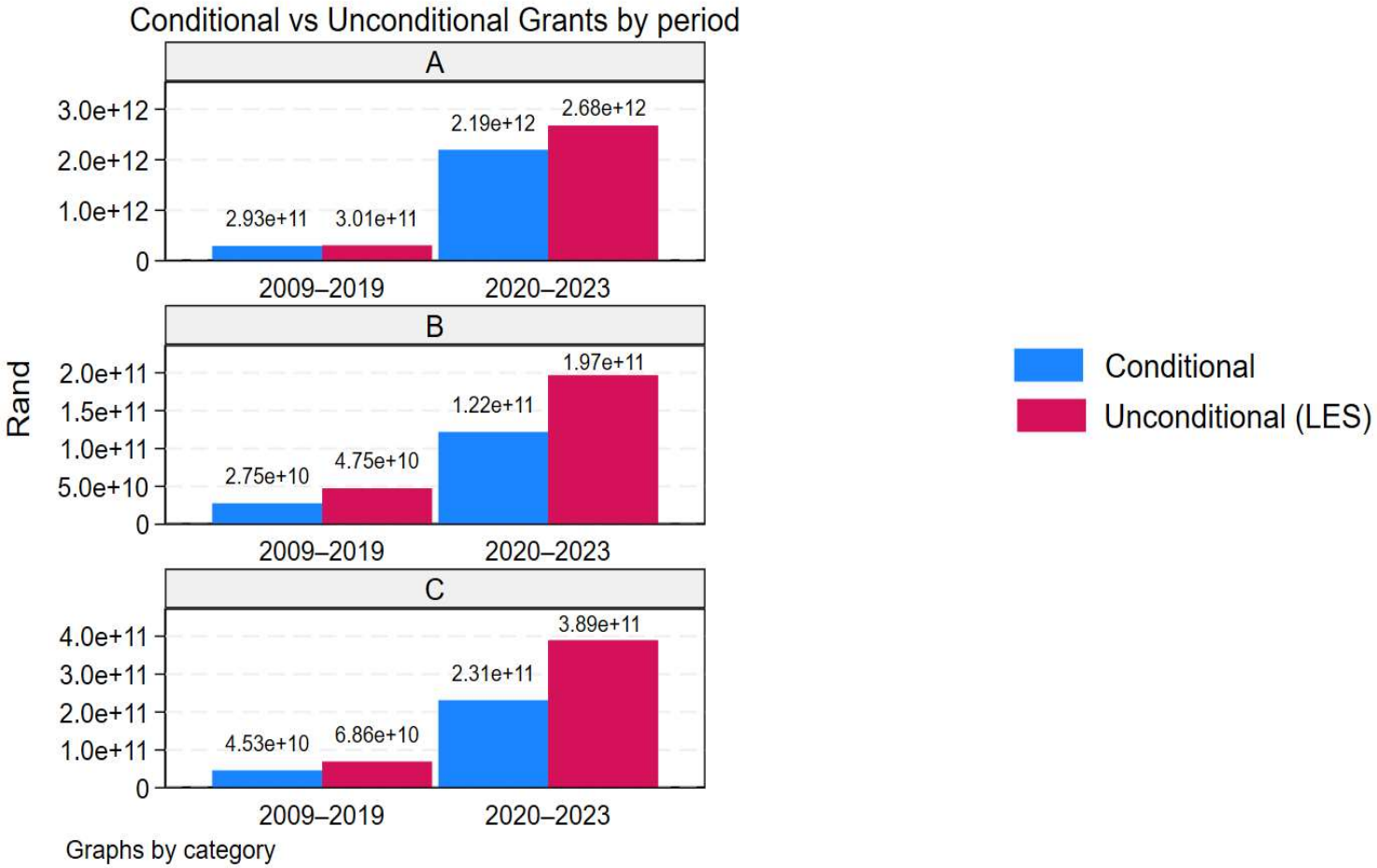
Direct vs Indirect Grants



Exploring the Data

Grants

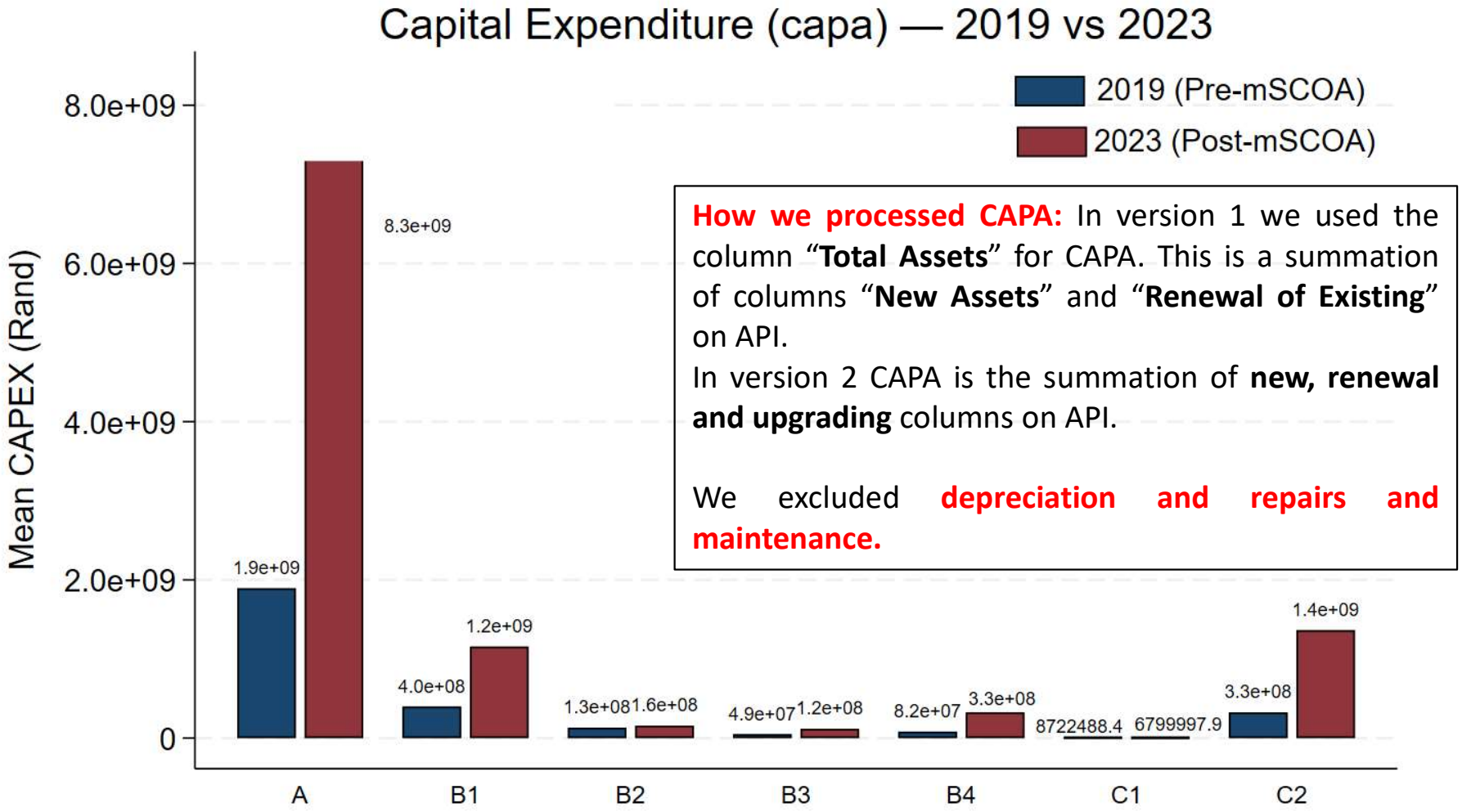
Conditional vs Unconditional Grants



Exploring the Data

CAPA, Capital Acquisition Data

Standalone dataset not in Income and Expenditure



How we processed CAPA: In version 1 we used the column "**Total Assets**" for CAPA. This is a summation of columns "**New Assets**" and "**Renewal of Existing**" on API.

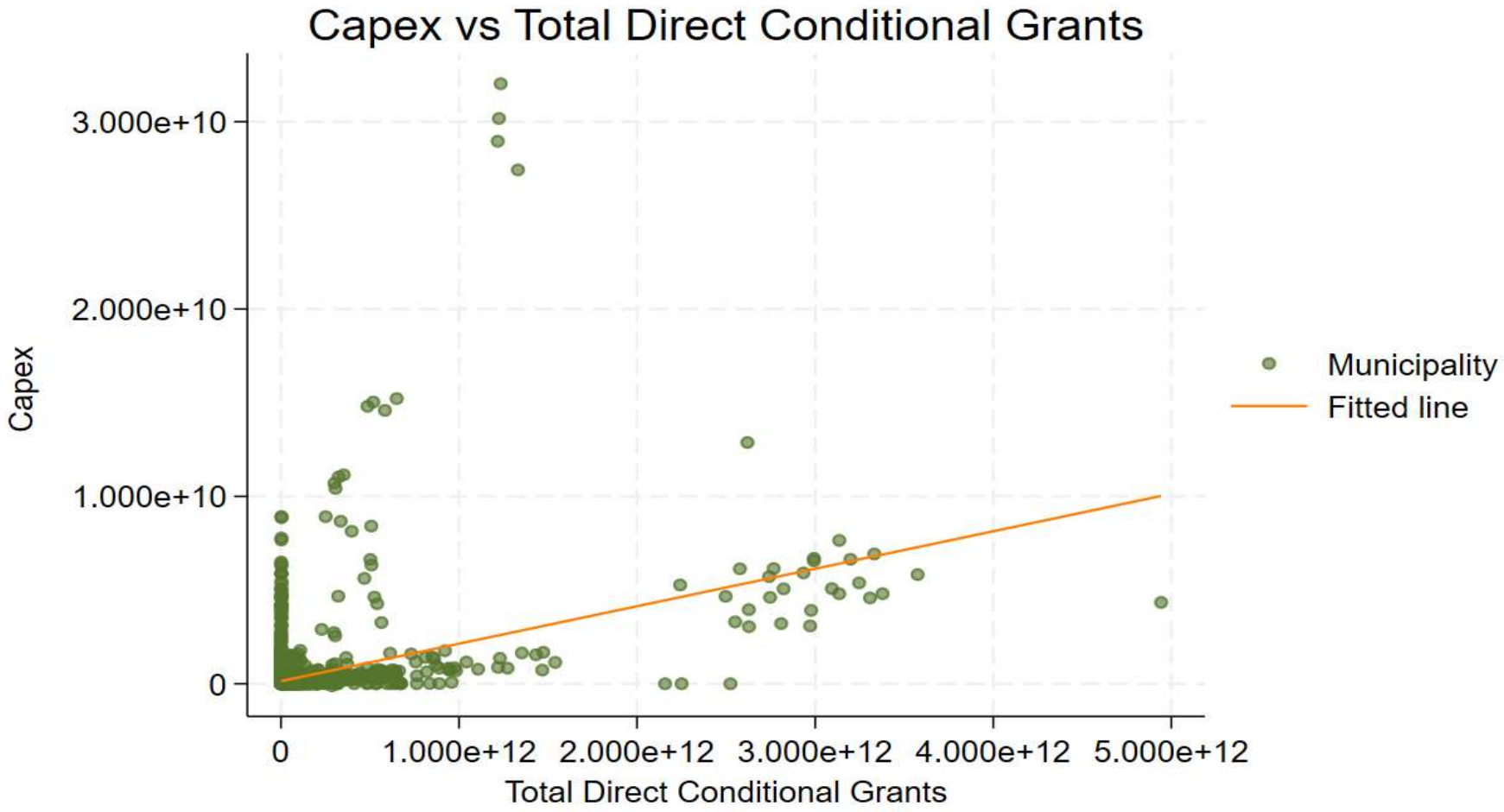
In version 2 CAPA is the summation of **new, renewal and upgrading** columns on API.

We excluded **depreciation and repairs and maintenance.**

Having more infrastructure data will bring more light in this data to help assess LED in South Africa

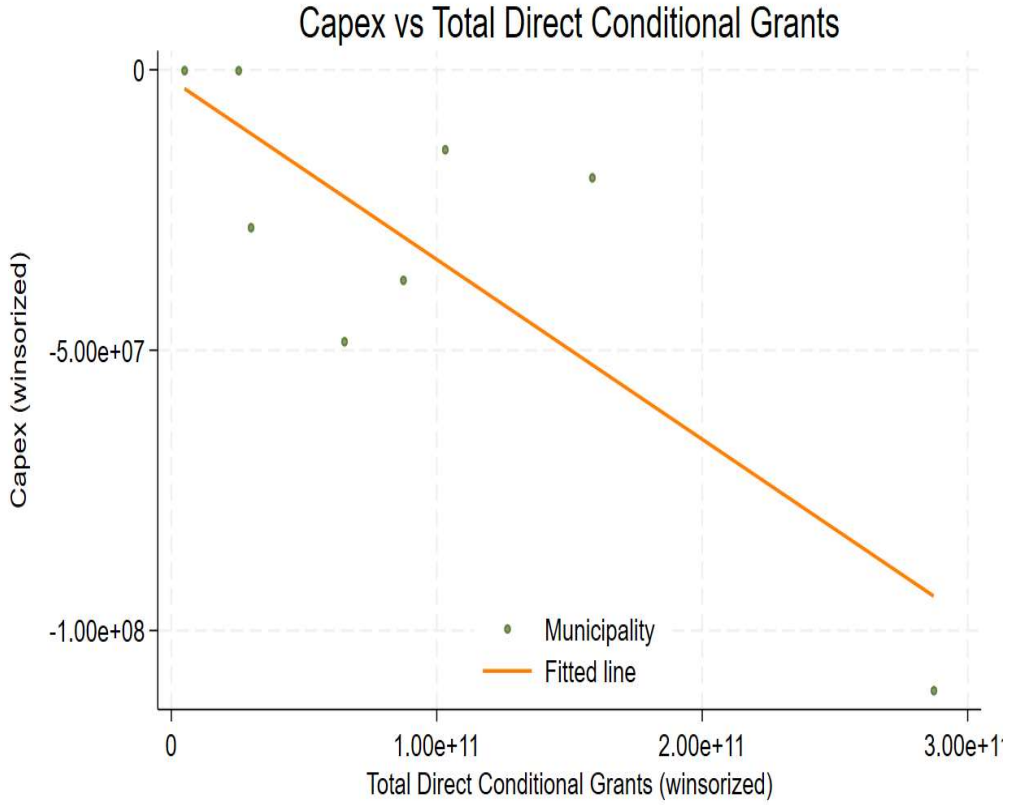
Exploring the Data

Pairwise Correlations



Exploring the Data

Negative Correlations

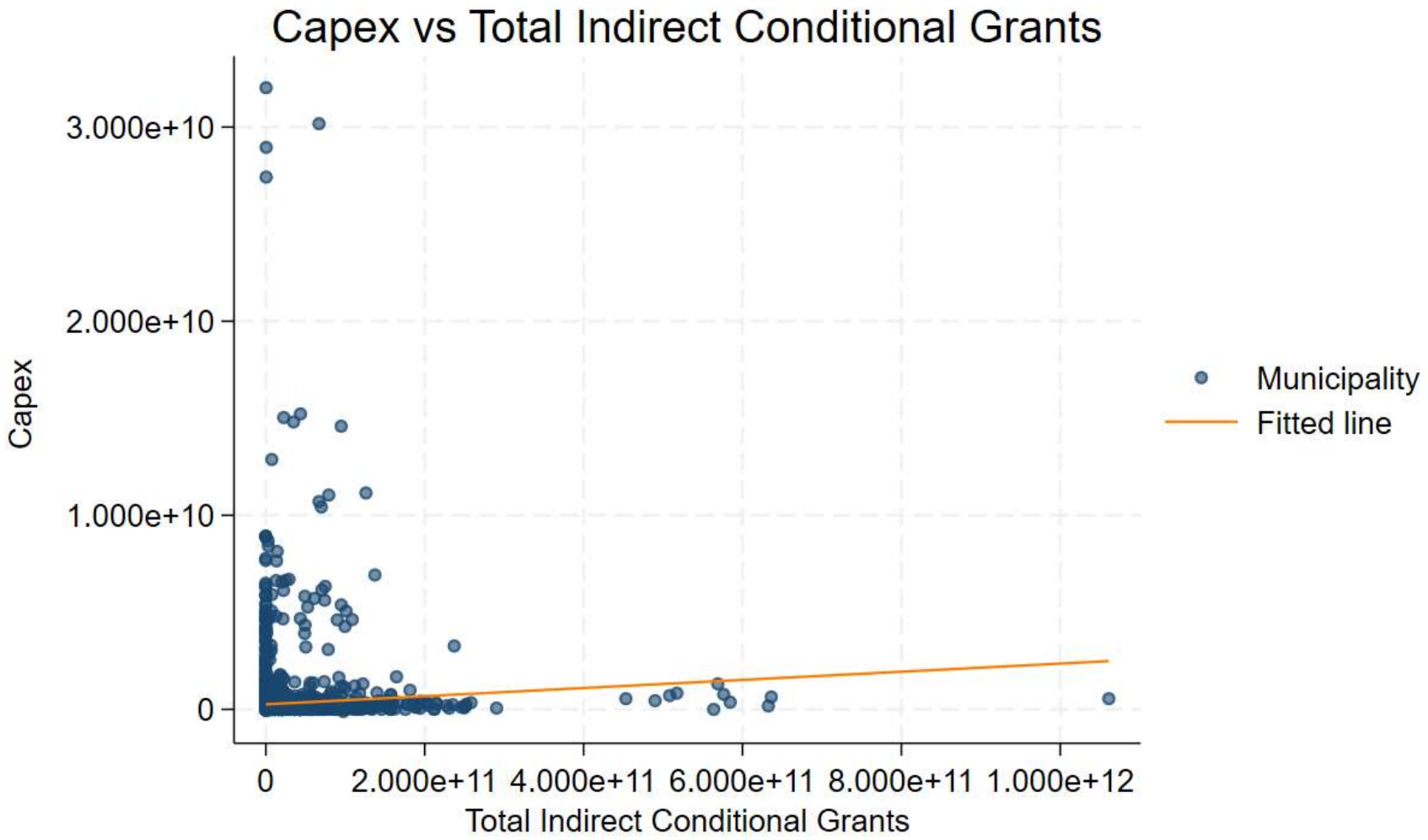


municipality	category	year	capa
Witzenberg	B	2023	-37508035
Nquthu	B	2023	-48442595
Dr J.S. Moroka	B	2023	-19217066
Umsobomvu	B	2023	-28110114
Overberg	C	2023	-99992
Maluti-a-Phofung	B	2023	-1.107e+08
J B Marks	B	2023	-14213919
Thembelihle	B	2023	-110143

NOTE: After winsorizing CAPA and total direct conditional grants, the relationship reversed and became negative. The graph on the right also shows some municipalities with negative CAPA. Both data require further investigation

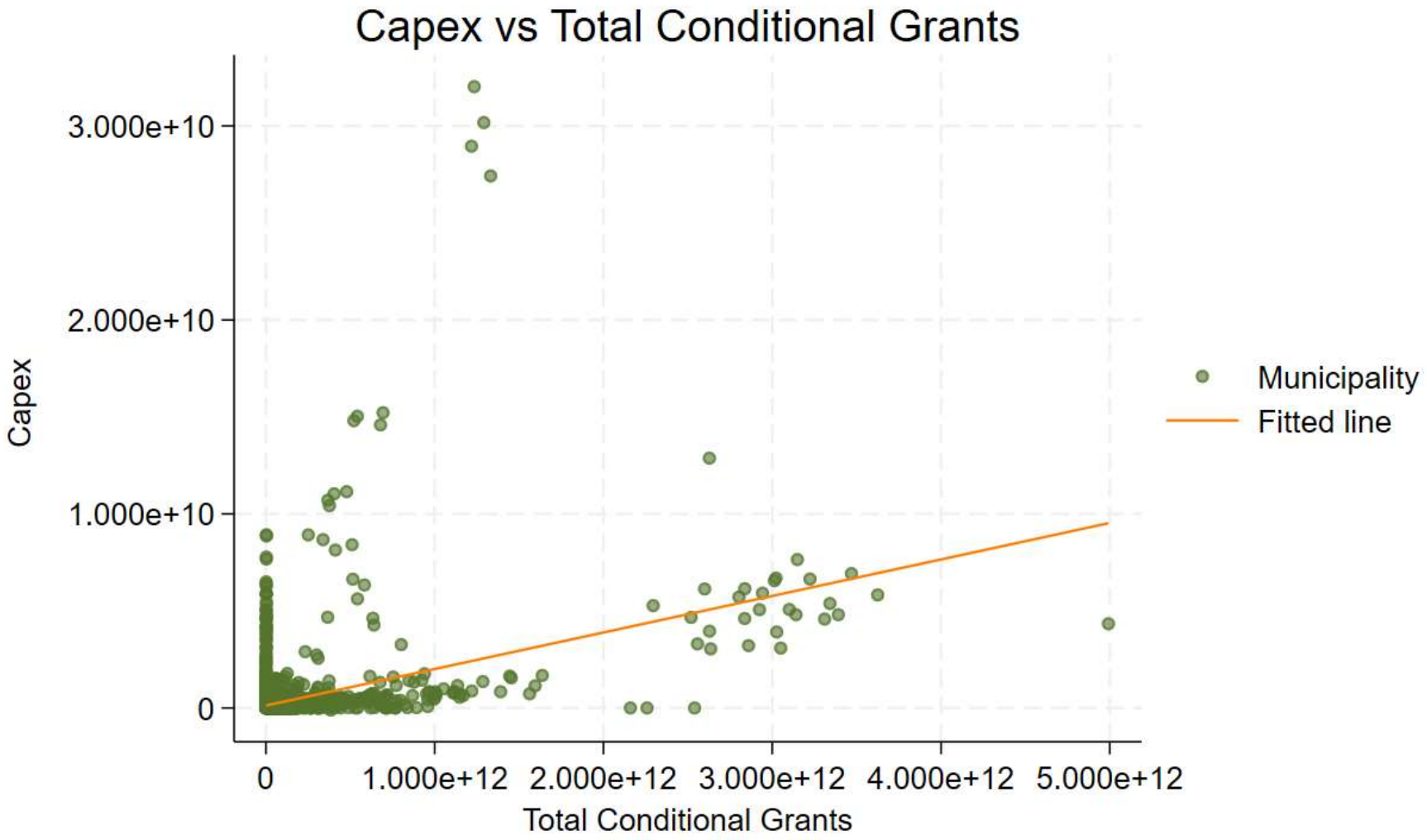
Exploring the Data

Pairwise Correlations (Full sample, Full time period)



Exploring the Data

Pairwise Correlations (Full sample, Full time period)



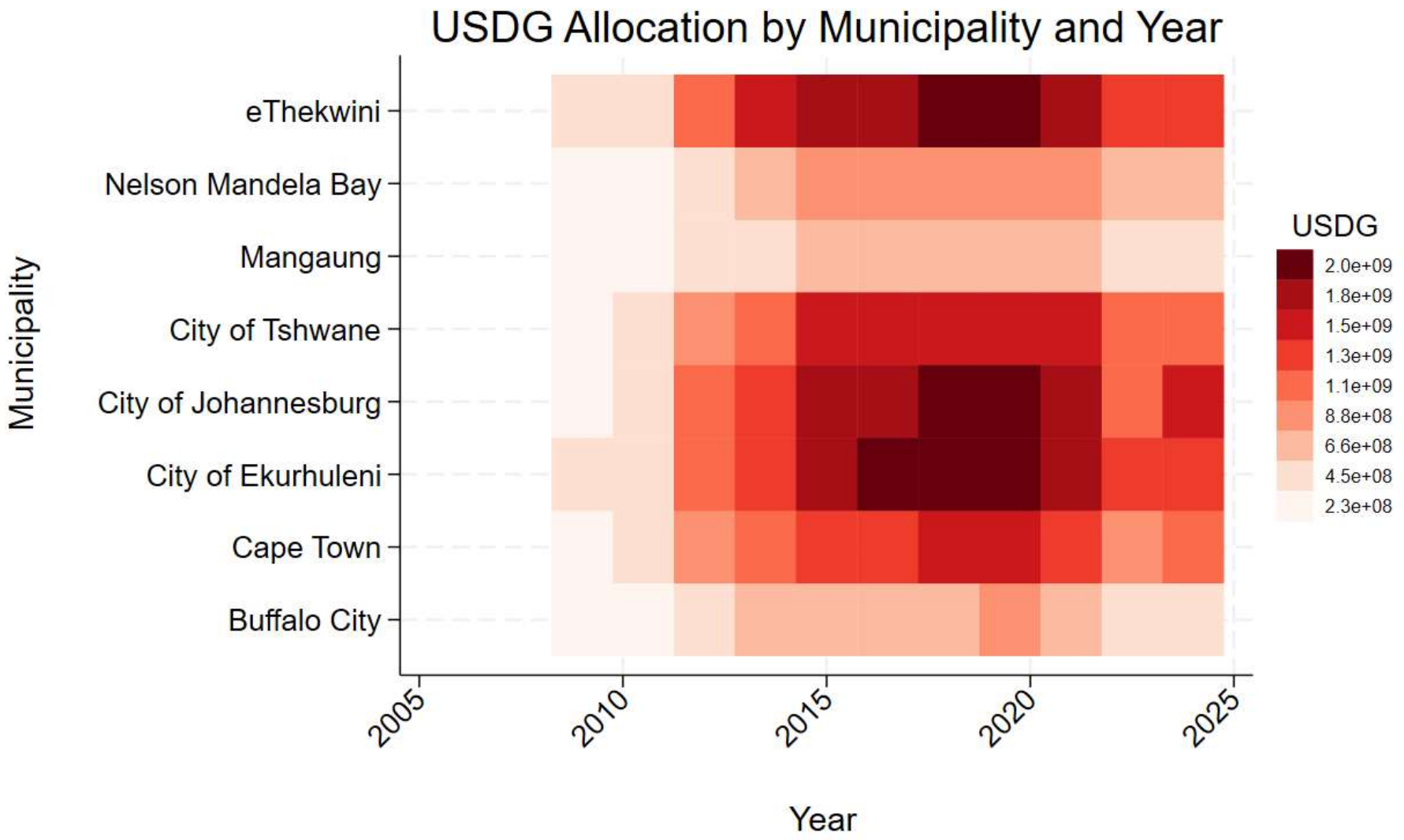
Exploring the Data

Grants Data: Need for more exploration

year	id	transfers_recognised_operating	transfers_recognised_capital	grants_total_api	total_grants_nonapi
2009	JHB	3230134000	1522577000	4752711000	2042190227
2010	JHB	4341267000	2611011000	6952278000	1656307000
2011	JHB	4763945000	2371021000	7134966000	4009084469
2012	JHB	5097986000	2534159000	7632145000	5012922407
2013	JHB	4509731000	2299001000	6808732000	4853583000
2014	JHB	5190365000	2599217000	7789582000	5079540000
2015	JHB	5987771765	3334755856	9322527621	5584254000
2016	JHB	6186022000	3134255000	9320277000	5984883000
2017	JHB	6835830623	3046016332	9881846955	6218673000
2018	JHB	7369073098	2413210484	9782283582	6679848000000
2019	JHB	8062085008	2681480183	10743565191	7378945000000
2020	JHB	13315287040	2790117376	16105404416	8313799000000
2021	JHB	14975039488	2585000192	17560039680	8503311000000
2022	JHB	10719528960	1811395456	12530924416	8490290000000
2023	JHB	10719528960	1811395456	12530924416	9503041000000

Exploring the Data

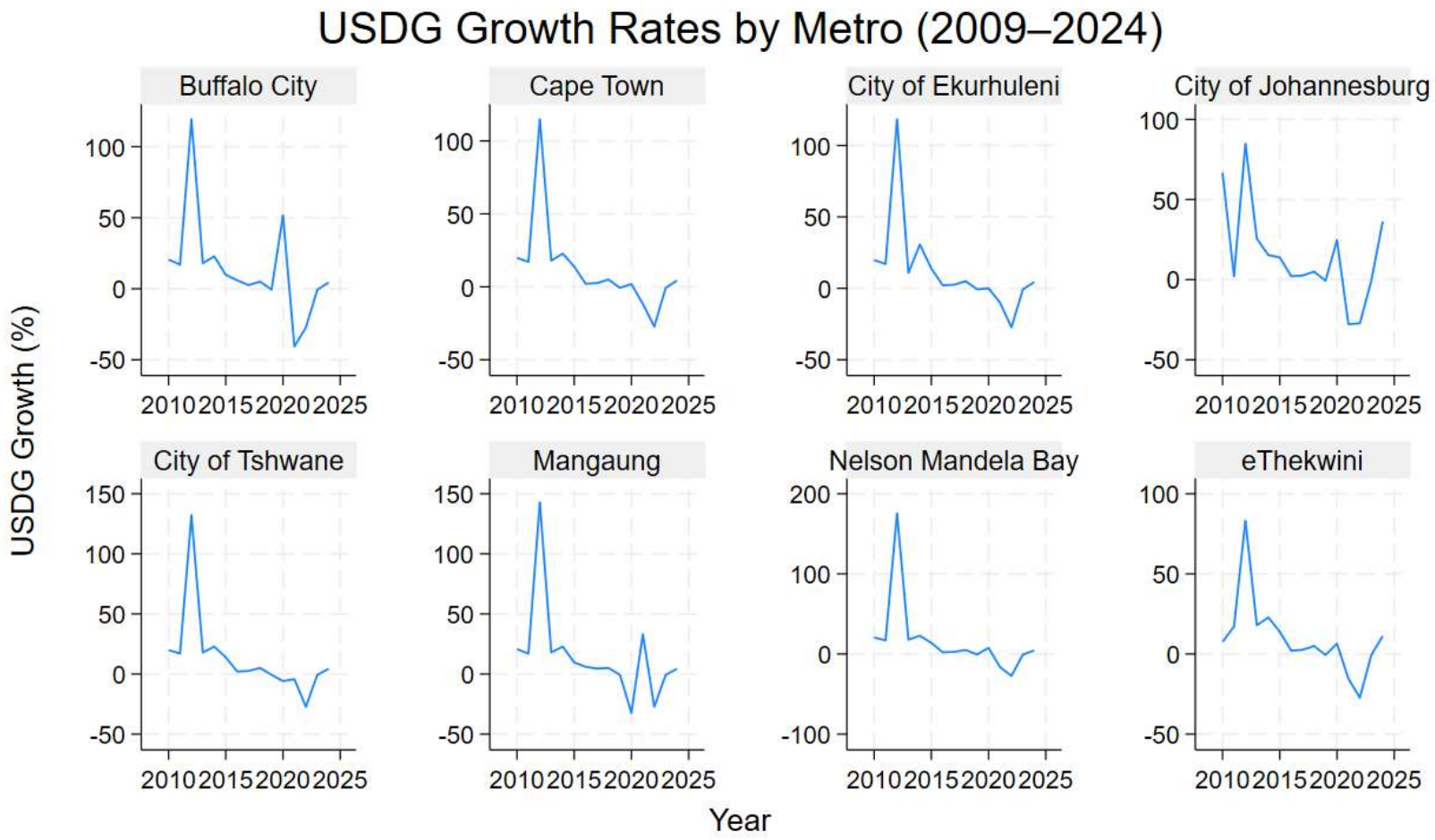
USDG Allocations



It will be ideal to put a heatmap on infrastructure development next to this graph in order to understand how efficiently USDG is being used at the metro level

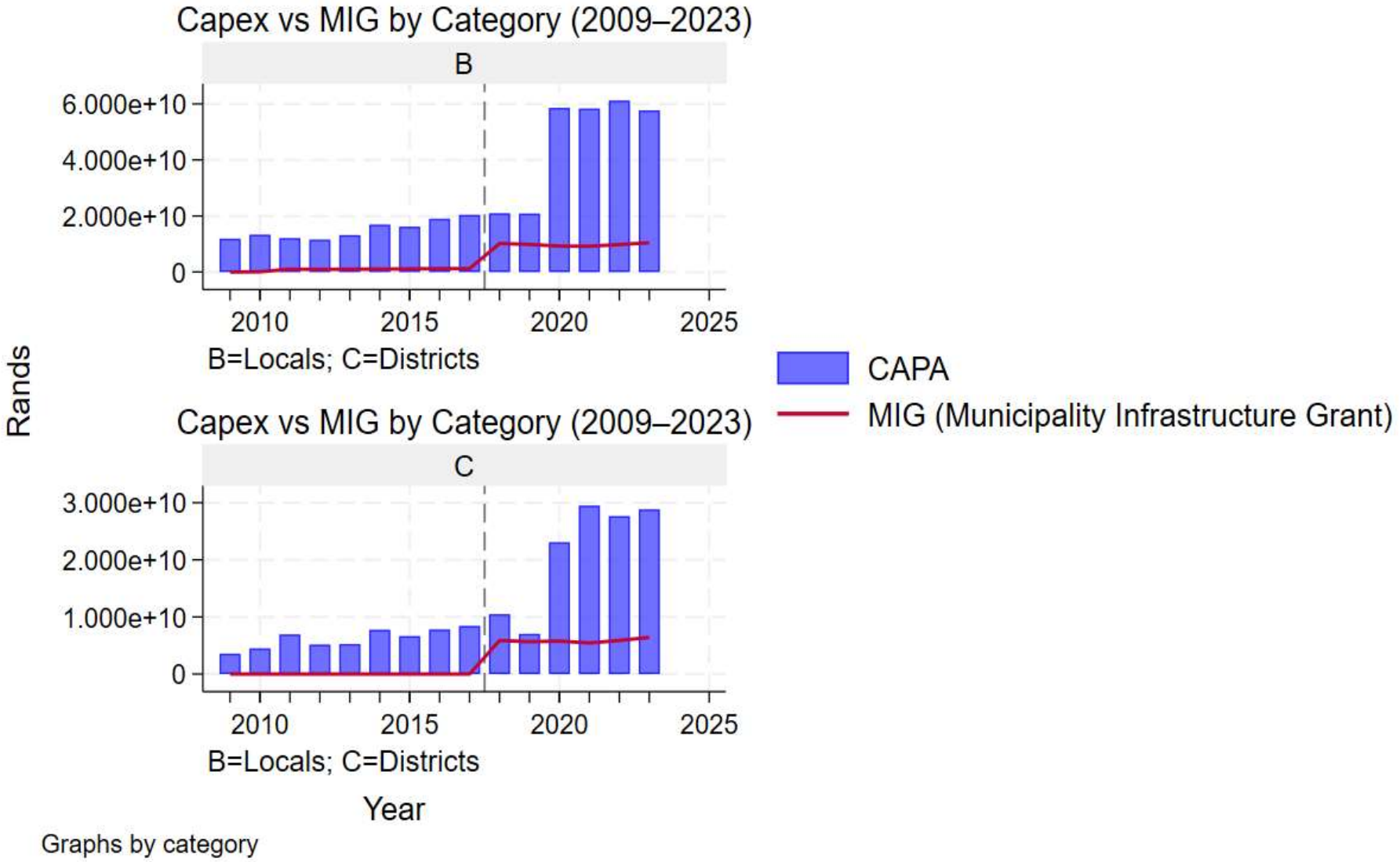
Exploring the Data

USDG Allocations



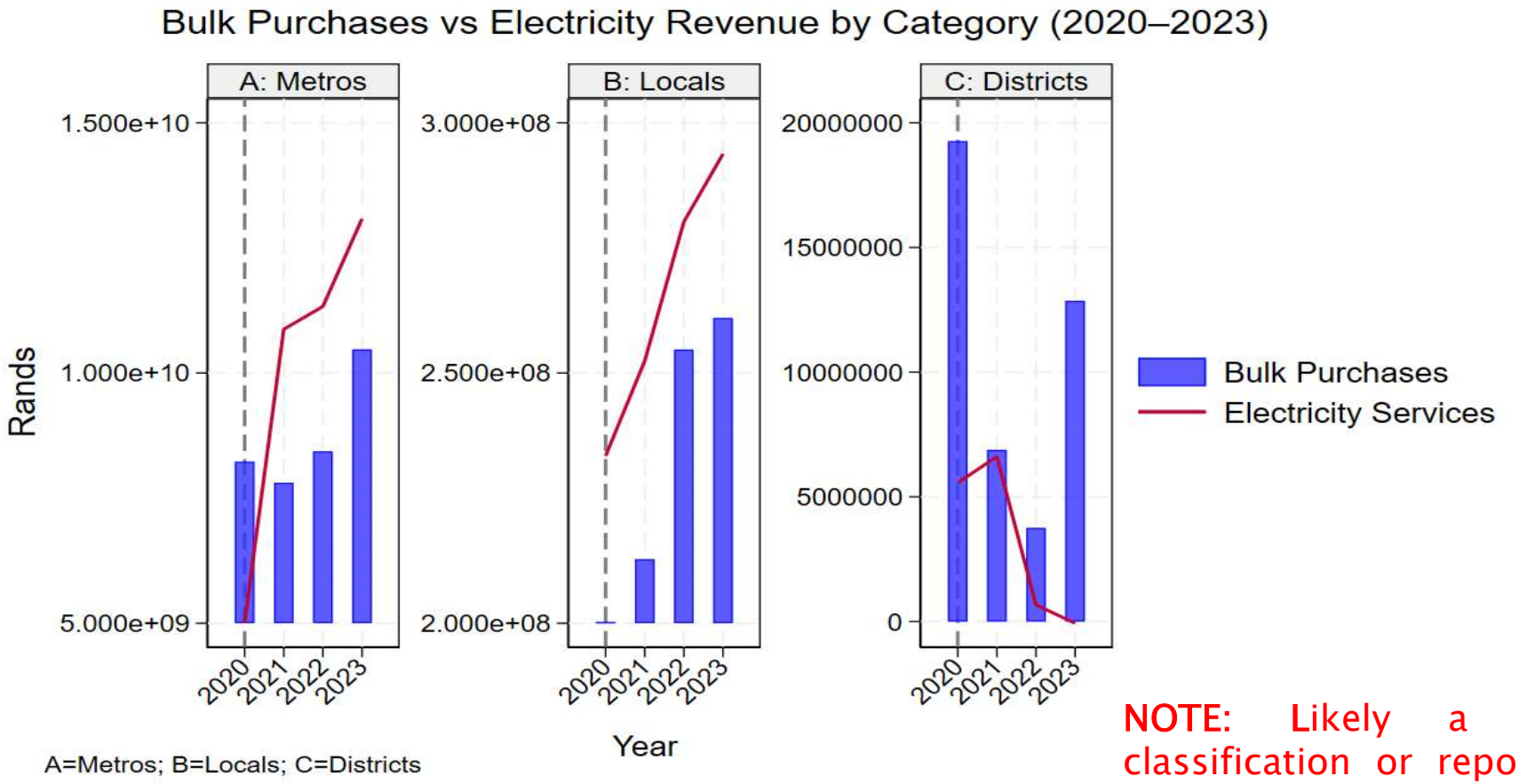
Exploring the Data

MIG and CAPA



Exploring the Data

Bulk Purchases versus Electricity Service Charges Revenue



NOTE: In V1 pre-mSCOA, we have the variable "**Bulk Purchases- 4100**", while in V2, post-mSCOA it is "**Bulk Purchases – electricity- 3300**". In this analysis we assumed that 4100 also refers to electricity.

NOTE: Likely a data classification or reporting issue, because districts generally do not distribute electricity

Exploring the Data

Bulk Purchases versus Electricity Service Charges Revenue

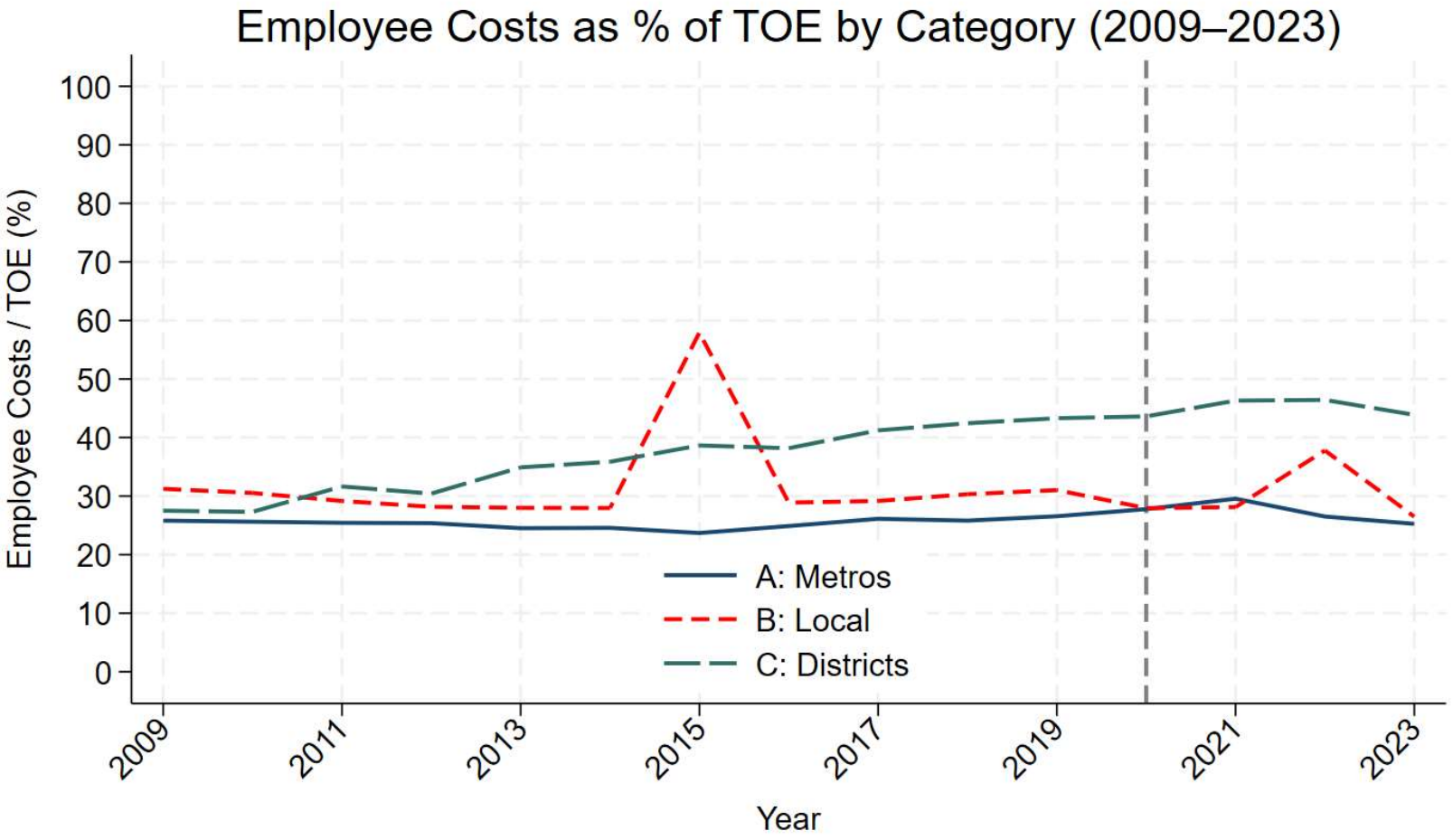
municipality	id	catego~2	year	serv_e~c
Umkhanyakude	DC27	C2	2020	10053675
West Coast	DC1	C1	2020	1069044
West Coast	DC1	C1	2021	1124525
West Rand	DC48	C1	2021	231747
Umkhanyakude	DC27	C2	2021	3941003
Uthukela	DC23	C2	2021	27485146
Overberg	DC3	C1	2021	286188
Overberg	DC3	C1	2022	278381
West Rand	DC48	C1	2022	519000
West Coast	DC1	C1	2022	1212789
Overberg	DC3	C1	2023	711287
West Coast	DC1	C1	2023	1242068
West Rand	DC48	C1	2023	568302
Umkhanyakude	DC27	C2	2023	-2795741

Level 2 category	has_serv_electric 0	1	Total
C1	335	10	345
C2	311	4	315
Total	646	14	660

NOTE: Likely a data classification or reporting issue, because districts generally do not distribute electricity

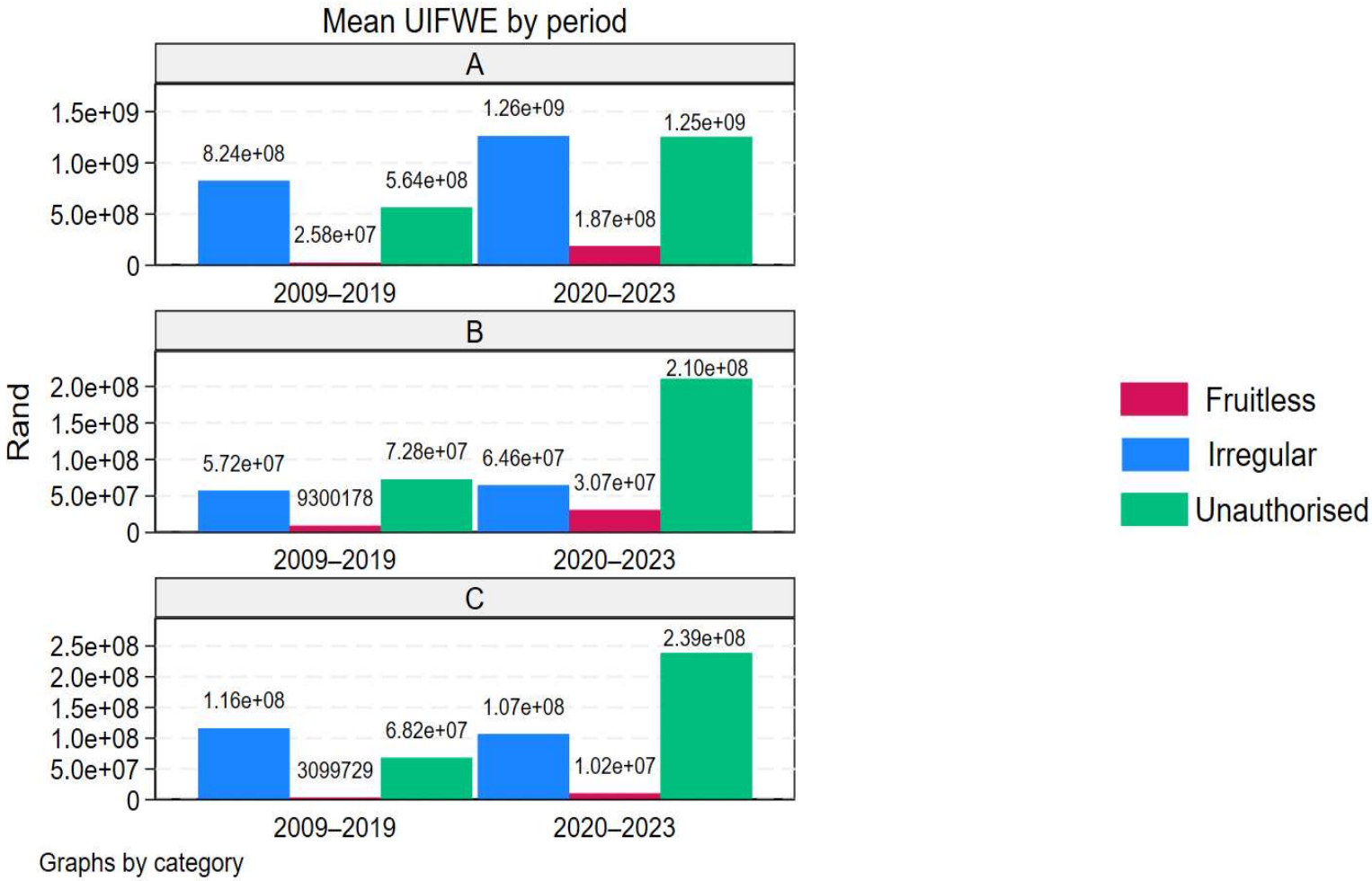
Exploring the Data

Employee Costs as % of TOE



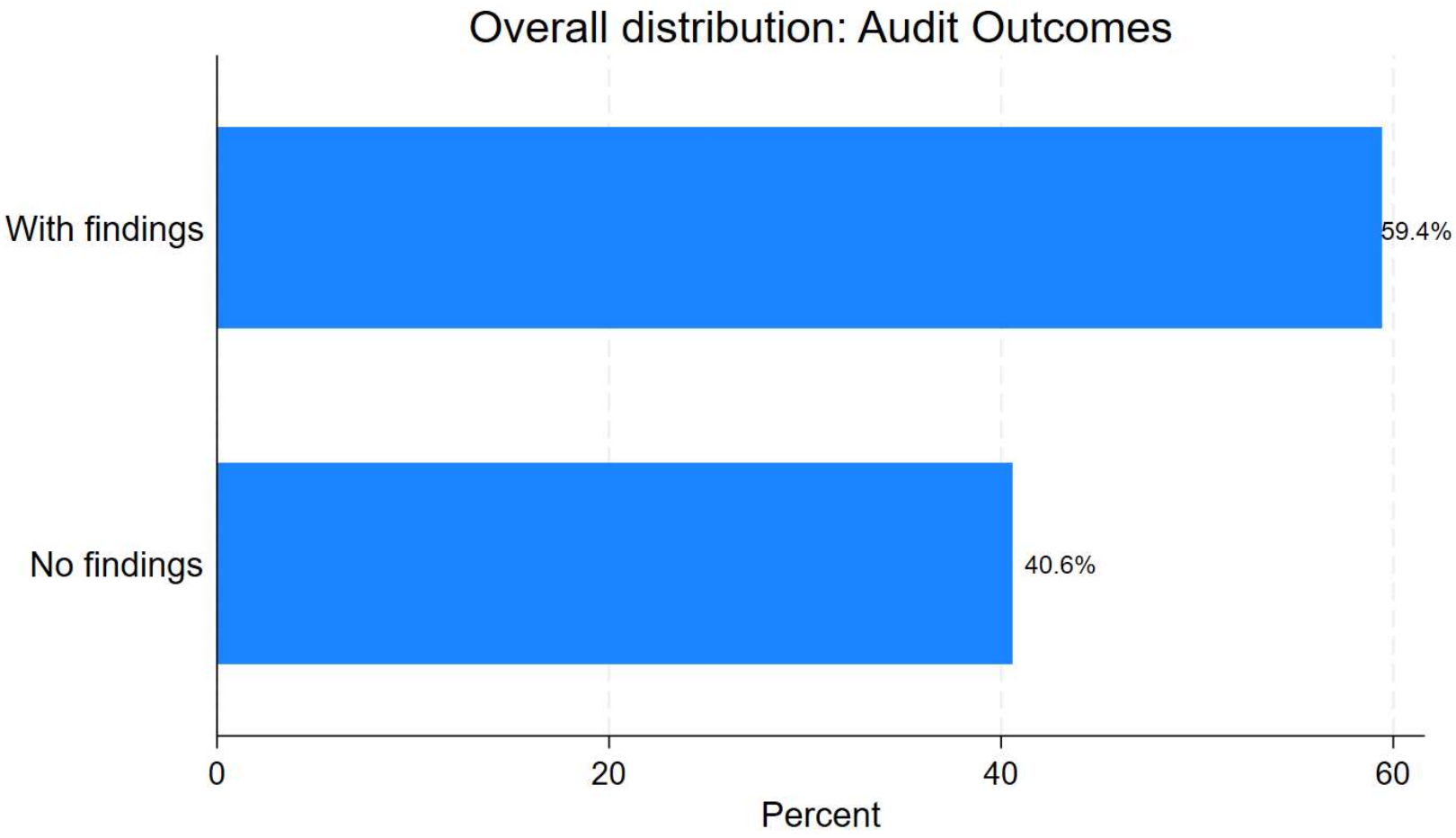
Exploring the Data

UIFWE: *Unauthorised, irregular, fruitless and wasteful expenditure*



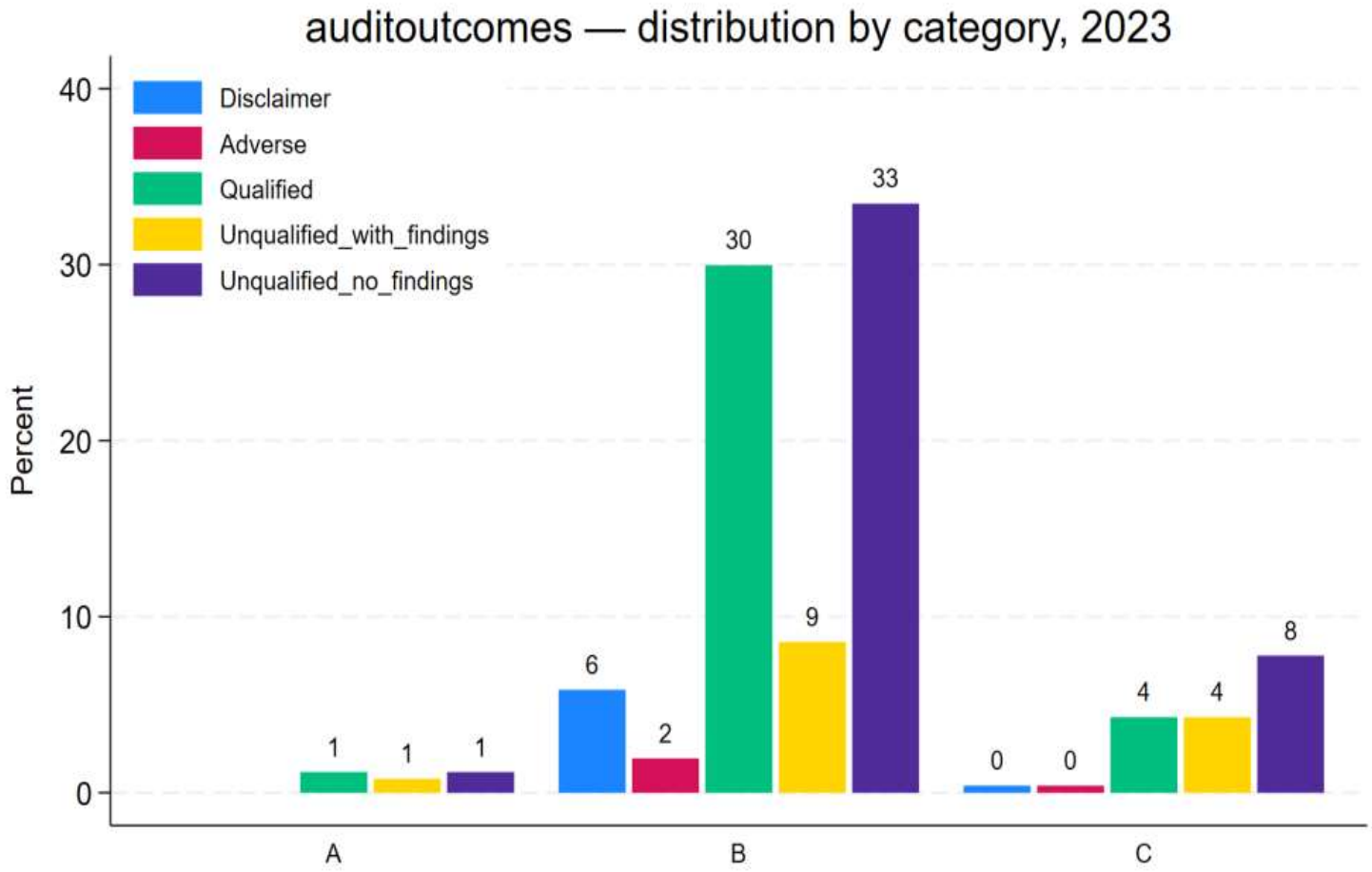
Exploring the Data

Audit outcomes – From SAAG (2009 – 2023)



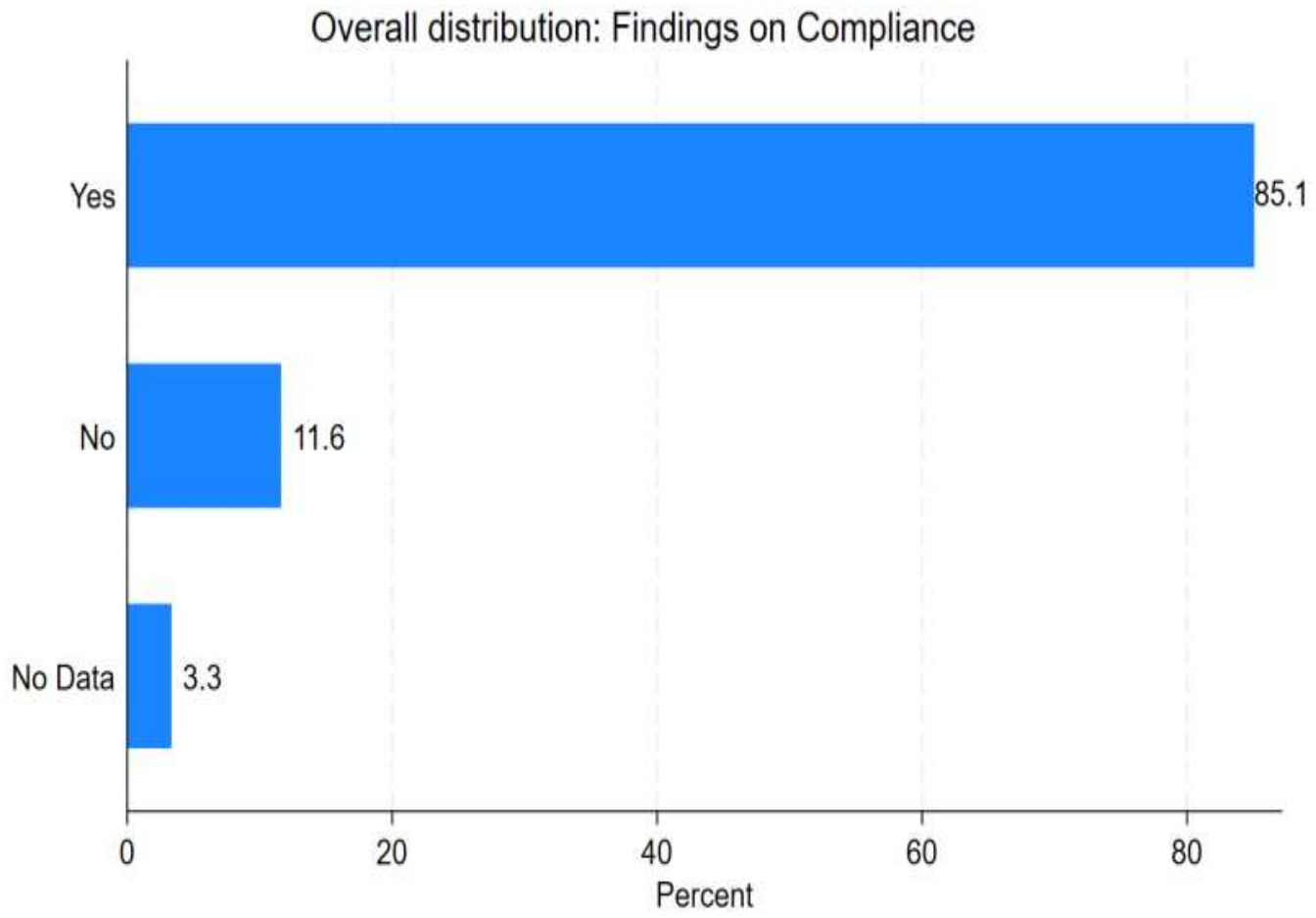
Exploring the Data

Audit outcomes



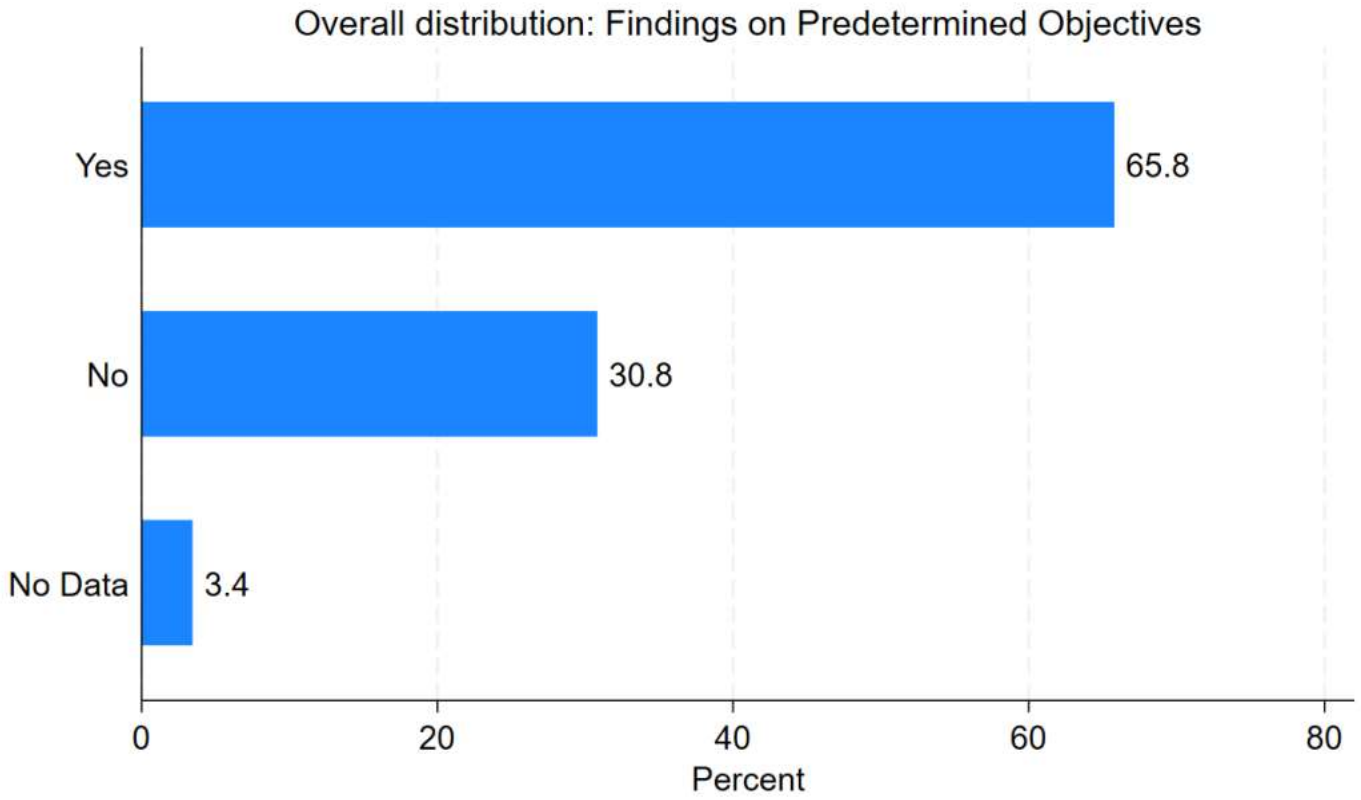
Exploring the Data

Findings on compliance (2009–2023)



Exploring the Data

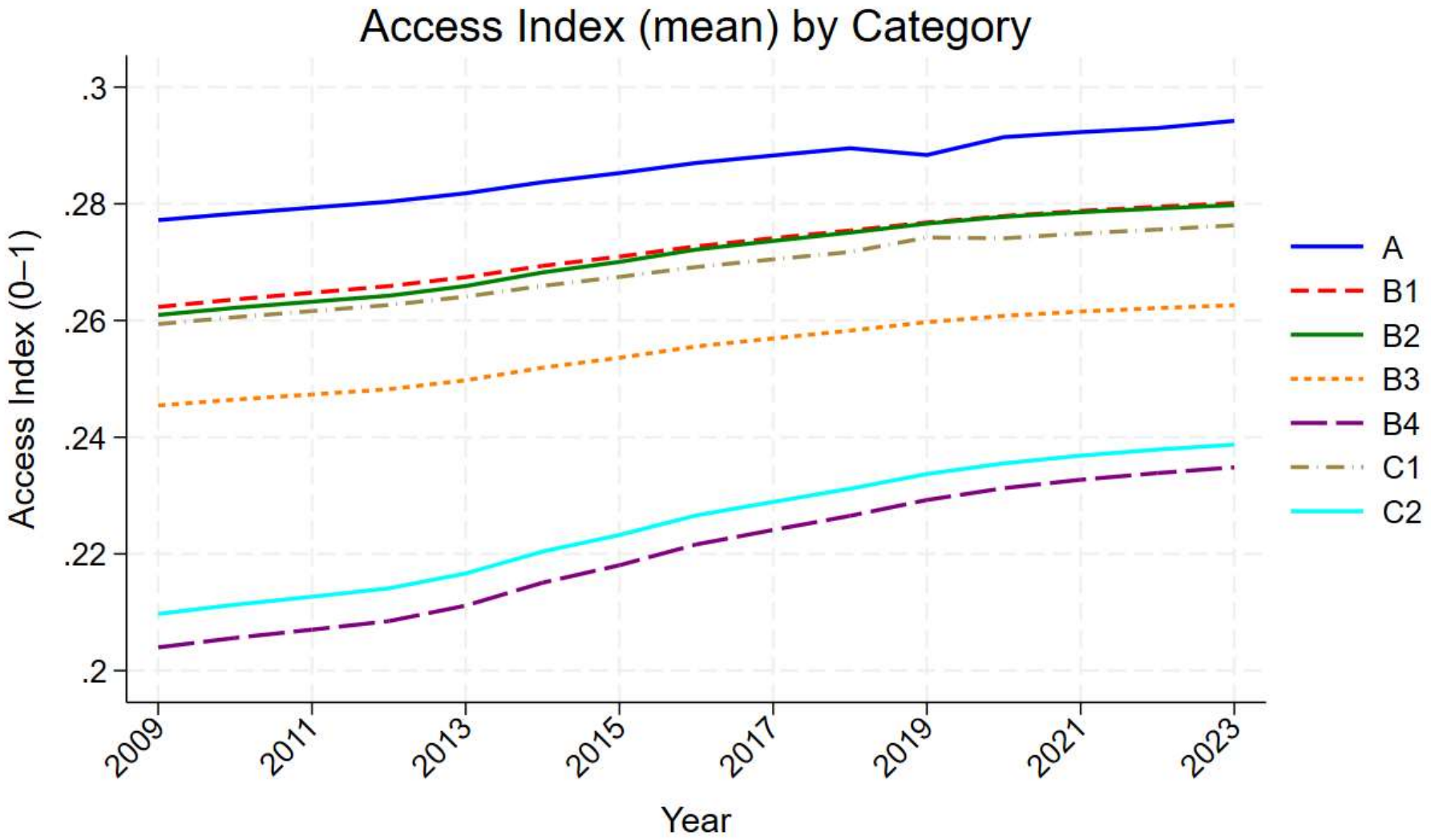
Findings on Predetermined Objectives (2009–2023)



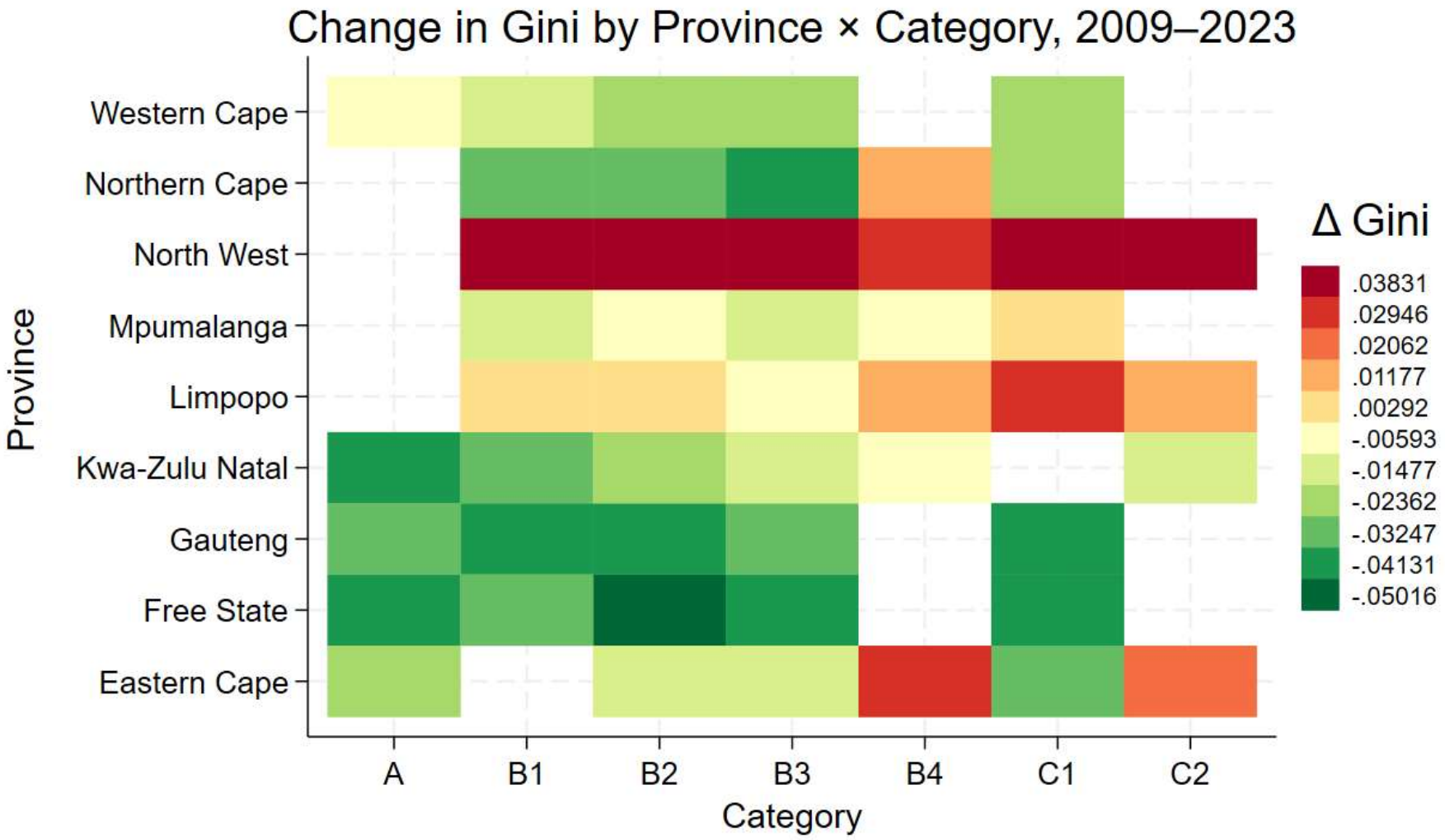
Adding Socio-economic outcomes

- We merged our rich income and expenditure dataset, including CAPA and SAAG, with socio-economic data from Quantec.
- It is also measured at the municipality level.

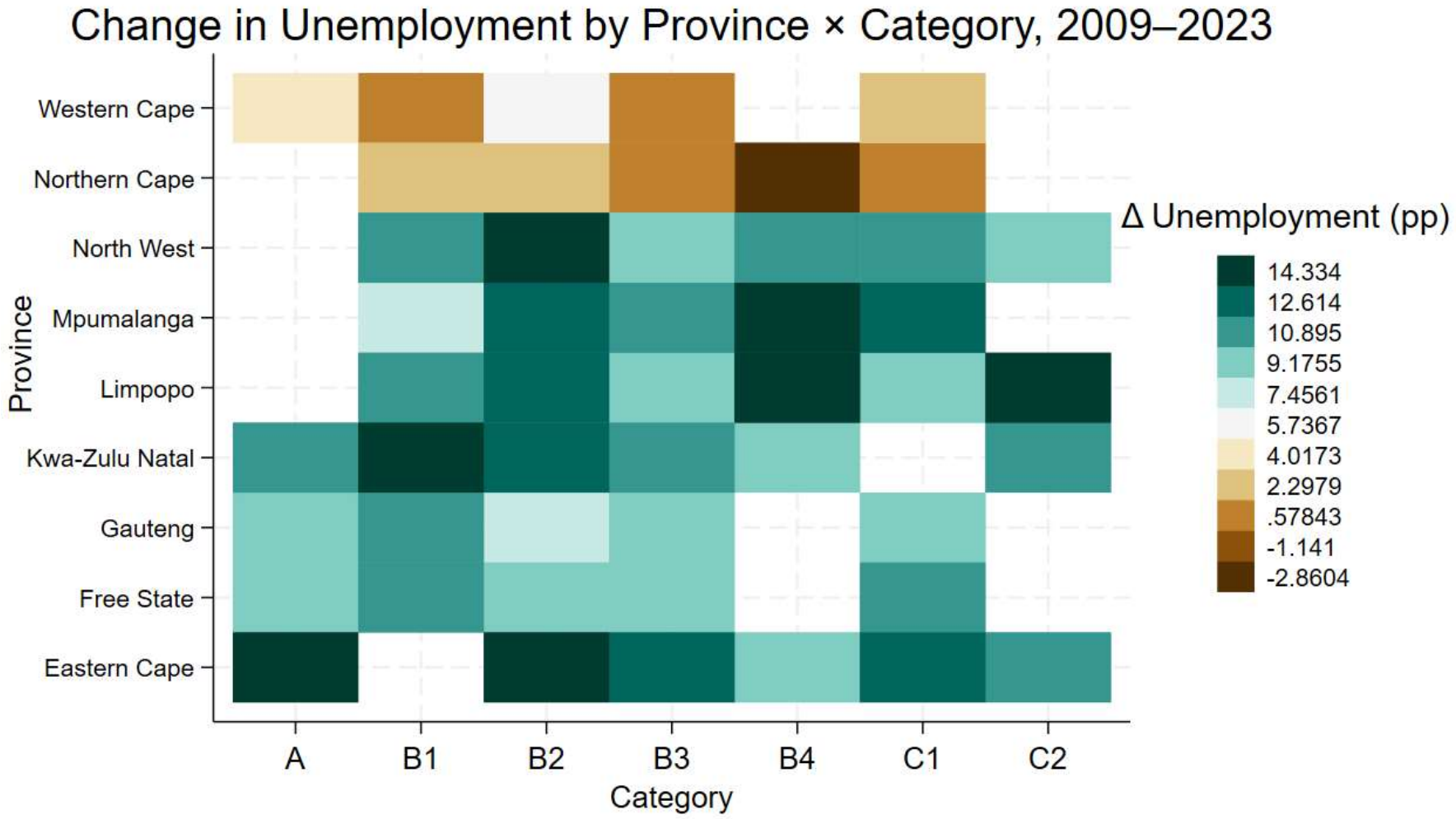
Adding Socio-economic outcomes



Adding Socio-economic outcomes



Adding Socio-economic outcomes



Recommendations to Enhance Accessibility of Municipal Finance Data for Research Purposes

- There is a need to include metadata
- Metadata makes data findable, understandable, and usable. Without metadata, even the most valuable data can be meaningless or misused.
- It explains the variables contained in a dataset — what each one means, how it is measured, and where it comes from.
- In addition to the API format for administrative purposes, there is need to repackage the data in a research-ready format.

Next Steps

- **Vision**: Establish the **LocalGov Data Lab** to enrich South Africa's municipal finance, socio-economic, and governance datasets.

  - The Lab has already been initiated within **the Department of Economics, equipped with four computers** that postgraduate students are currently using to work on their dissertations.

- Through this hands-on engagement, students also contribute to improving data quality by identifying and correcting errors in the municipal finance datasets as they arise.

- To safeguard data integrity during the ongoing validation process, the Lab's computers are fully secured (with no network connections and USB access disabled), ensuring that data cannot be exported or downloaded until verification is complete.

Next Steps

- Core Functions and contributions of the LocalGov Data Lab :
  - It serves as a collaborative platform where researchers and government officials can jointly use municipal finance, governance, and socio-economic data to co-produce knowledge, exchange skills, and generate actionable insights.

  Its key functions are to:

  - Facilitate joint research and policy publications between academia and the public sector.
  - Produce evidence-based policy briefs to guide reform and improve governance.
  - Support data-driven benchmarking and decision-making in municipal finance.
  - Promote **data transparency and accessibility for improved public sector accountability.**
  - Build a pipeline of young researchers committed to evidence-informed policy and reform.

Next Steps

- **Why Expanding the LocalGov Data Lab Matters:**
  - Builds on the existing integrated municipal finance dataset to create a more **holistic evidence base.**
  - Where possible, we aim to incorporate **new datasets** such as:
    - ✓ Academic qualifications of municipal officials
    - ✓ Data on infrastructure projects at the local level
    - ✓ Demographic, spatial, governance, and administrative variables
    - ✓ Other relevant dataset
  - **Deepens understanding** of the factors influencing municipal performance and governance.
  - Provide a richer, multidimensional picture of how institutional capacity, infrastructure quality, and socio-economic context influence fiscal outcomes and service delivery.
  - **Enhances policy relevance** by generating stronger evidence for reform and performance benchmarking.

Next Steps

- Why Expanding the LocalGov Data Lab Matters:

  - In addition, by integrating this project with our ongoing work—such as the Spatial Economic Activity Data – South Africa (SEAD-SA) that is also at the local level, this project expands the empirical basis for understanding local economic dynamics, putting together administrative tax data and municipal finances.

Next Steps

- **Approach**: Driven by co-production of knowledge and transdisciplinary research (economics, data science, data engineering, public policy, political science, etc.).
- **Outputs**: Produce policy briefs with actionable, evidence-based recommendations; produce publishable research papers to meet academic requirements
- **Capacity Building**: Serve as a training and research hub for graduate students and policymakers pursuing advanced degrees.
- **Impact**: More than a dataset — a catalyst for reform, innovation, and collaboration in strengthening local governance.

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The End!!

Any Questions??

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