

Territorial Intelligence from Tax Data: Responding to the Demand for Spatial Economic Statistics in South Africa

Prof Justin Visagie*

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August 2025

Primary partnership



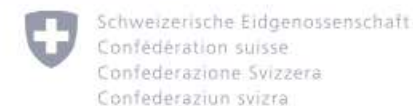
National partners



Technical partners



Donor partners



Swiss Confederation

Metro partners

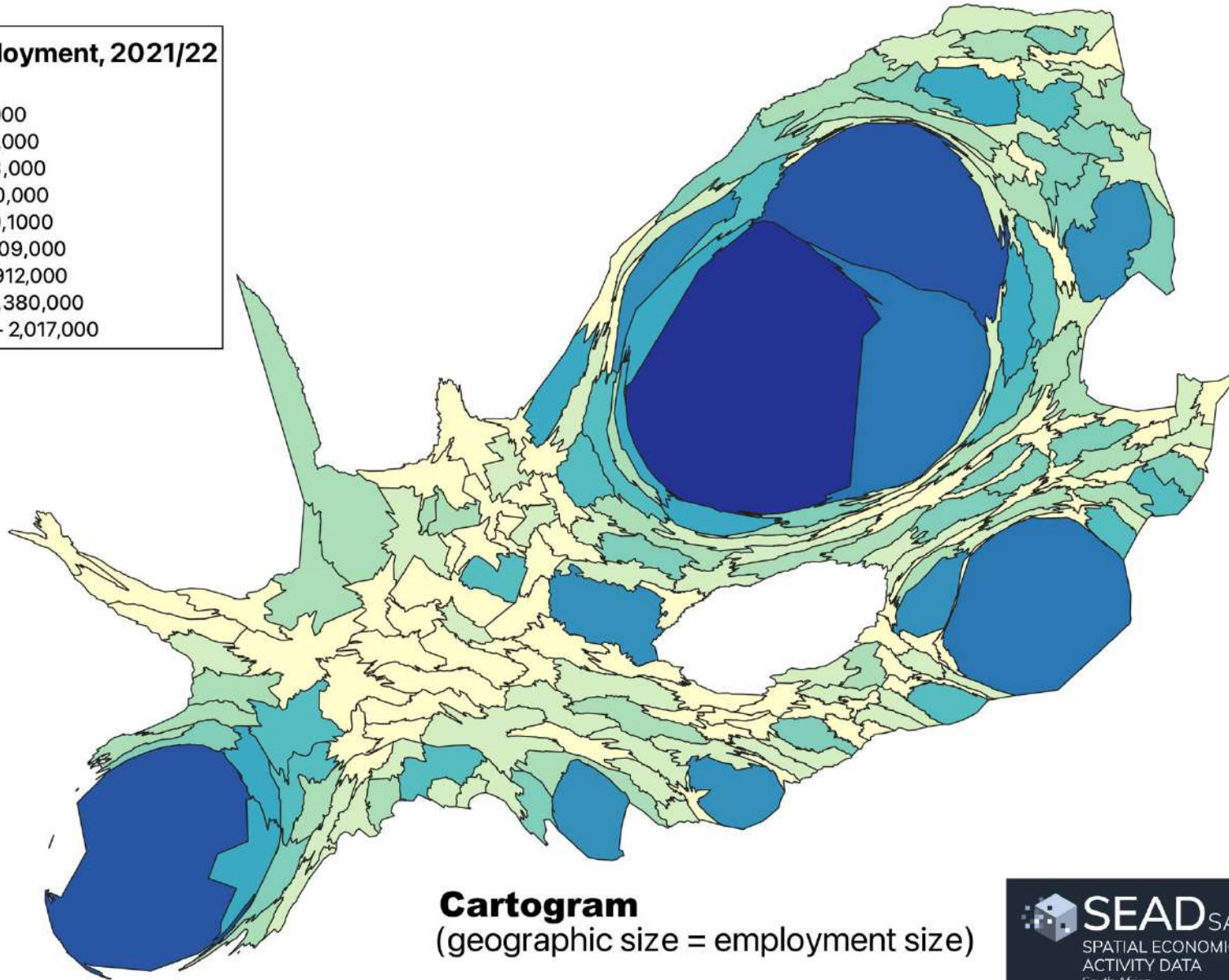
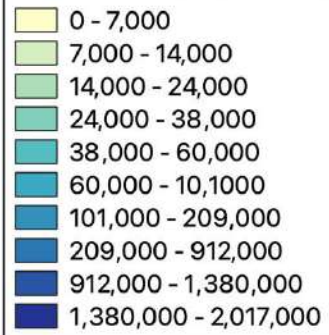


01

DOES GEOGRAPHY MATTER?



Formal Employment, 2021/22



Cartogram
(geographic size = employment size)

02

DATA GAP

- South Africa has a wealth of households surveys: QLFS, GHS, Census, Community Survey, NIDS etc
- Firm-level and economic data is comparatively scarce:
 - Economic indices from StatsSA: mostly at provincial level at very high level of aggregation
 - Some labour force info from surveys – but rough/blunt measurement
 - NO sub-municipal level data available anywhere
- Spatial economic data provided by commercial intermediaries: Neatly packaged, easy to use BUT paywalls, transparency/black box, *Garbage-in-Garbage-out?*
- ***Community survey 2016 AND Census 2022 NO LABOUR/ECONOMIC MODULE!***

Poor understanding of even basic questions:

- What is the GDP of Johannesburg? How has this changed over time?
- How does job creation compare between metros, secondary cities and farming areas?
- Which industries have created the most jobs in each local municipality? And jobs for youth?
- What is the economic trajectory of Cape Towns CBD's compared with other business districts?

SA survey data is problematic if pushed too far

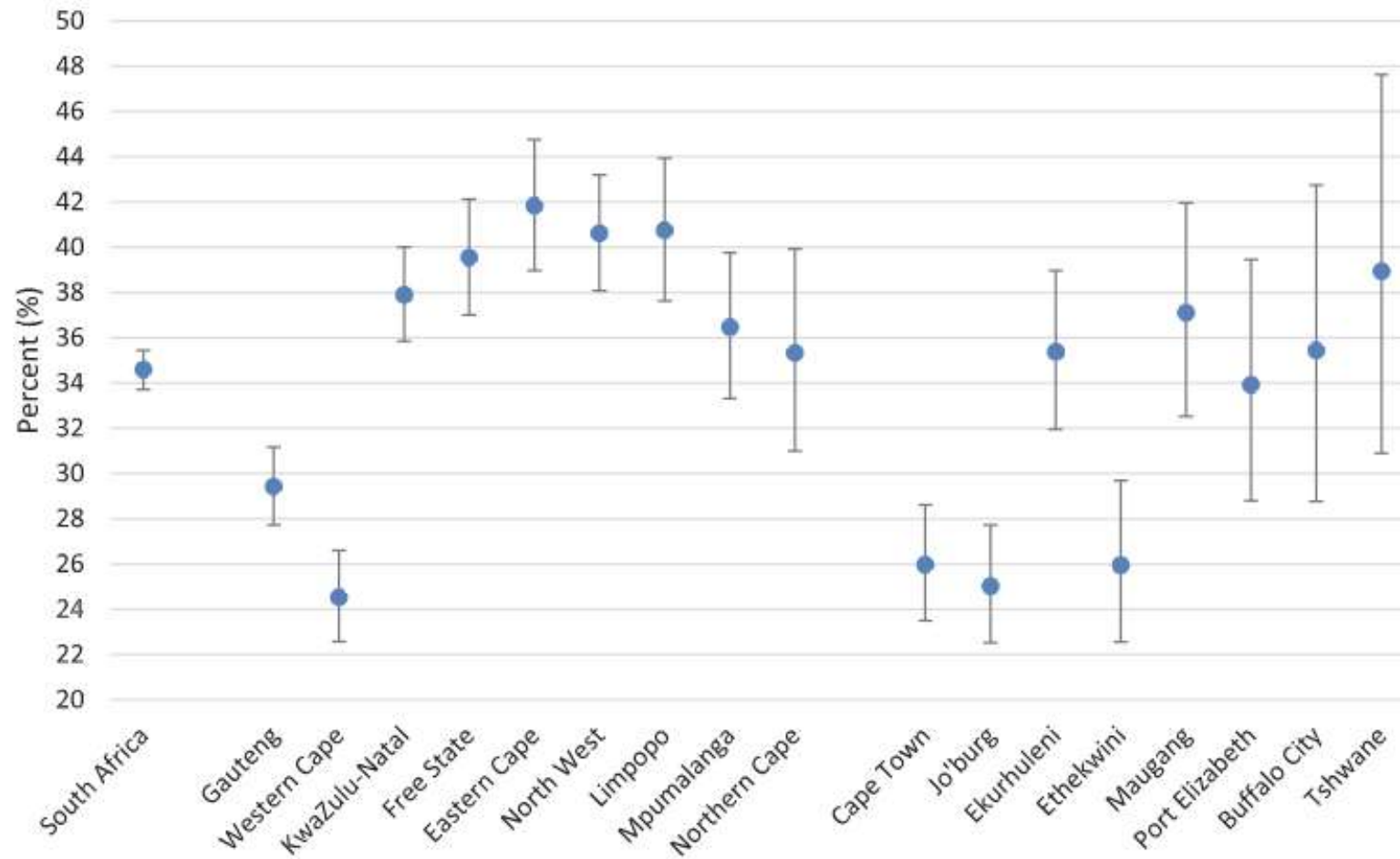


Figure 3. Rates of unemployment across provinces and metros, QLFS 2014 Q4. Source: Quarterly labour force survey 2014 Q4; own estimates.



Development Southern Africa



ISSN: 0376-835X (Print) 1470-3637 (Online) journal homepage: <https://www.tandfonline.com/loi/dsua20>

Measuring regional labour markets in South Africa: How robust are sub-national estimates from the Quarterly Labour Force Survey?

Justin Visagie

To cite this article: Justin Visagie (2018): Measuring regional labour markets in South Africa: How robust are sub-national estimates from the Quarterly Labour Force Survey?, Development Southern Africa, DOI: 10.1080/0376835X.2018.1521265

To link to this article: <https://doi.org/10.1080/0376835X.2018.1521265>

03

WHAT ABOUT ADMIN DATA?

ADVANTAGES

- **Accuracy:** reduce recall bias / social stigma; greater accuracy
- **Coverage/depth:** reduce missing data or attrition; HUGE samples for fine-grained analysis
- **Longitudinal:** Flow over time - regular tracking over long periods
- **Cost-effective:** already being collected

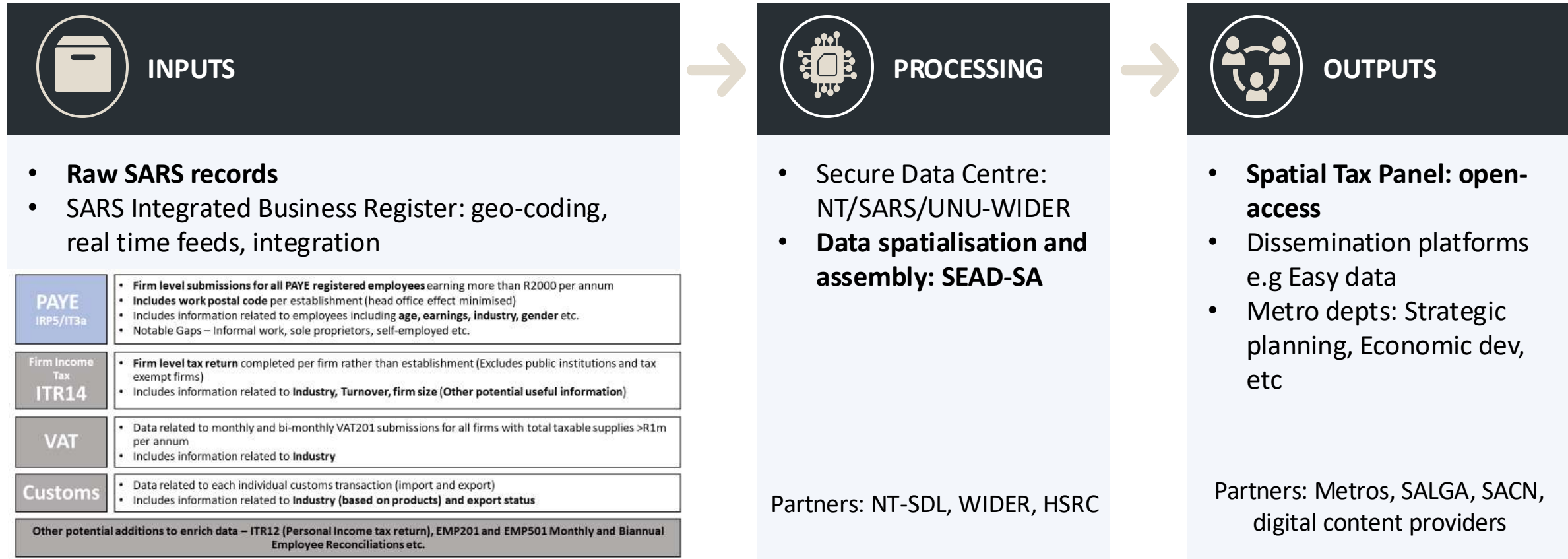
DISADVANTAGES

- **Limited scope and flexibility:** locked into what is collected; not purpose built
- **Usability:** data cleaning preparation time-intensive; little professional acknowledgement
- **Access:** sensitive info; legal implications; tension between ease of access and unmitigated risk

04

BREAKTHROUGH: MINING ADMIN TAX DATA

Spatial economic data: 'value chain' : Breaking down silos; innovation, experimentation and data sharing



05

Timeline: Joint-up governance

2014

Economies of Regions Learning Network (ERLN) – strong demand from metros for better spatial economic data

2014

Secure Data Centre for tax analysis set up in NT headquarters, Pretoria – NT, SARS and the UNU-WIDER ‘SA-TIED’ programme

2019

NT pilot study commissioned exploring feasibility of ‘spatialised’ tax data

2020

Spatial Economic Activity Data Strategy (SEADS) – Economic Census not feasible, need for a longer-term capability within the State

May 2021

NT Metro Spatialised Economic Data Reports – demonstrated value of spatial tax mining

July 2021

HSRC/NT formal partnership: build sustainable public capability

Nov 2021

Internal spatial tax database released to metros – clear application, but uneven uptake

May 2022

Open access agreement – anonymised spatial tax panels freely available

June 2022

Scoping of SARS 'Integrated Business Register' (IBR) – geo-coding, real-time feeds, new administrative sources

Nov 2022

Participatory planning workshop: Long-term vision – Metros, StatsSA, SARS, WIDER, NT, HSRC, private industry, academia

Feb 2023

HSRC/NT Tax Analysis Portal – www.spatialtaxdata.org.za

May 2023

HSRC/NT/FCDO partnership – consolidate tax panels, extend coverage beyond metros, start to explore new admin sources

June 2023

Official launch – Cities Economic Outlook 2023; expanded open access tax databases; portal expansions (curated dashboards)

Creation of *Spatial Tax Panel* as a national asset



- **More than 100 open access databases**
- **Up-to-date information**
 - Released version 5.0 for 2024 tax year in Feb 2025
 - 10 year time series: 2014 - 2024
- **Granular spatial data**
 - Coverage at provincial, district, municipal, and neighbourhood (hex) for metros
- **Key themes**
 - Local industry (Very detailed 5 digit SIC!)
 - EXAMPLE: Manu (1 digit) → Transport (2 digit) → Ships&boats (3 digit) → Pleasure&sporting boats (5 digit)
 - Job creation and growth
 - Equitable Economies
 - Wages, gender, youth employment
- **Transparent methodology**

06

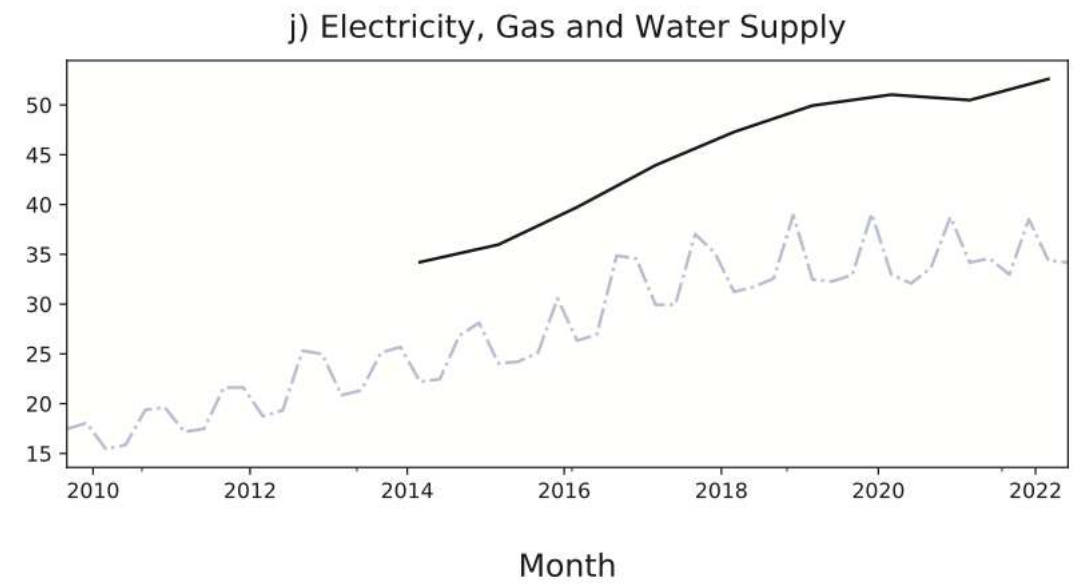
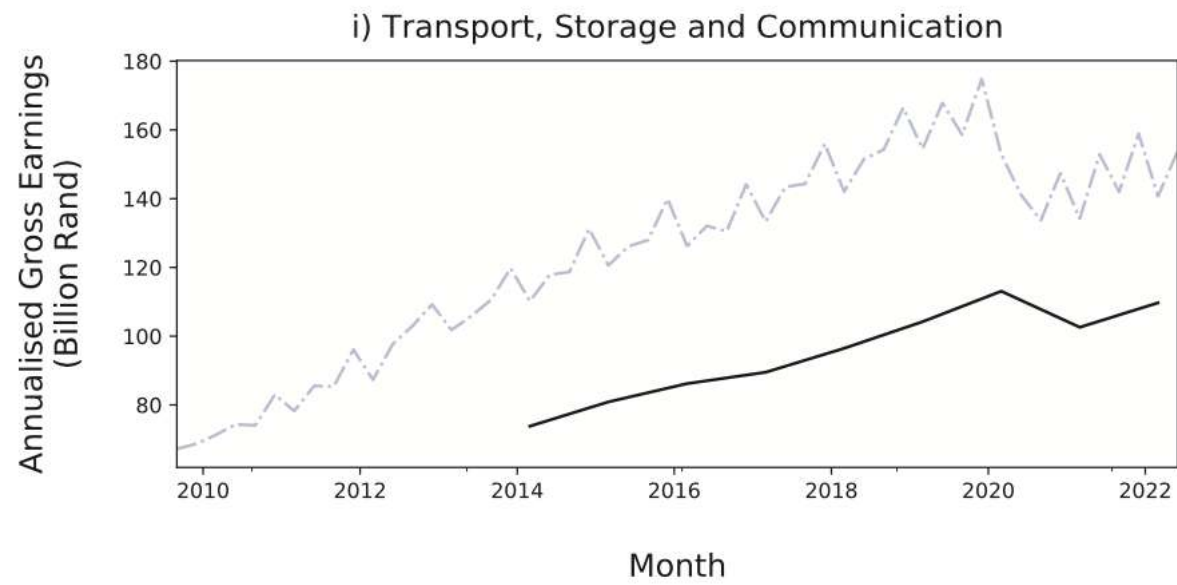
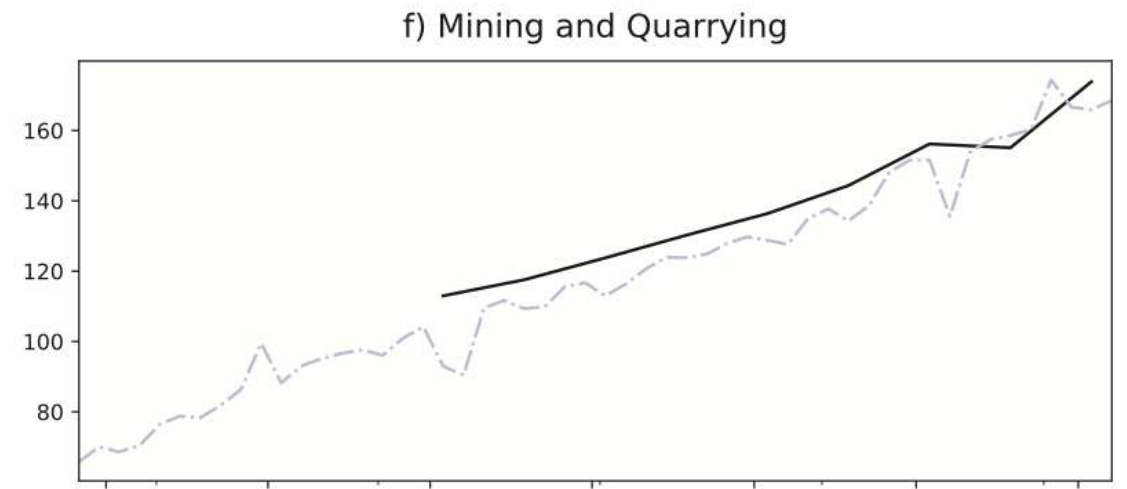
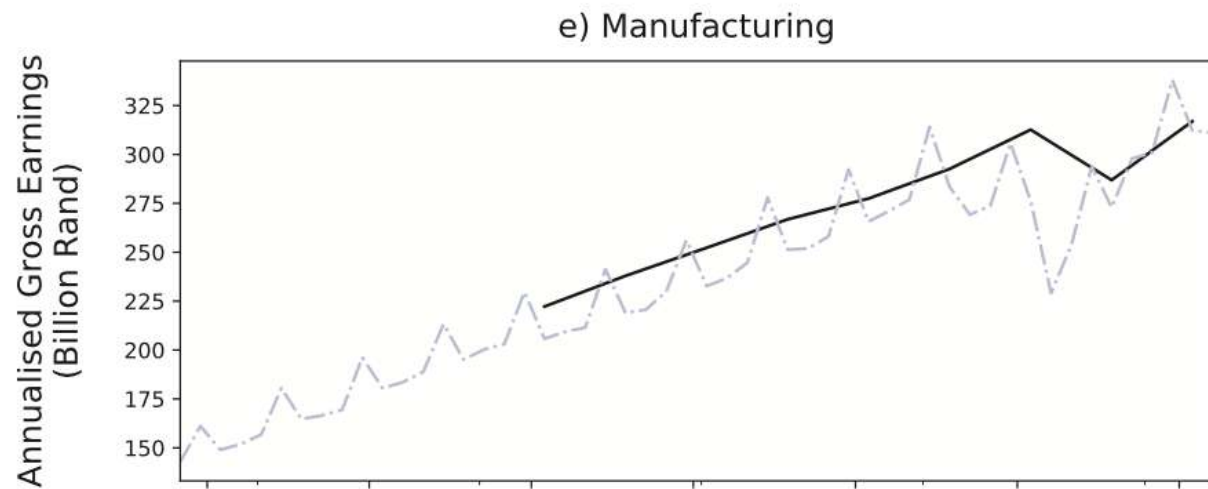
Spatial Tax Panel v5.1 Overview

Spatial Variables	Temporal Variables	Output Variables	Aggregation Variables	
National (Provincial and District to be created for web tool) Municipalities Postal Codes Uber H3 equal area hexagon (Disaggregating from Postal Codes)	Months (Only for employee level data)	Employee Level	<ul style="list-style-type: none"> Industry (SIC5 1-5 digit level) Wage Band Age Group Sex Immigration Status Youth Indicator 	<ul style="list-style-type: none"> Firm Size Establishment Size Opened/Closed Firms/Establishments Export/import Firms Multi-Establishment Indicator
	Tax year (March - February) Currently 2014-2024	Median Income Level	<ul style="list-style-type: none"> Industry (SIC5 1-5 digit level) Age Group (According to ILO age groups) and Youth Sex 	
		Gini Coefficients		
		Establishment Level	<ul style="list-style-type: none"> Industry (SIC5 1-2 digit level) Firm Size – SARS definition (based on Turnover and Current Assets) Establishment Size - Number of Employees Opened/Closed Firms (Year) Export/Import Firms Multi-Establishment Indicator 	

06

Spatial Tax Panel (STP) Limitations

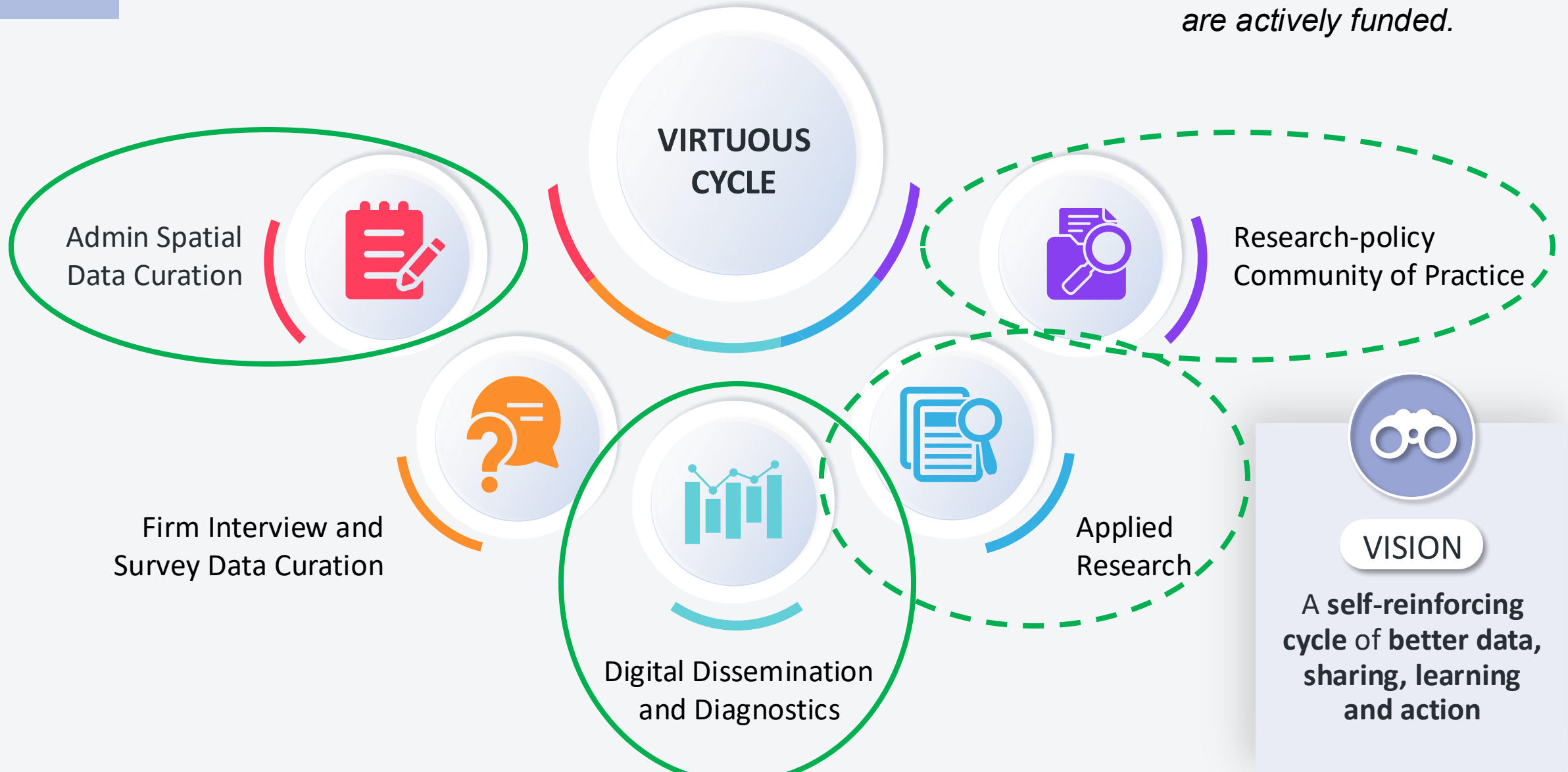
- **Formal sector** trends only... (Note: informal empl <20% in South Africa)
- Database is based on **place of work** (we'd like to add place of employees place of residence in the future)
- **Longitudinal panel**: Reporting starts in **2013/14 tax year** when the PAYE submission became mandatory for all workers. V5.1 is up to **2023/24 taxyear**.
- **Masking** to protect anonymity on any observation with <10: becomes problematic in detailed cross-tabulations. e.g. hex by 5D sector by wage level by gender by age...
- **General data noise**: This is administrative data and sometimes suffers where a firm or employee completes a tax form incorrectly or is late in submitting their returns. But will get rectified as time goes on.



— Spatial Tax Panel - - - QES (Annualised)

Vision 2030: Theory of change

*UK:FCDO partnership
July 2023 – March
2026. Green circles
are actively funded.*



The screenshot shows the homepage of the Spatial Economic Activity Data South Africa website. The background is a street-level view of a city in South Africa. At the top left is the logo for 'SPATIAL ECONOMIC ACTIVITY DATA South Africa'. At the top right are navigation links: 'LOGIN', 'REGISTER', 'DASHBOARDS', 'MAP EXPLORER', 'DOWNLOAD DATA', and 'ABOUT THE PROJECT'. The main heading is 'EXPLORE SOUTH AFRICAN TAX DATA' in large, bold letters. Below this is a paragraph: 'There is a glaring gap in the availability of credible spatial economic data in South Africa. This ambitious project draws on administrative tax records to generate new insights about the economy of South African cities and regions'. Below the paragraph are three main sections, each with an icon and a description: 'DASHBOARDS' with a grid icon, 'MAP EXPLORER' with a location pin icon, and 'DOWNLOAD DATA' with a download arrow icon. At the bottom center is a 'Learn More' button with a right-pointing arrow.

SPATIAL ECONOMIC ACTIVITY DATA South Africa

LOGIN REGISTER DASHBOARDS MAP EXPLORER DOWNLOAD DATA ABOUT THE PROJECT

EXPLORE SOUTH AFRICAN TAX DATA

There is a glaring gap in the availability of credible spatial economic data in South Africa. This ambitious project draws on administrative tax records to generate new insights about the economy of South African cities and regions

DASHBOARDS
Go on a journey to discover distinctive features about your municipality

MAP EXPLORER
An open ended tool to visualize spatial tax data based on your interests

DOWNLOAD DATA
Get access to the raw data, metadata and methodology user guide

[Learn More >](#)

deep current

OrigenSoftware

UFS

*Thanks to our
tech partners!*

Make it accessible! Make it understandable!



Dashboards

Go on a journey to discover distinctive features about your municipality



Map Explorer

An open ended tool to visualize spatial tax data based on your interests

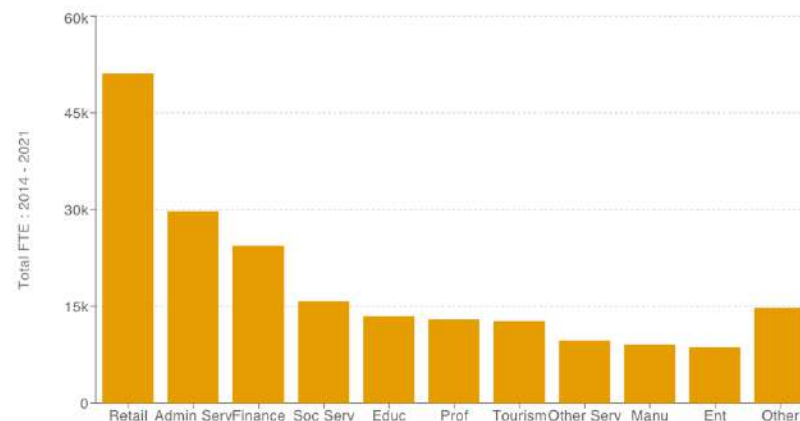


Which sectors created the most new jobs in Cape Town?

The sectors which create the most new jobs have a critical role to play within the local economy. Job creation can be driven by economic expansion in dynamic sectors. However total jobs growth can also be related to industry size (or dominance) because modest and even low growth will add up to more jobs in large industries. In either case, these sectors mattered most for job creation.

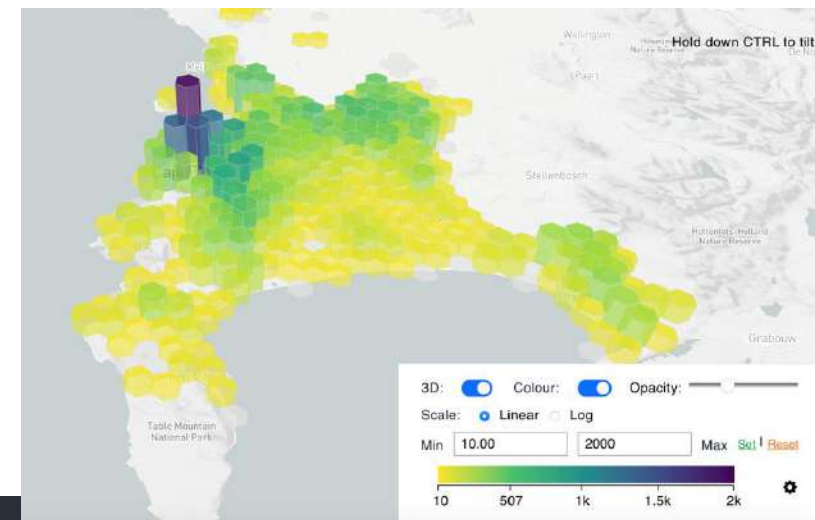
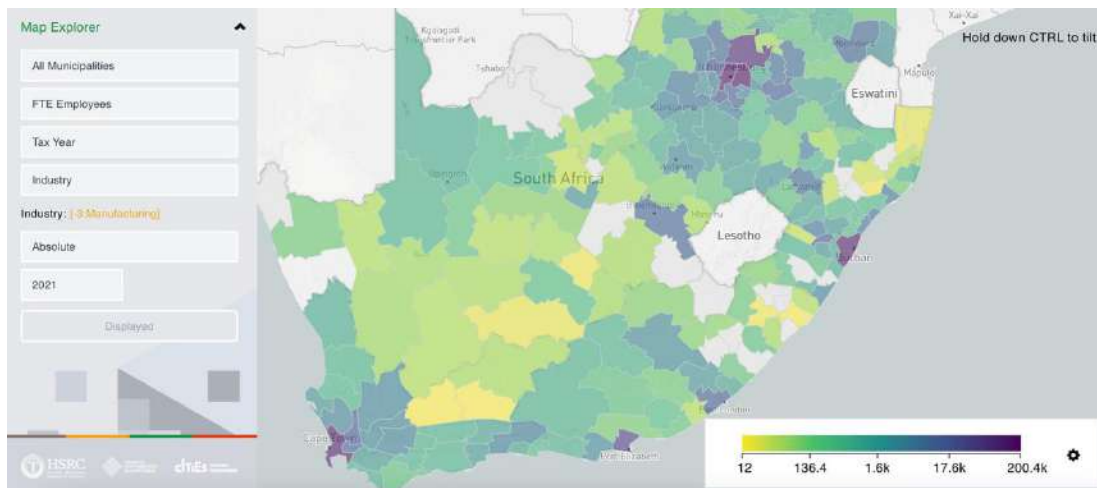
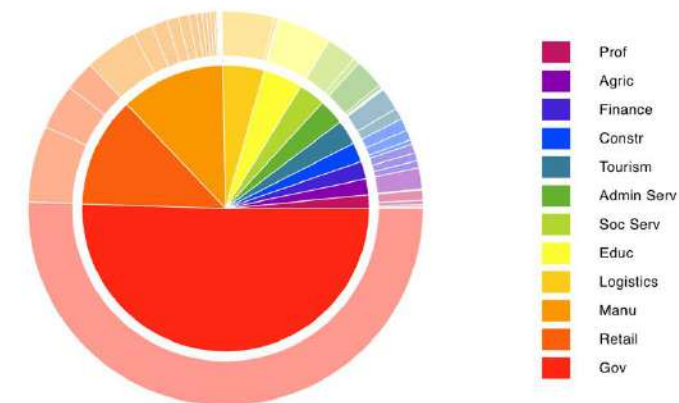
Cape Town Economic Growth
New Jobs 2014 - 2021

< PREV Total Jobs Growth | Growth by Sector NEXT >



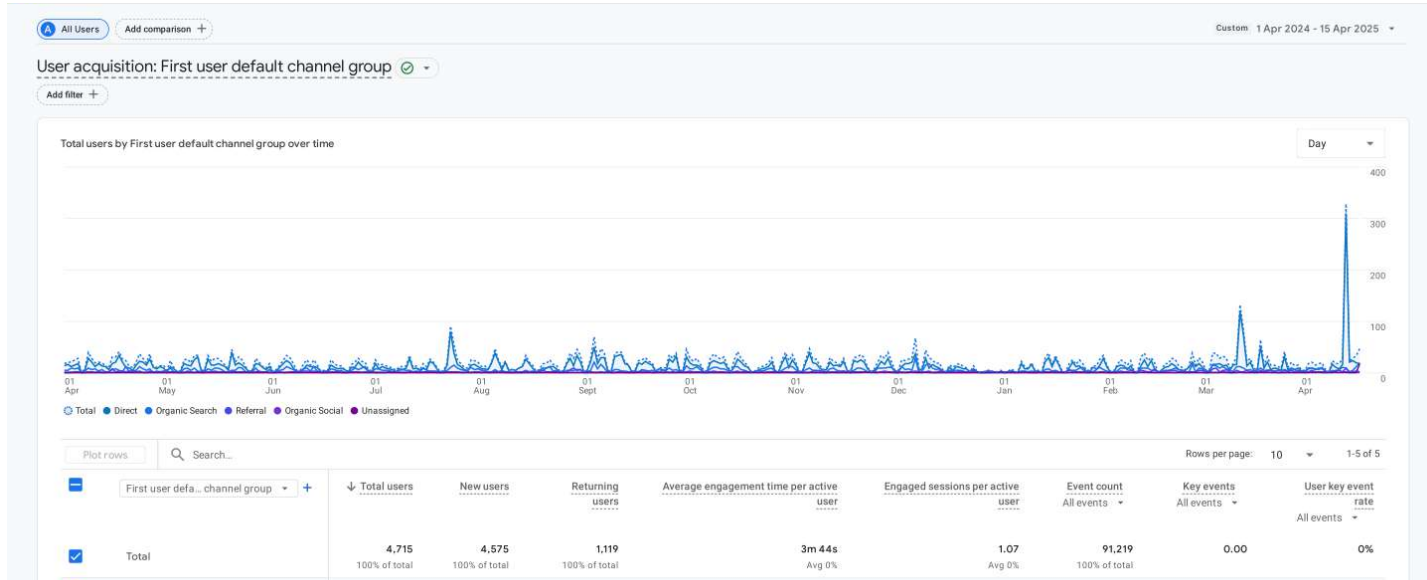
Newcastle Industry Diagnostic
Industry Profile : 2021

< PREV Growth by Sector | Industry Potential NEXT >

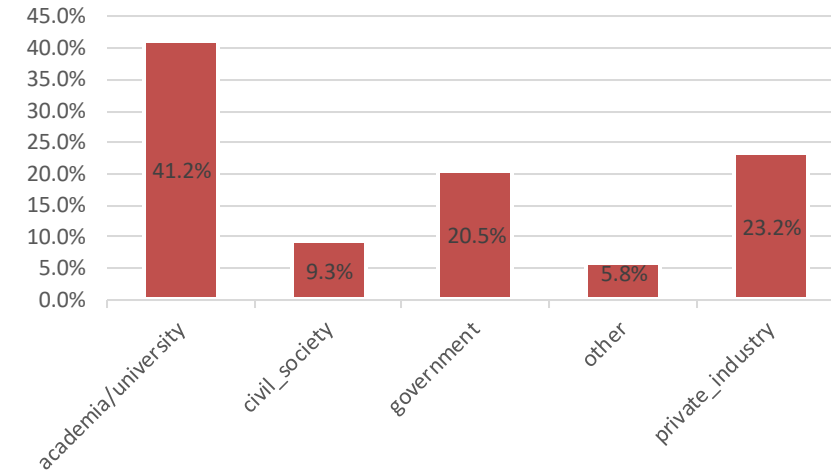


08

Maintaining good levels of engagement

Analytics HSRG
Spatial Tax Data[Go to report](#)

Downloads by User Type (n=271)



4,715 users on the portal over the last 12 months; 271 users who downloaded the raw databases

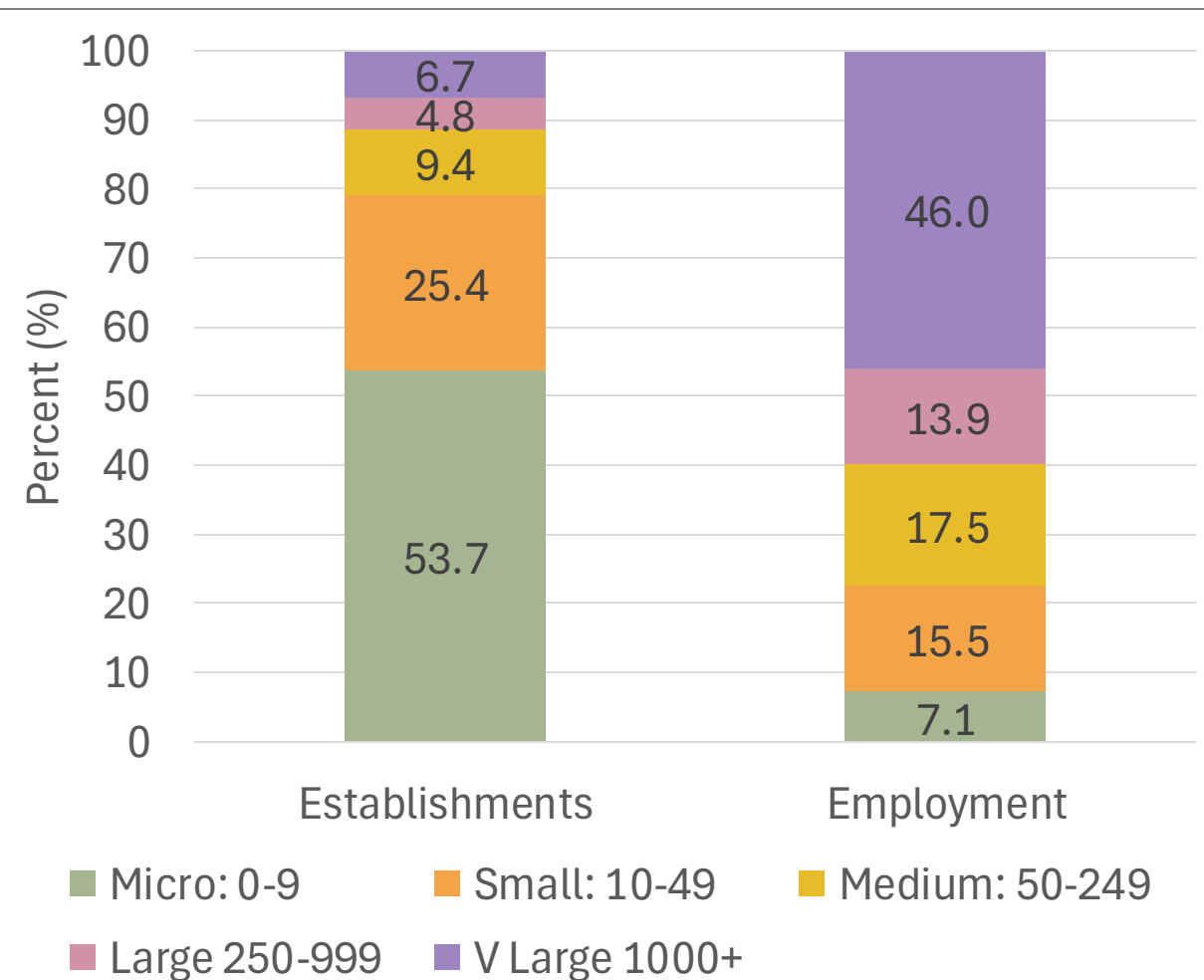
“...engagement with the web portal has stabilised compared with last year (when we had a high profile ministerial launch) while use of the raw data looks to exceed our expectations”

Research: removing the guesswork from SMME M&E



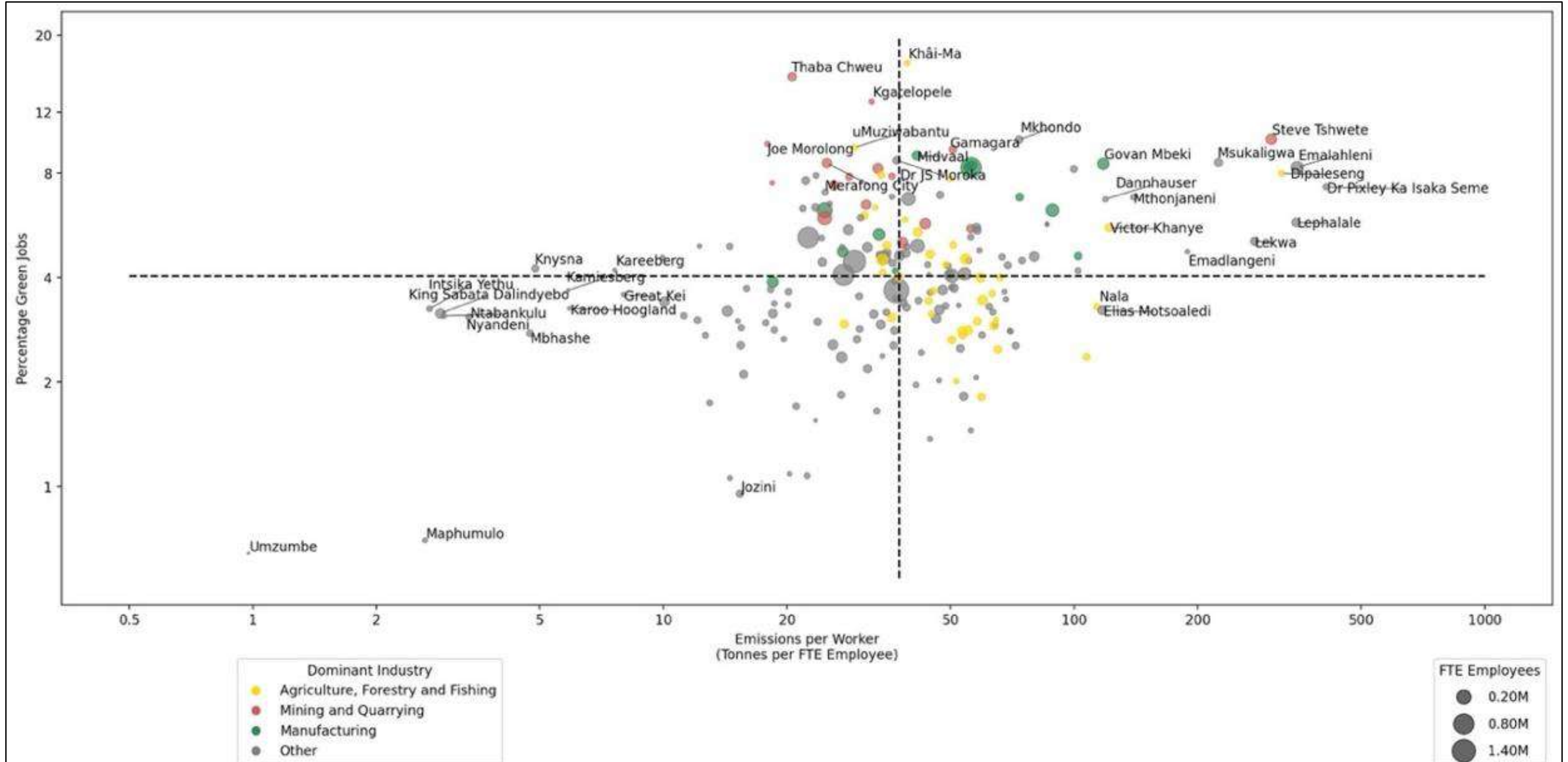
1. What is the contribution of small business to the economy?
2. What explains the different levels of entrepreneurship between municipalities?
3. Which segments/sectors have created the most opportunities for small business

Figure 1: Total establishments and employment by firm size, 2019/20



Research: Green Jobs Research Partnership (AFD-SALDRU)

Where are local municipal impacts (emissions vs green jobs)



10 Practical use and application in govt....

Using Administrative Data for Applied Analysis and Research

Some working examples from CCT



Using Spatially Disaggregated Data to Build Analytical Models

- In order to evaluate the impact of infrastructure investments, particularly in transport, the City needs to understand how the complex web of markets: labour; property adjust in space
- This requires us to go beyond partial equilibrium, space agnostic models

➔ Spatial General Equilibrium Model



The model*

Residential and employment choices
Land developers
Externalities

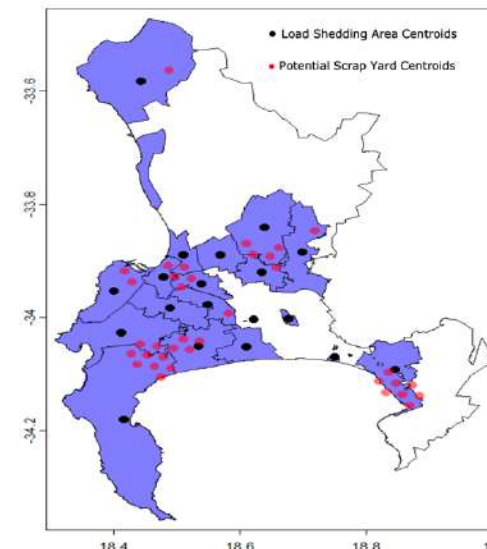
Minimum data requirements

Employment and population by spatial unit
Housing prices
Size of each spatial unit
Travel times across locations

Using disaggregated data in Applied Analysis

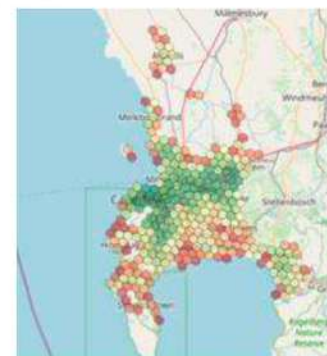
Example 1: Understanding the determinants of Copper theft

- Emerged from a desire to understand the impact of the copper export ban
- But developed into a regression model to understand the determinants of copper theft
- Data: Asset Management Dataset (repairs due to theft); copper price; load-shedding hours; proxy for economic activity (containers shipped); season effects
- **Distance to scrapyards** was considered an important variable and we were able to draw on the SARS tax data, using SIC code 46691

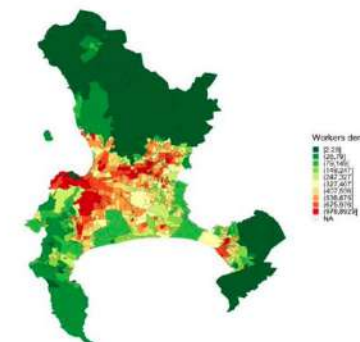


Using SARS data instead of Mobile Data – How do they compare

SARS Data

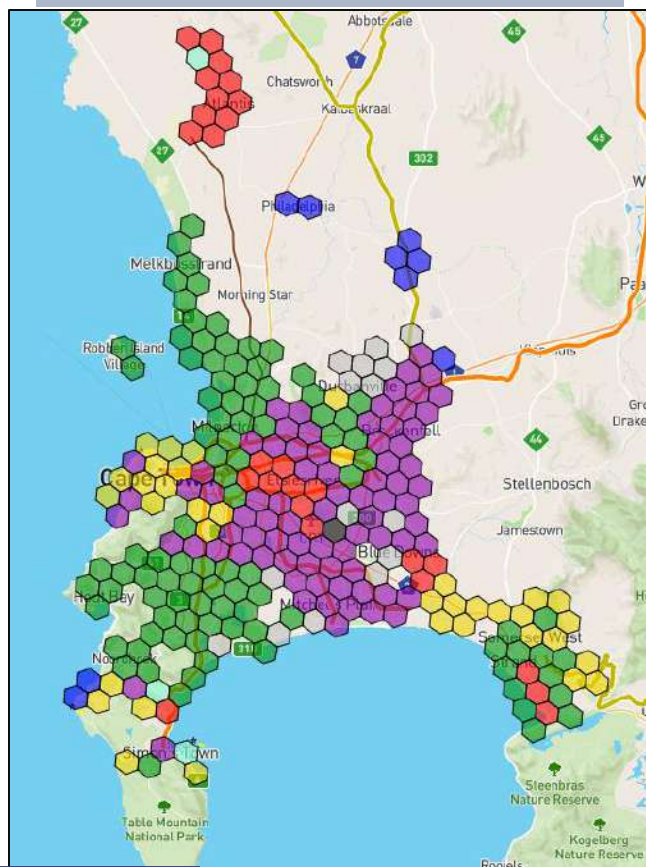


Mobile data

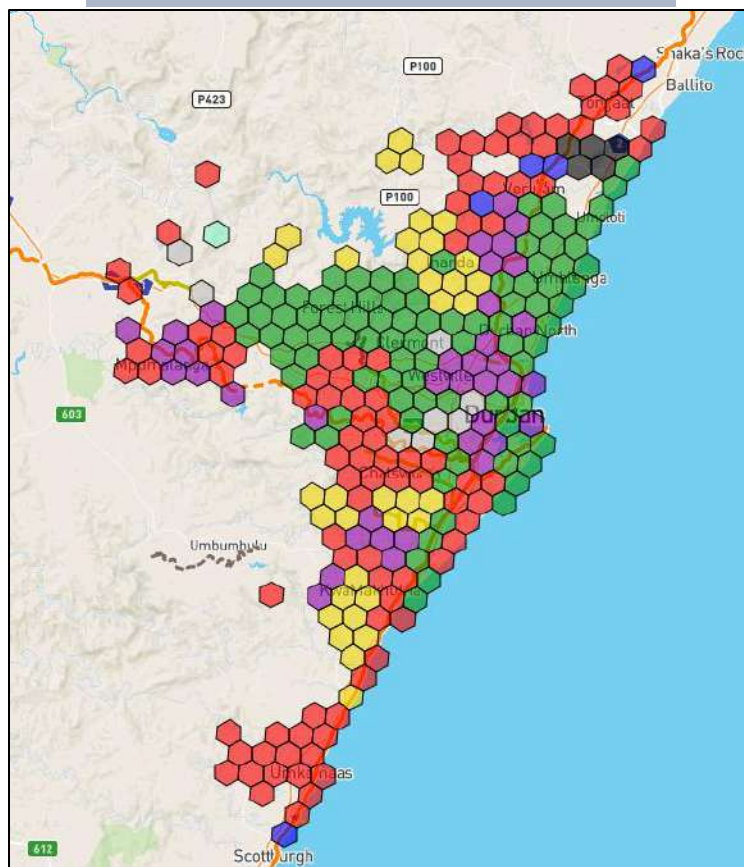


Different City Spatial Specializations in South Africa – by Dominant Sector Employer per area

CAPE TOWN – Wholesale and Retail Trade

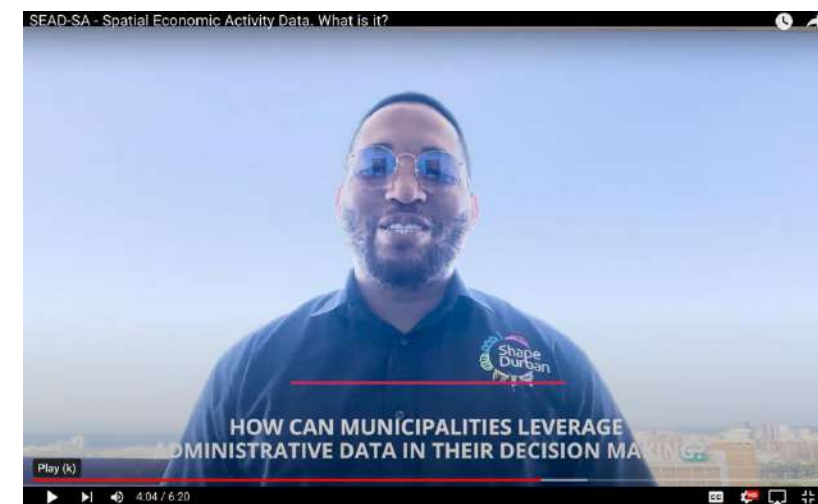


DURBAN / eTHEKWINI– Financial & Professional Business Services



	Sector
	Manufacturing
	Financial & Professional Business Services
	Wholesale and Retail Trade
	Construction
	Transport and Storage
	Community & Social Services
	Agriculture, Forestry and Fishing

Source: The Durban EDGE, 2022



https://www.youtube.com/watch?v=7l3-_C4uh2g&list=WL&index=1

Circular 88 reporting: from outputs to outcomes...

JOINT PLANNING, BUDGETING & REPORTING REFORMS

Local Economic Development TWG

PRESENTED BY:

Mike Leslie

Date: 20 November 2024



INDICATOR ASSIGNMENT	LED1.2	A4 Back to Basics pillar	Local economic development	A9 Indicator Formula	((1) Number of individuals in FTE employment in the recently concluded tax year – (2) Number of individuals in FTE employment at the start of the term of local government) / (2) Number of individuals in FTE employment at the start of the term of local government
A5 Unit of measurement	Percentage of individuals FTE employment opportunities	A6 Frequency of reporting	Annual	A10 Indicator origin	The indicator relates to MTSF Priority 2: Economic Transformation and Job Creation. It aligns in terms of the Outcome- More decent jobs created and sustained with youth, women and persons with disabilities prioritised.
A11 Notes on calculation	The indicator is reported in the "C88_LED1_2_PercentChange_Employment_BaseYear-LatestYear.xlsx" database released by the Spatial Tax Panel. The data base should include the latest data available for the purpose of monitoring and reporting, as well as the baseline year. For the purposes of consistency, the tax year ending in 2022 is considered the baseline for the 2021-2026 term of local government. 2027 will be the baseline for the next term of local government and so on in five year intervals thereafter.			A12 Additional notes	Targets should be set as a % (i.e. 10% increase in formal employment). If a municipality has 100 FTE jobs in 2022 and in 2026 it has 111 FTE jobs, then the indicator value would reflect as $(111-100)/100 = 11\%$ in 2026. When setting a medium-term target for the indicator, the municipality should take into account projected population growth and demographic shifts in the working age population.

Reporting responsibility	Applies to Municipal Category		Readiness
National	Metro	Yes	Tier 2
	Intermediate City	Yes	Tier 3
	District	Yes	Tier 3
	Local	Yes	Tier 3

B1 Data Element	(1) Number of individuals in FTE employment in the recently concluded tax year	B4 Source	Spatial Economic Activity Data - South Africa (SEAD SA): Spatial Tax Panel	C1 Data Element	(2) Number of individuals in FTE employment at the start of the term of local government	C4 Source	Spatial Economic Activity Data - South Africa (SEAD SA): Spatial Tax Panel
B2 Frequency of collection	Annual	B5 Units	Number of individuals	C2 Frequency of collection	Annual	C5 Units	Number of individuals

Multipliers of an open access approach to data...

News media



OPINIONISTA

Latest Spatial Tax Panel data tell much about formal employment in the provinces and metros of SA

By Seelan Naidoo

11 Jul 2023

Dr Seelan Naidoo is principal associate at Public Ethos Consulting. He holds a master's in Decision-making, Knowledge and Values from Stellenbosch University, and a PhD in Organisation Studies and Cultural Theory from the University of St Gallen. He is an associated researcher of the Centre for Humanities Research at the University of the Western Cape. He writes in his personal capacity.

BusinessDay

JUSTIN VISAGIE AND MARK PATERSON: Real data needed to promote jobs and growth

The lack of data co-ordination makes it difficult to draw up realistic plans and execute responses

16 APRIL 2023 - 12:09

By JUSTIN VISAGIE AND MARK PATERSON

Despite the widely recognised notion that formal and informal small, medium-sized and microenterprises (SMEs) employ most of the country's labour force, there is a lack of hard evidence on the composition of small businesses in South Africa. Human Sciences Research Council senior research specialist Justin Visagie has said.

CREAPER MEDIA'S ENGINEERING NEWS

SMMs' contribution to economy threatened by historical legacy, lacking industrial policy

Photo by Koenig

Despite the widely recognised notion that formal and informal small, medium-sized and microenterprises (SMEs) employ most of the country's labour force, there is a lack of hard evidence on the composition of small businesses in South Africa. Human Sciences Research Council senior research specialist Justin Visagie has said.

Wednesday March 26, 2023

Why are hundreds of SMEs leaving Durban? Chamber of Commerce launches investigation

Durban's economic fortunes have been mixed with the number of businesses declining but there has been an uptick in employment. Picture: Doctor Ngwenya Independent Newspapers

From first touch to full funnel, Zoho fuels your marketing.

GCRU | Gauteng City-Region Observatory

[BACK TO MAP OF THE MONTH](#)

Spatial changes in Gauteng's formal manufacturing jobs: 2014 – 2022

Ebrahim-Khalil Hassen, Dr Laven Naidoo, Dr Mamokete Modiba, Dr Darlington Mushongera, Hendrik Labuschagne

DOI: <https://doi.org/10.36634/LDPH9021>

Date of publication: 30 April 2024

Download Map

GCRU Map of the Month

Change formal manufacturing jobs in Gauteng between 2014 and 2022

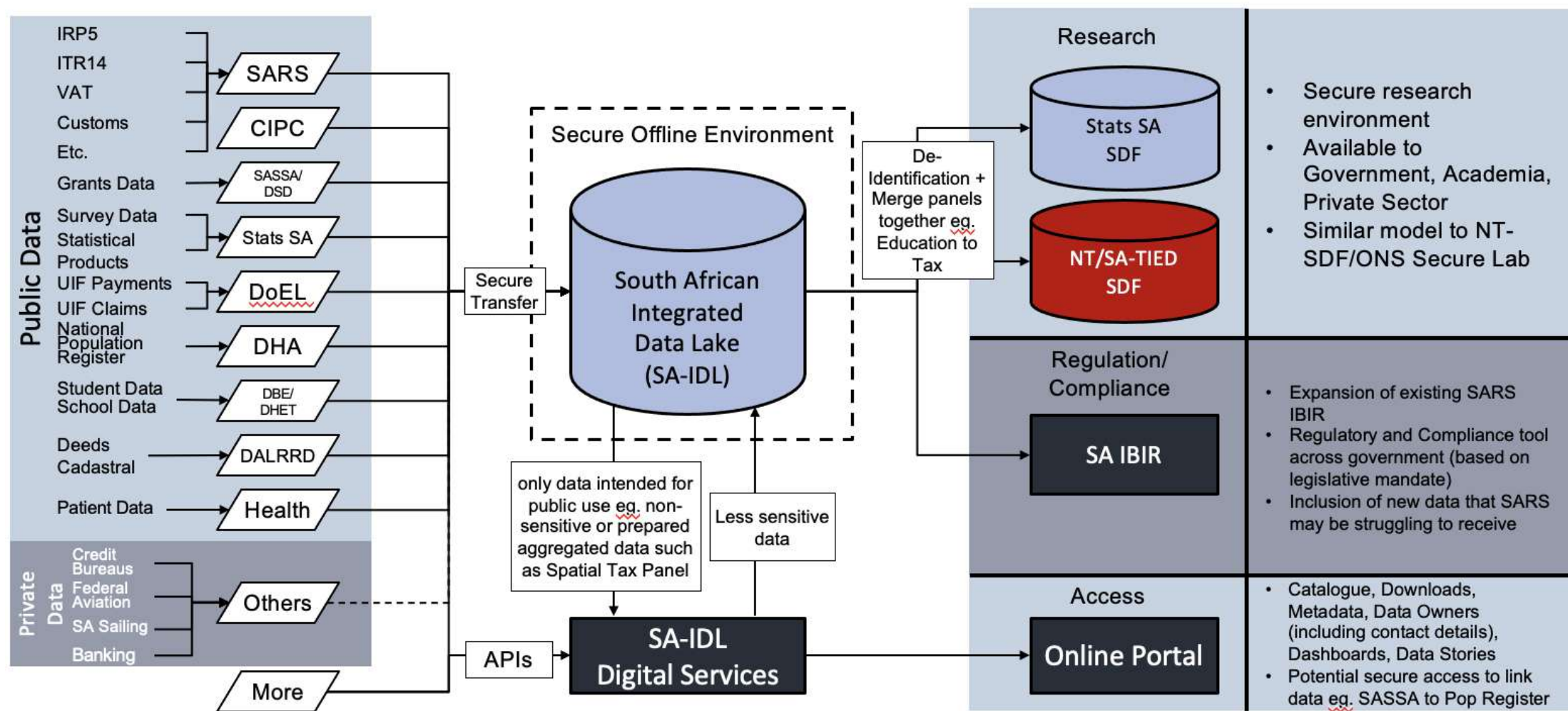
Changes in the number of formal manufacturing jobs per municipality region between 2014 and 2022

- 20 000 - 25 000 Jobs Lost
- 10 000 - 20 000 Jobs Lost
- 1 000 - 10 000 Jobs Lost
- 1 000 - 3 000 Jobs Lost
- 0 - 1 000 Jobs Lost
- 0 - 1 000 Jobs Gained
- 1 000 - 3 000 Jobs Gained
- 3 000 - 5 119 Jobs Gained
- Municipalities in Gauteng

GCRU

Where to next for admin data *in South Africa*?

South African Integrated Data Lake ...Mzansi Xchange



12

Concluding remarks

Lessons

- **Slowly but surely:** start small, build trust, deliver real value on a realistic workload
- **Joined-up governance:** SEAD-SA as a collective brand; understanding the value chain
- **Finding champions:** energy, passion, impact
- **Flexible and responsive:** demand-led from end-users; adapt as we go

Limitations

- **Data is necessary but not sufficient:** a lot of work to translate into tangible outcomes
- **Technical expertise:** CPT and ETH front runners
- **Legal and bureaucratic hurdles:** delays in accessing geo-coded data; questions about suburb layers
- **Wider institutional reforms:** need further integration across multiple sources



SEADSA
SPATIAL ECONOMIC
ACTIVITY DATA
South Africa

THANK YOU



EEE

Equitable Education and Economies



national treasury
Department:
National Treasury
REPUBLIC OF SOUTH AFRICA

dtiEs **SUPPORT
PROGRAMME**



**UK International
Development**

Partnership | Progress | Prosperity