



Demand for GISc knowledge and skills in South Africa

*Presented by Serena Coetzee
12 August 2015*



Workshop objective

Collect information about
the **demand** for
GISc knowledge and skills

Workshop program

1. Background to the survey
2. Related studies in other parts of the world
3. Fill in survey of the demand for GISc knowledge and skills...

1. Background



- 2013/4: GISc community survey ISSA
 - **Who are the members of the GISc community in SA?**
 - **What do they do?**
- Reasons for survey
 - GISc is scarce skill for SIPs (DHET report in 2014)
 - Shortage of registered GISc professionals
 - Professional GISc registration challenges
 - Registration categories and academic requirements suitable for type of work done by GISc professionals?

RESULTS

2013/4: GISc community survey

- 25% of respondents switched to GISc-related work later in their career
- Application fields
 - Individuals tend to focus on a few application fields
 - GISc community as a whole is active in most application fields
- Barrier to registration
 - Qualifications not meeting academic requirements
- Daily activities
 - Most
 - **data analysis and interpretation**, together with **data acquisition**, **data management**, and/or **visualization/mapping**
 - Many
 - do not need mathematics and physics on a daily basis

RESULTS

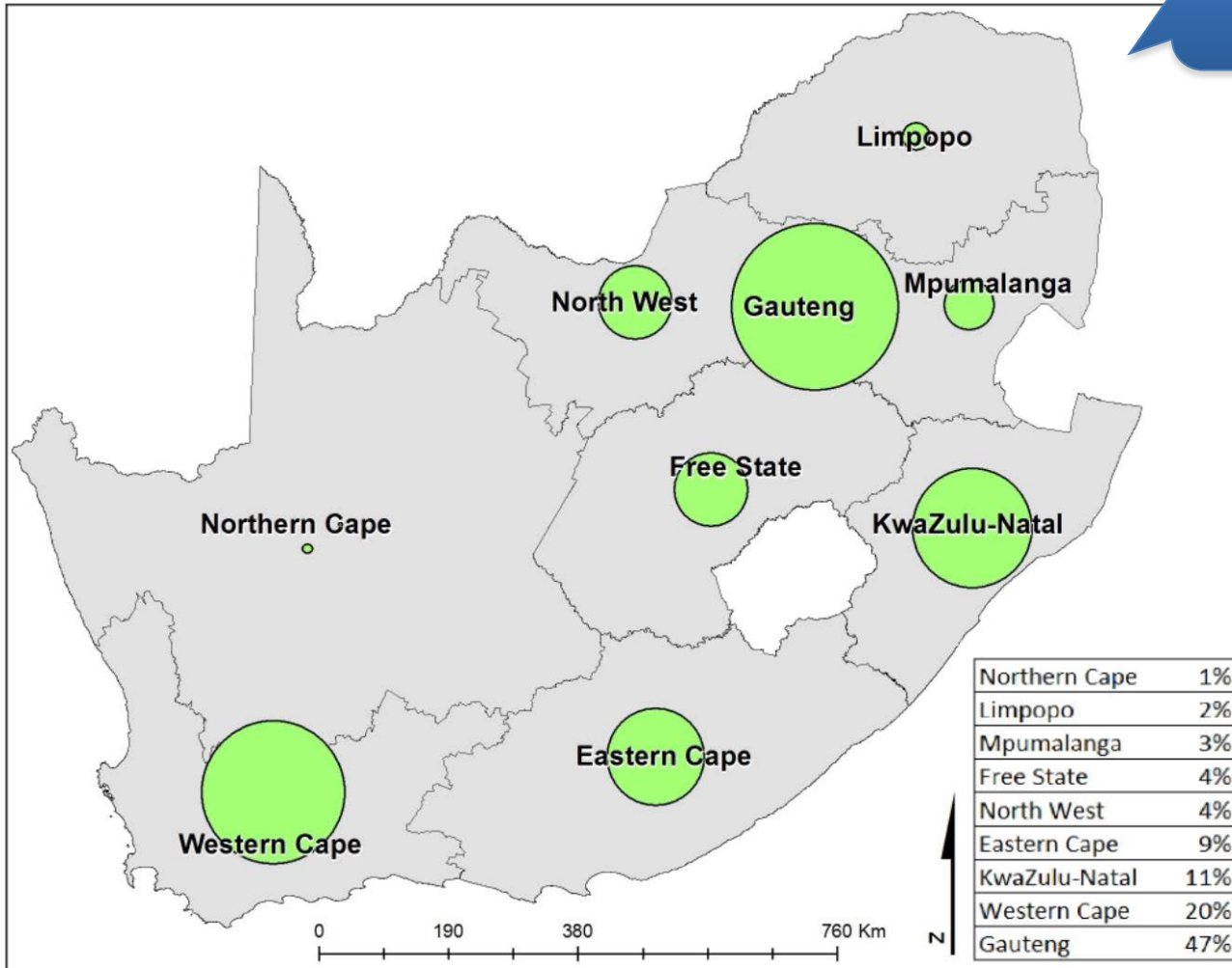
2013/4: GISc community survey

- Questions raised
 - ? Is the differentiation between the type of work performed by different registration categories clear enough?
 - ? Is an additional registration category required for professionals from other disciplines who use GIS as a tool?
 - ? Why are many people who focus on remote sensing not registered as GISc professionals with PLATO?
- Results contribute to the understanding of the supply and demand for GISc knowledge and skills in South Africa
 - We know what many (not all) GISSA members do on a daily basis
 - This says something about the demand because they are (hopefully) employed in a position that meets some demand...

RESULTS

2013/4: GISC community survey

Does demand correlate with population and/or GDP...?

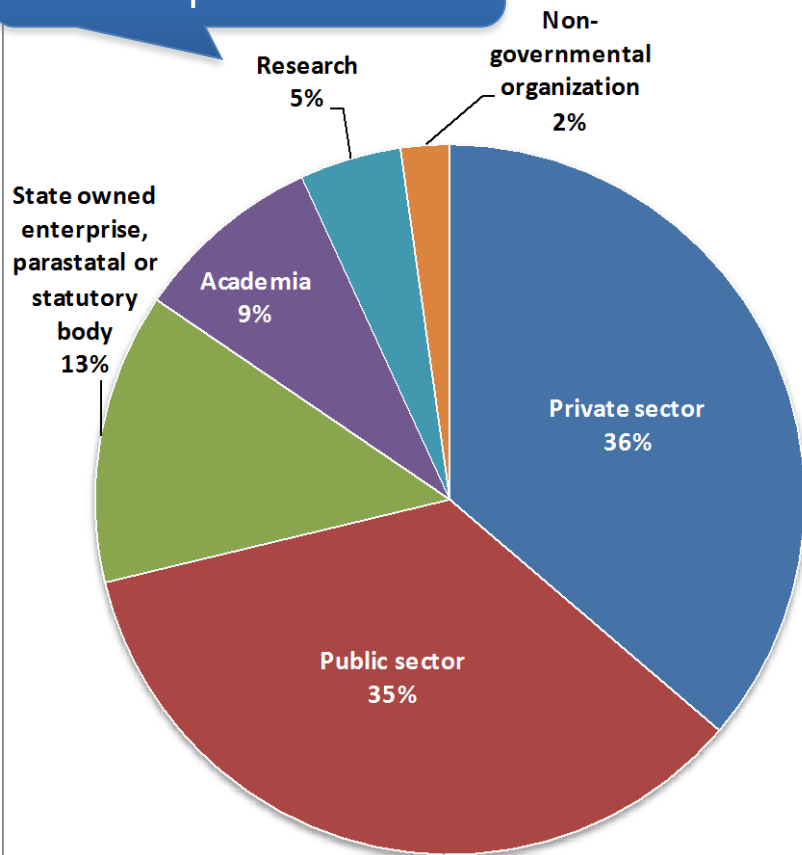


	GDP%	Pop%
Northern Cape	2.0	2.2
Limpopo	7.3	10.4
Mpumalanga	7.6	7.8
Free State	5.1	5.3
North West	6.8	6.8
Eastern Cape	7.7	12.7
KwaZulu-Natal	16	19.8
Western Cape	13.7	11.2
Gauteng	33.8	23.7

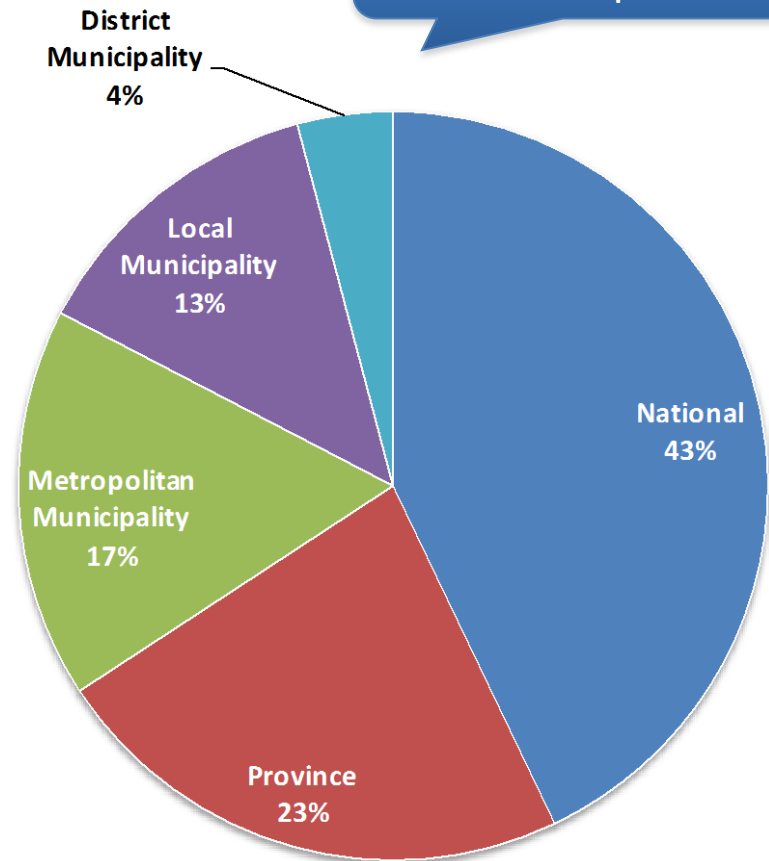
RESULTS

2013/4: GISc community survey

More demand in public than in private sector



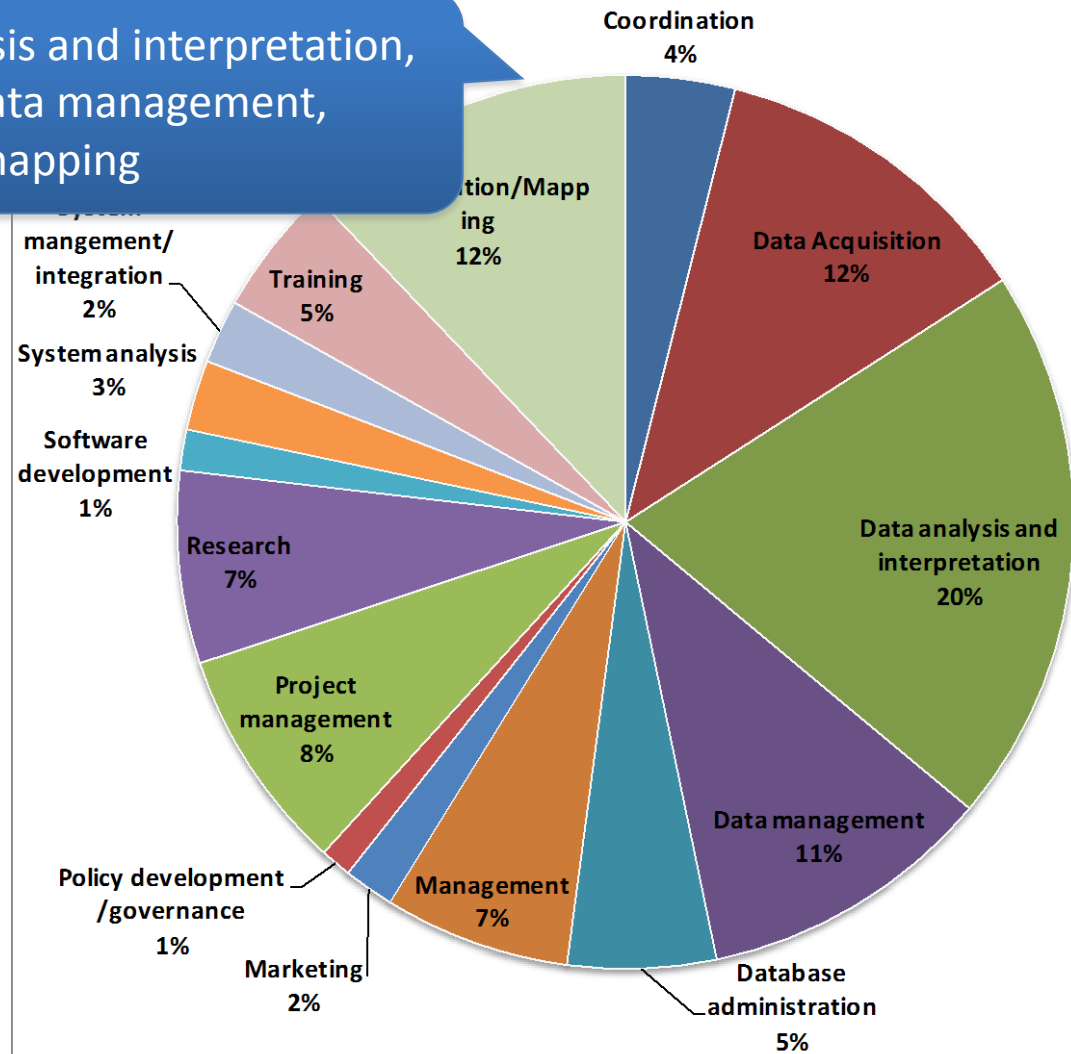
Most demand in national departments



RESULTS

2013/4: GISc community survey

Most demand for data analysis and interpretation, then data acquisition, data management, visualization/mapping



RESULTS

2013/4: GISc community survey

We counted people who are working...
what about vacant positions?

**Further research required to
better understand the demand...**

2. Related studies

- GI-N2K project (Europe)
- UN-GGIM: Future trends in geospatial information management
- Oxera report by Google

GI-N2K (European project)



Integrated analysis of the demand for and supply of geospatial education and training

- Survey
 - Demand side: organisations and companies with a need for geographic information competences
 - Supply side: organisations offering teaching in geographic information
- Results indicate that GIS&T BoK needs update to address
 1. the shift from primary data acquisition to the handling of highly **abundant spatial data**;
 2. a lack of competences in **programming and application development**; and
 3. a poor coverage of **web-related** aspects.

Future trends (2013)



- Technology trends
 - Creation of huge data volumes, linked data, cloud computing, open source, open standards, GNSS, UAVs, ...
- Legal and policy developments
- Skills requirements and training mechanisms
 - Maximizing value of geospatial information, extracting value from a world of data, visualization skills,
 - **The adoption of data-driven rather than cartographically-driven geospatial content will see a fundamental shift in the skills base and costs.**
- The role of the private and non-governmental sectors
- Future role of governments

Oxera report (2013)

What is the economic impact of GEO SERVICES

Geo services are:



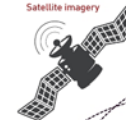
Satellite receivers and manufacturing



Electronic maps



Satellite navigation



Satellite imagery



Location-based search

Geo services global revenues are \$150-\$270 billion per year

Video games industry \$25 billion

Geo services \$150-\$270 billion

Airline industry \$594 billion

Geo services global added value is around \$100 billion per year



Geo services save:



Geo services save 3.5 billion litres of gasoline per year—approximately 0.1% of the total world production of 5 trillion litres of liquid oil products

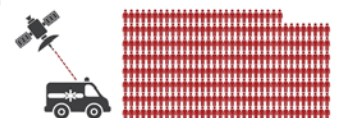
Geo services facilitate competition, leading to savings from reduced prices among infrequently bought goods and services of up to:



Geo services can improve agricultural irrigation, helping to achieve global cost savings per year of:



Geo services aid faster emergency response; for example, in England Geo services may have helped to save at least 152 lives per year



Students educated using Geo services can expect



3%

higher average wages five years after graduation than those who weren't

3. Survey of the demand for GISc knowledge and skills...

- Joint survey by the Committee for Spatial Information(CSI) and the Geoinformation Society of South Africa (GISSA)
- Purpose
 - To get a better understanding of the demand for GISc knowledge and skills in South Africa
- Sections
 - **Section 1** – Characteristics of the organization (e.g. DRDLR or Aurecon)
 - **Section 2** – Characteristics of the organizational unit (e.g. NSIF or Aurecon Asset Management Division)
 - **Section 3** – GISc knowledge and skills requirements in your organizational unit
 - **Section 4** – Employee development

Section 1

Characteristics of the *organization (e.g. DRDLR or Aurecon)*

1.1 Indicate the main industries of the business or mandate of your organization. You may check more than one.

Agriculture, Civil Engineering...Weather/Meteorology, Other

1.2 To what extent are the GISc knowledge and skills needed to fulfill the strategic objectives of your organization? Check only one.

Crucial/Critical

Strategically important

Operationally important

Optional

1.3 Select the economic sector of your organization

Public, private, NGO, research, academia, state-owned enterprise

1.4 Is your company listed on the JSE?

Yes/No

Section 2

Characteristics of the *organizational unit (e.g. NSIF or Aurecon Asset Management)*

2.1 If your organization is in the public sector, select the area of jurisdiction of your organizational unit. Check only one.

Local, metro, district, province, national

2.2 Select the province where the primary office of your organizational unit is situated. Check only one.

Eastern Cape, Free State ... Western Cape

2.3 Indicate the type of business your organizational unit engages in.

List of business types.... n/a, partially, mostly, only

2.4 Indicate the total number of employees in your organizational unit. Check only one.

<=10, 10-100, 101-500, >500

Section 3

GISc knowledge and skills requirements in your organizational unit

3.1 Is GISc professional registration compulsory for certain posts or jobs in your organizational unit?

Yes/No

3.2 Indicate the total number of posts or positions in your organizational unit for which GISc knowledge and skills are required

Experienced: None/How many?

Entry level: None/How many?

GISc interns: None/How many?

3.3 Which geospatial platforms are used in your organizational unit?

List of platforms... Never/Rarely/Occasionally/Frequently/Only

3.4 How much of the work in your organizational unit, for which GISc knowledge and skills are required, is conducted in the roles listed below?

List of roles... None/Some/Most/All

3.5 How relevant are the following GISc knowledge and skills to the business or mandate of your organizational unit?

List of skills... Not at all/Slightly/Moderately/Extremely

3.6 Which GISc knowledge and skills do you think the employees of your organizational unit will require in the future (which they don't have now)?

Free textbox

Section 4

Employee development

4.1 Indicate the number of fulltime bursaries offered by your organization or organizational unit in the following disciplines, or tick the second column if you do not know.

Environmental science, Geography, Geoinformatics/GISc/Geomatics, Remote sensing, Surveying, Town and regional planning

4.2 Which type of self-development does your organizational unit provide to its employees? You may select more than one.

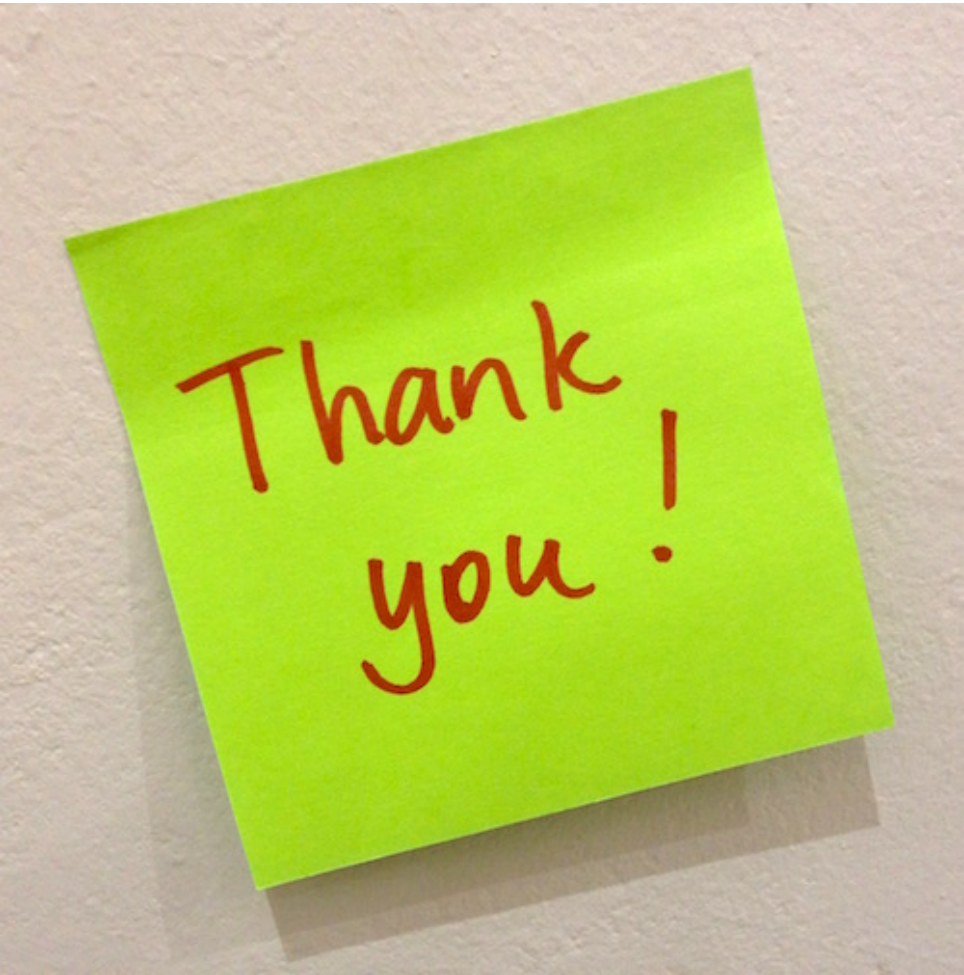
List of self-development types... Yes/No/I don't know

4.3 Indicate the level you represent in your organizational unit. Check only one.

Top management, senior management, middle management, supervision, senior operational, junior operational

4.4 Use the text box below to tell us anything else you would like to share with us about the demand for GISc knowledge and skills in South Africa

Free textbox



Thank
you!

References

- Oxera (2013). What is the economic impact of Geo?
- UN-GGIM (2013). *Future trends in geospatial information management: the five to ten year vision.*
- Rip F, Wallentin G, Van Lammeren R (2014). *Integrated analysis of the demand for and supply of geospatial education and training.* LLP – Erasmus Academic Network N° 540409-LLP-1-2013-1-BE-ERASMUS-ENW.
- Wallentin G, Hofer B and Traun C (2015). Assessment of workforce demands to shape GIS&T education. *Transactions in GIS*, 19(3):439-454.