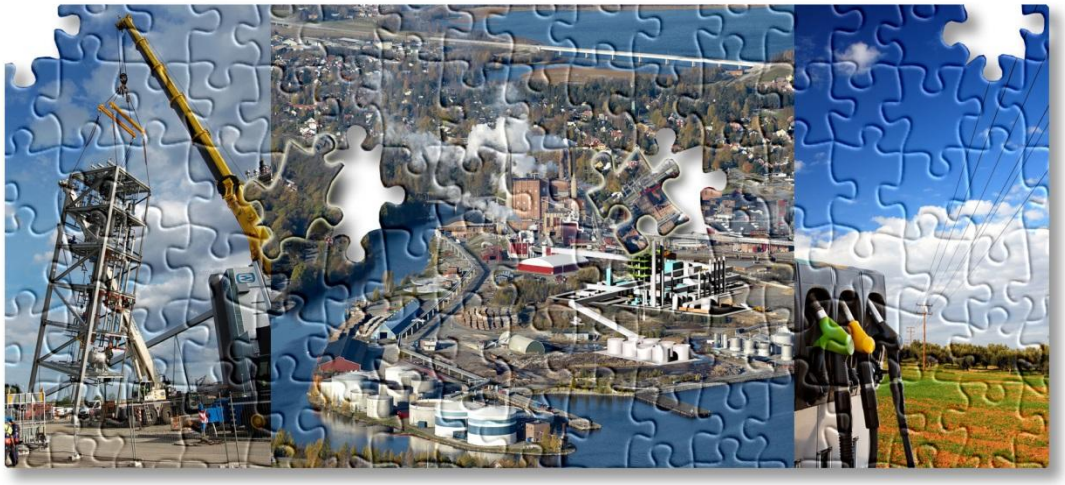
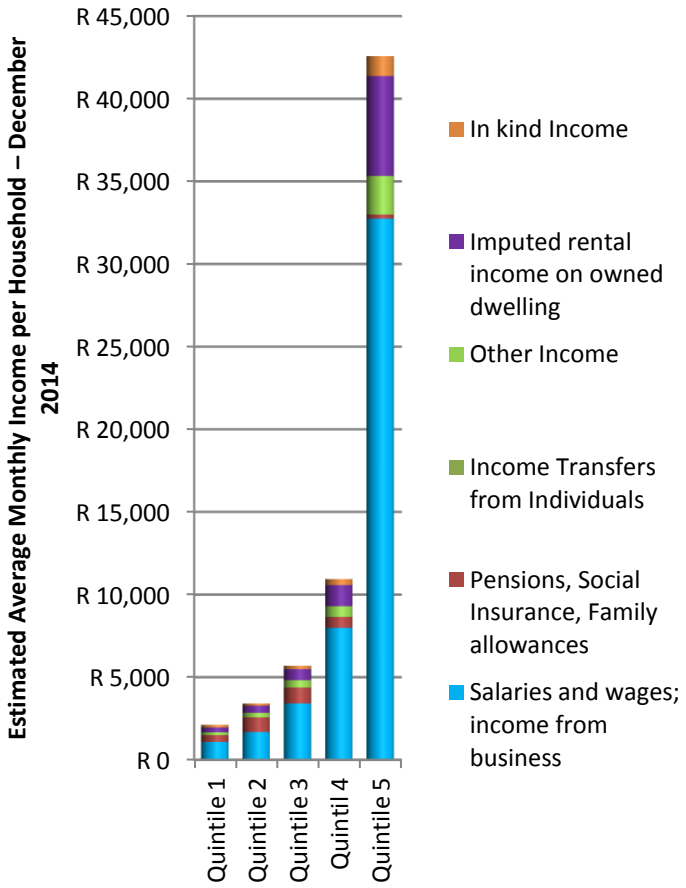


Estimated Employment Multipliers for the City of Johannesburg

Undertaken by Trade & Industrial Policy Strategies (TIPS) for
The City of Johannesburg Metro
2015

THE CONTEXT – EMPLOYMENT AND INCOMES

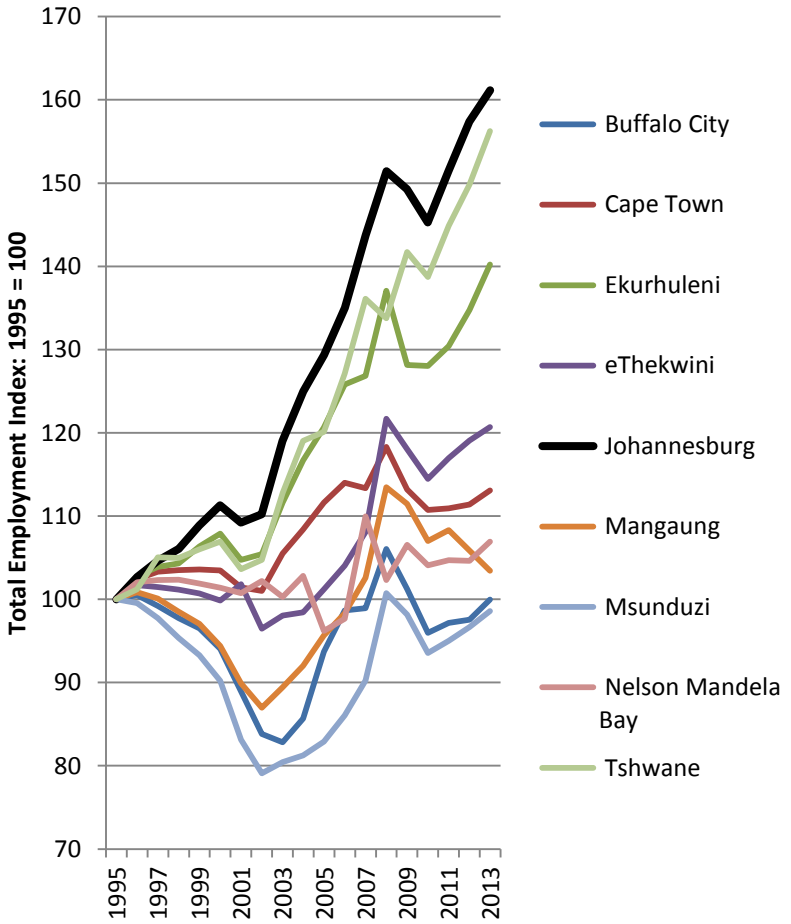
A profile of households in South Africa

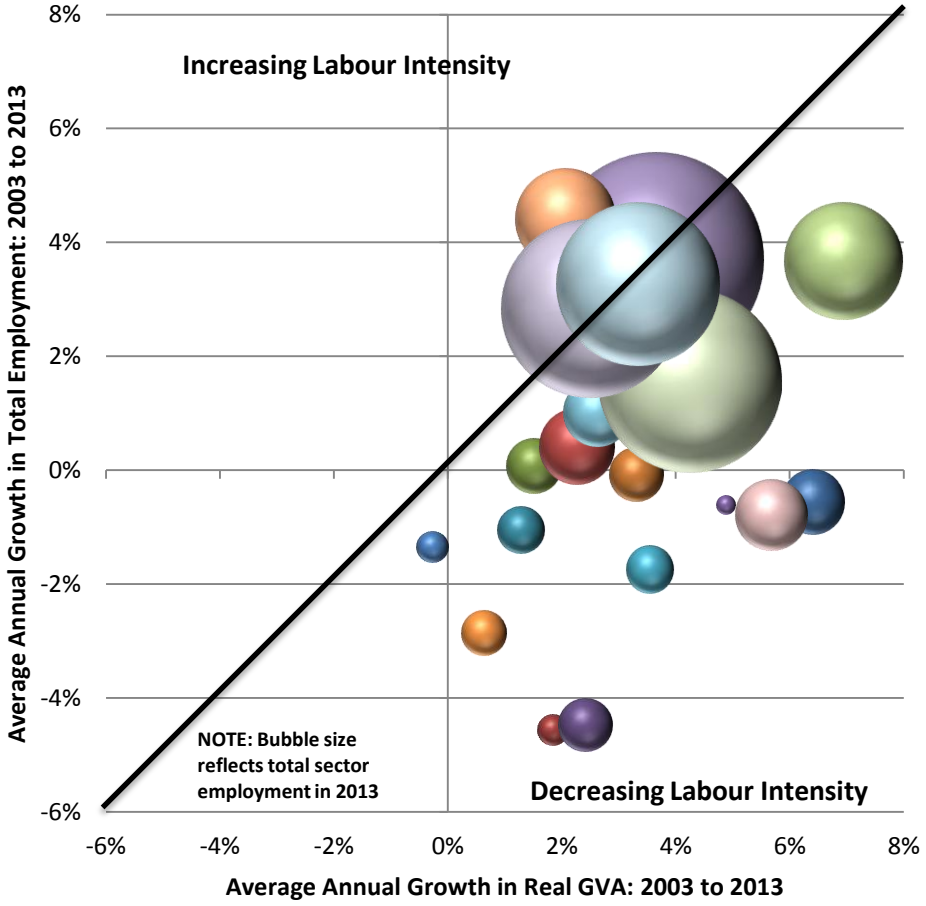


Characteristic	Household Quintile				
	1 (Bottom 20%)	2	3	4	5 (Top 20%)
Estimated average number of people per household	4.7	3.5	3.1	2.7	2.5
Estimated % of household income earned from employment	53%	50%	60%	73%	77%
Estimated % of household income from transfers	21%	27%	17%	6%	1%
Estimated % of household income from imputed rent and in-kind income	22%	17%	15%	15%	17%
Estimated average monthly income per household – December 2014	R 2 112	R 3 412	R 5 683	R 10 928	R 42 579
Implied average monthly income per household member – December 2014	R 449	R 975	R 1 833	R 4 048	R 17 032

Source of basic data: Stats SA 2010/11 Income and Expenditure Survey, SARB Quarterly Bulletin

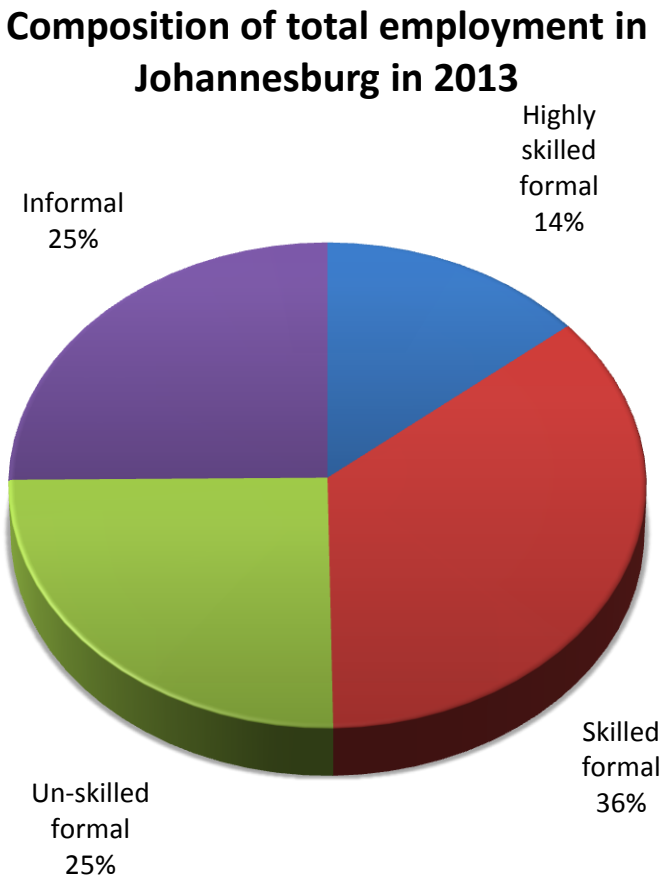
Trends in Metro Employment



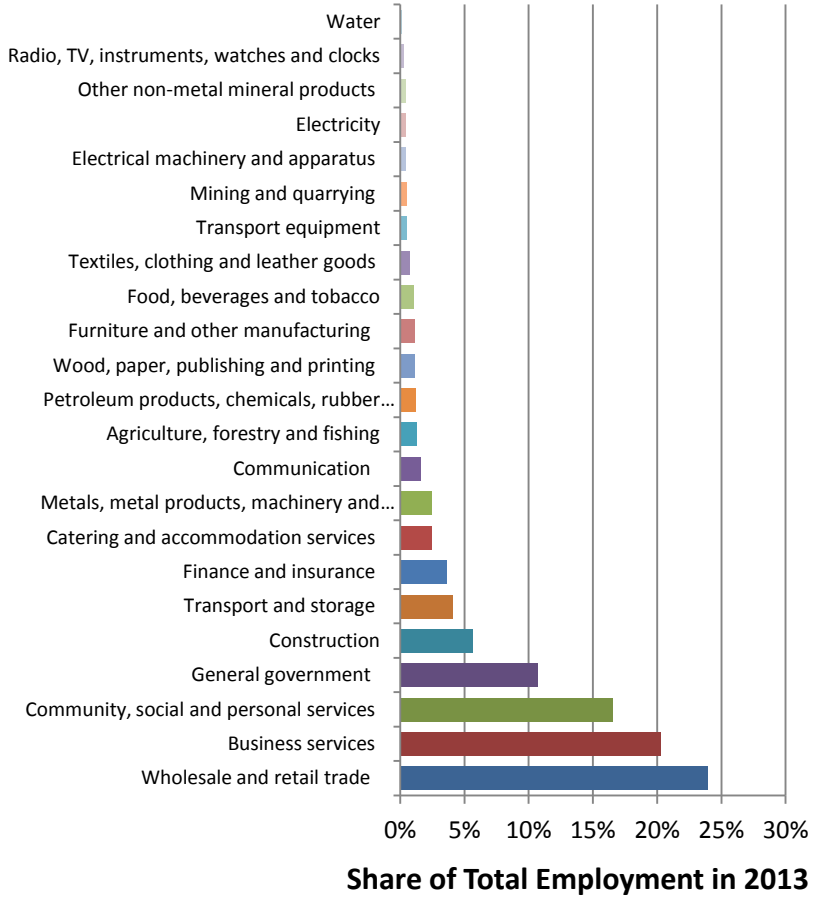


Source of basic data: Quantec Standardised Regional Database

Nature of employment in Johannesburg in 2013

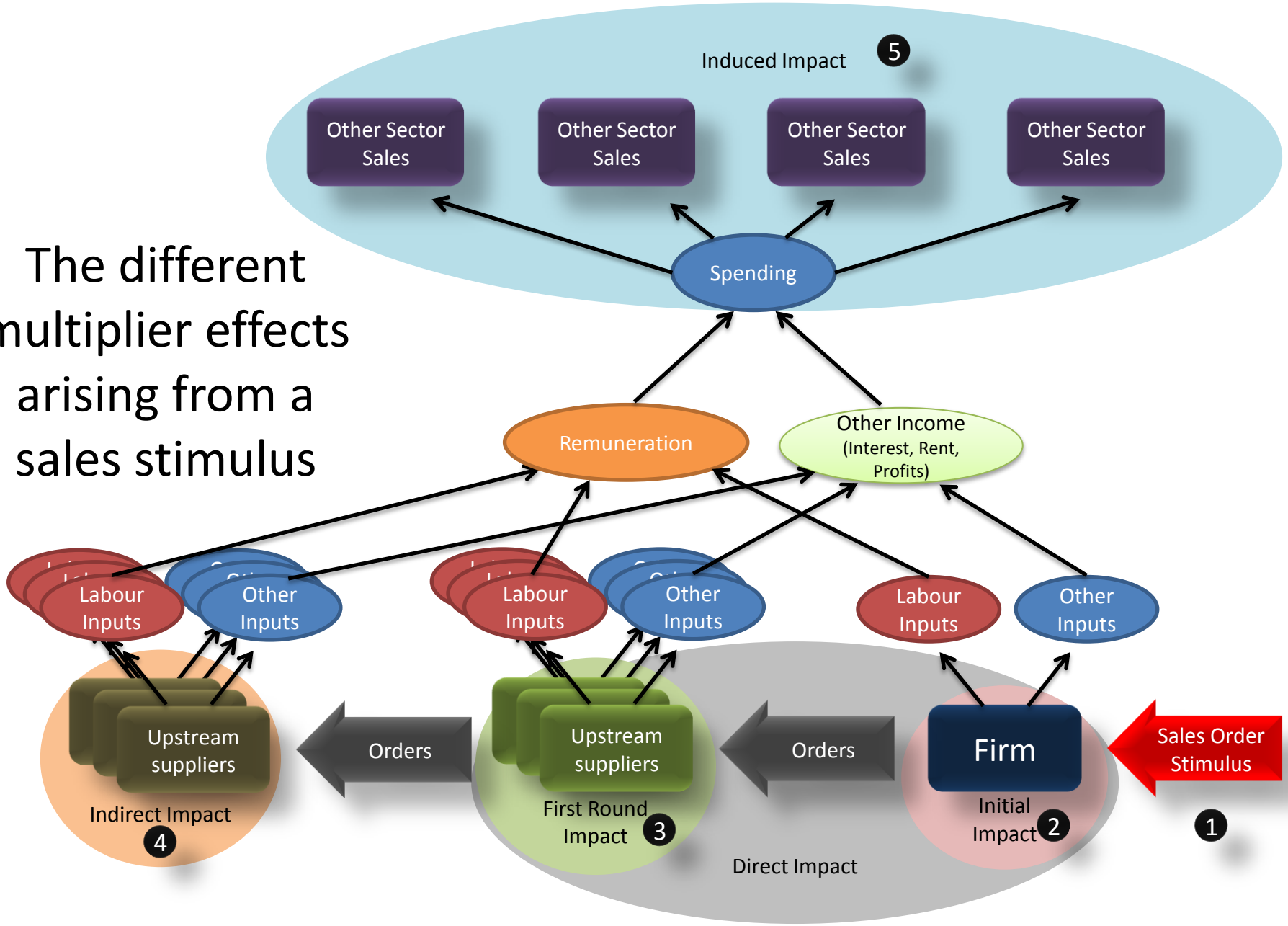


1.6 million people employed



THE PROCESS OF ESTIMATING EMPLOYMENT MULTIPLIERS

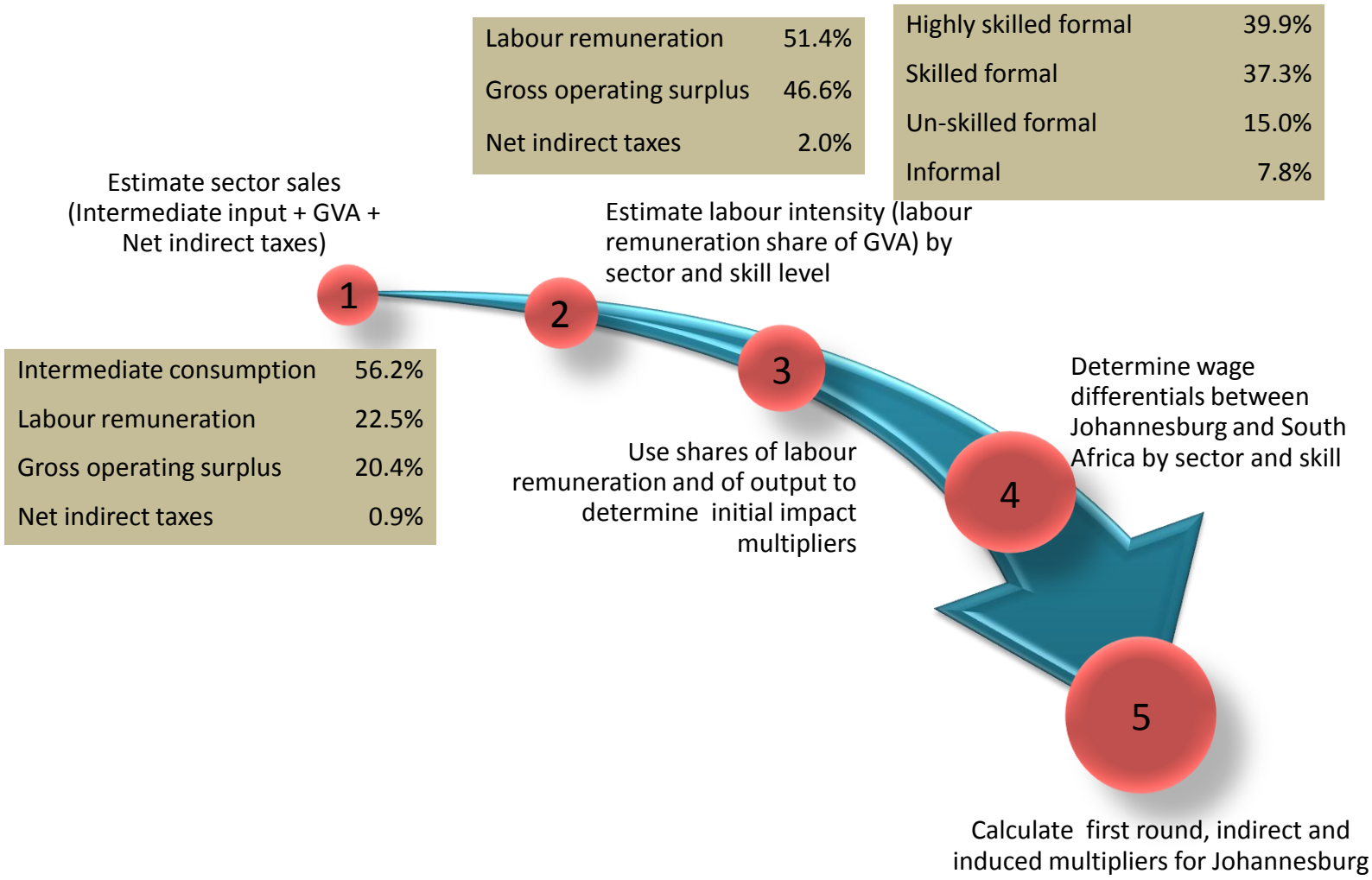
The different multiplier effects arising from a sales stimulus



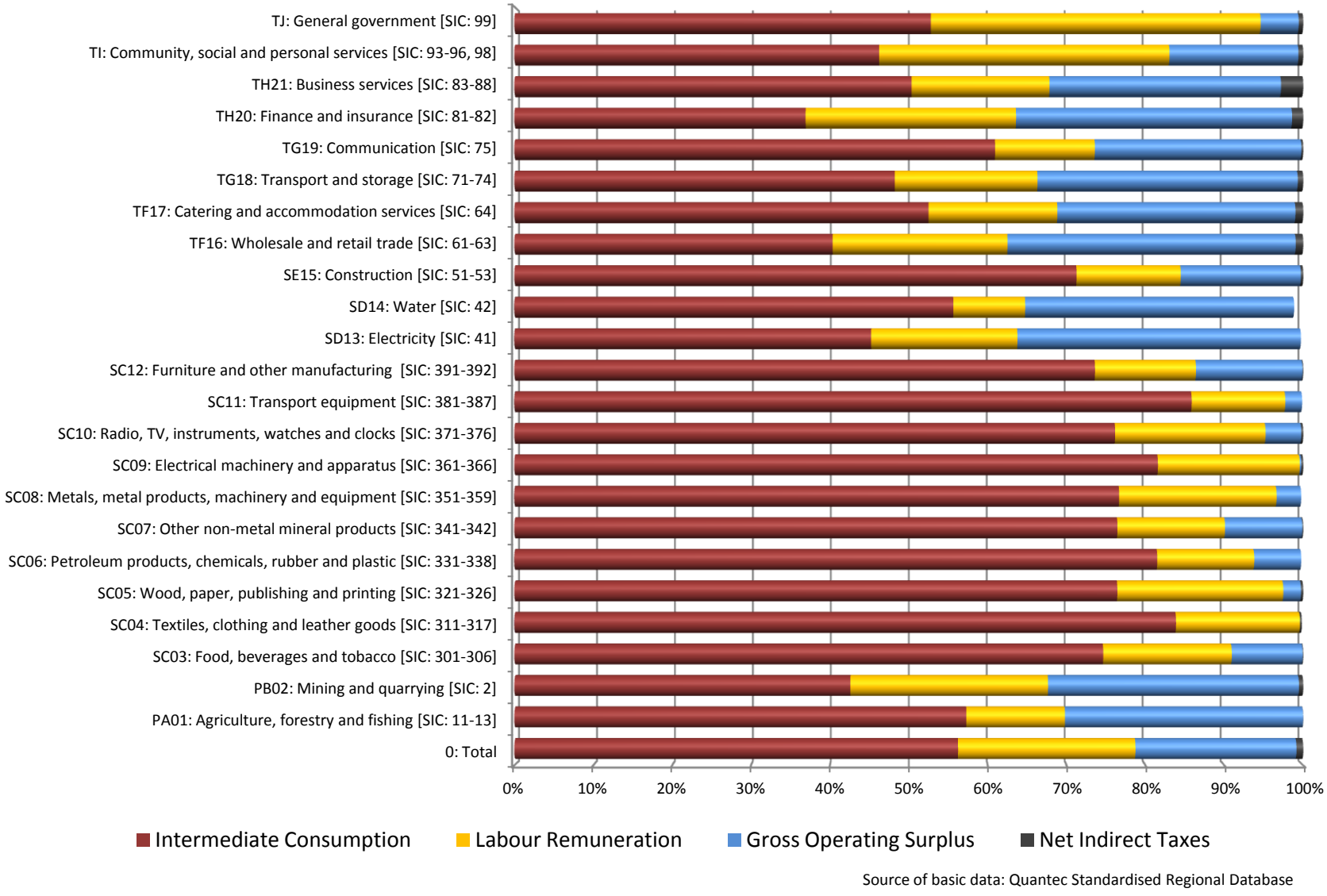
Some points of departure

- Demand for labour is derived from the demand for the goods and services that labour is required to produce.
- Unless a sector is already operating at full capacity, sales support existing employment opportunities – they don't create new ones.
- Those employment opportunities will only continue to be supported for as long as sales orders continue to be forthcoming.
- When a firm is operating at or near full capacity, the employment opportunities created will depend on the rates of technical substitution between labour and other factors of production and the relative costs or prices of the different factor inputs. Changes in the productivity of existing workers will also impact on the need to employ additional labour to meet sales orders over time

Basic approach to estimation

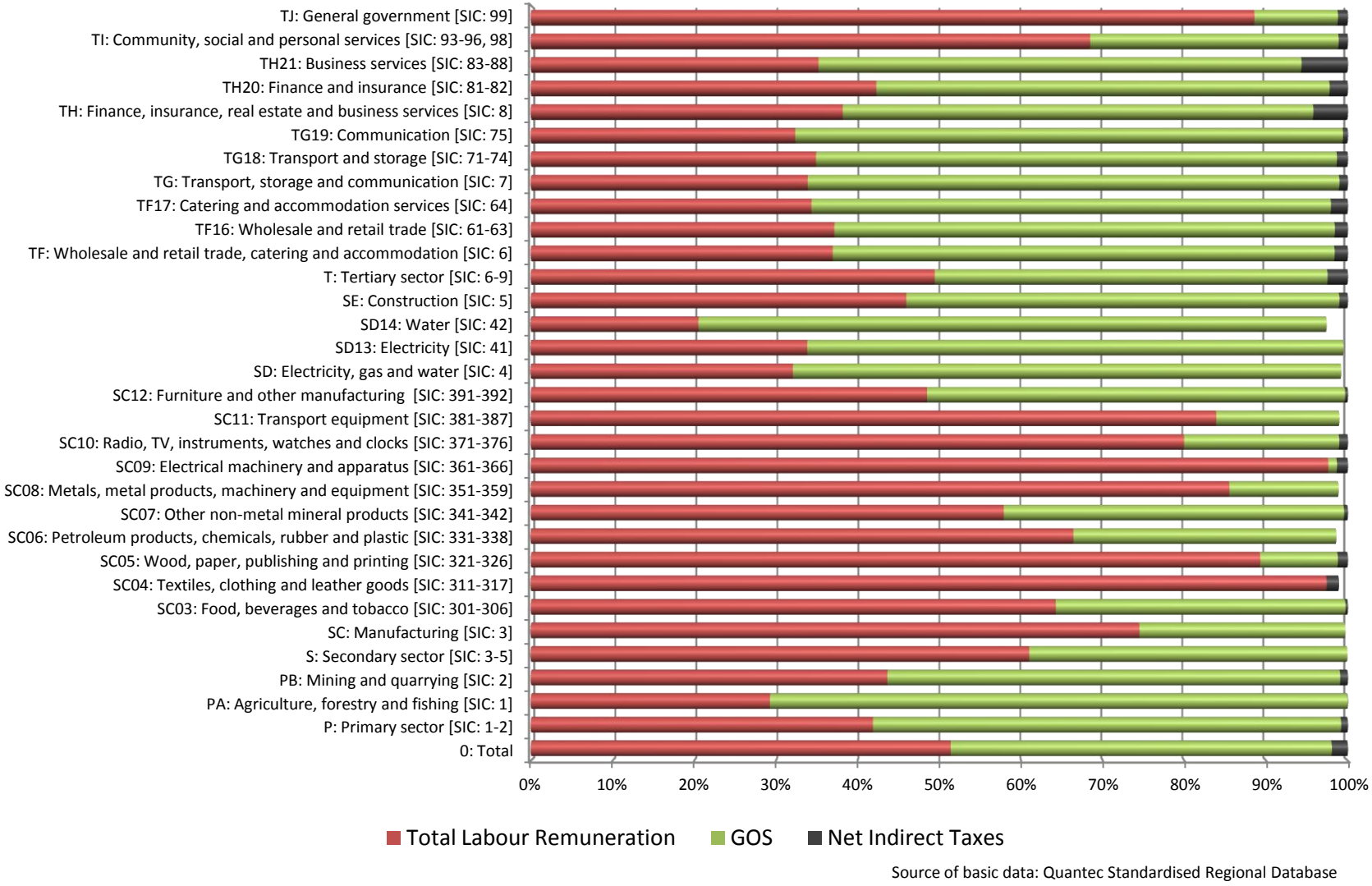


The composition of sales by sector in Johannesburg in 2013



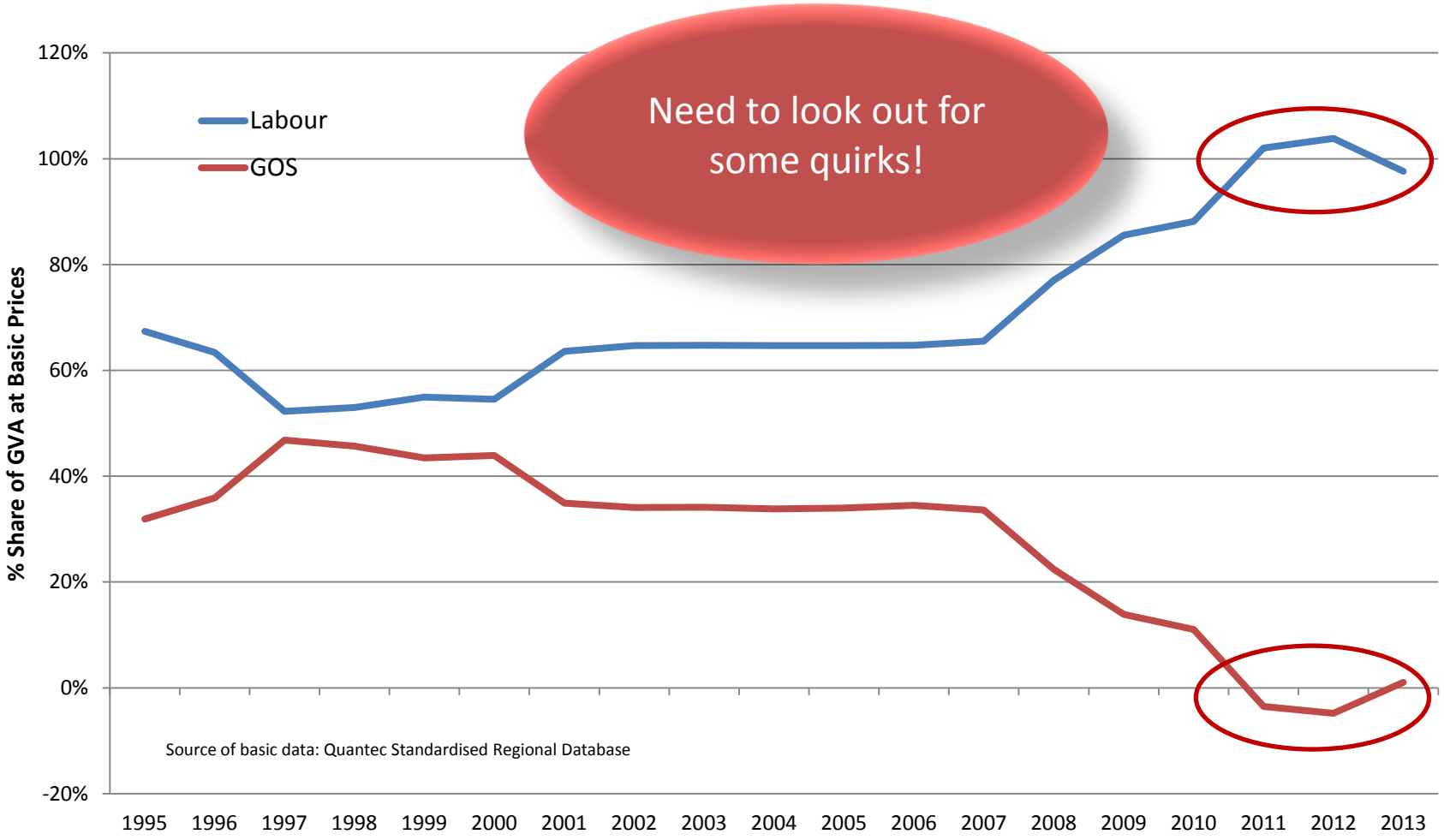
Source of basic data: Quantec Standardised Regional Database

The composition of gross value added by sector in Johannesburg in 2013

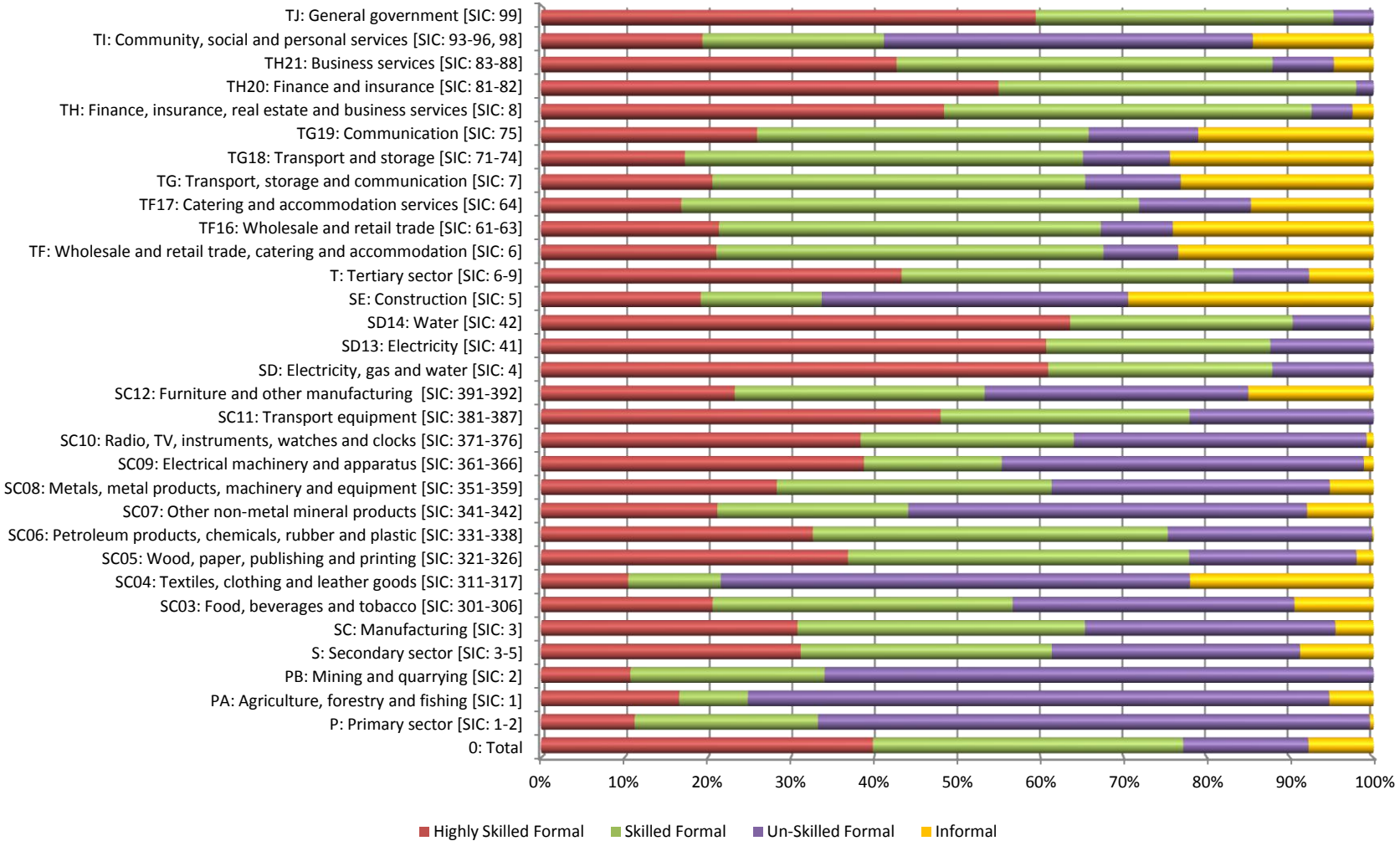


Source of basic data: Quantec Standardised Regional Database

Relative labour and capital intensities in the electrical machinery and apparatus sector in Johannesburg



The skills composition of employment by sector in Johannesburg in 2013



Source of basic data: Quantec Standardised Regional Database

THE RESULTS OF THE EMPLOYMENT ESTIMATION PROCESS

Estimated initial impact employment multipliers by sector and skills level in Johannesburg in 2013

Industry	Estimated Initial Impact Number of Employment Opportunities Supported by a R1 million Sales Stimulus				
	Average	Highly Skilled Formal	Skilled Formal	Un-skilled Formal	Informal
0: Total	1.820	0.244	0.623	0.438	0.516
P: Primary sector [SIC: 1-2]	1.374	0.051	0.111	1.080	0.132
PA: Agriculture, forestry and fishing [SIC: 1]	6.282	0.209	0.318	4.933	0.822
PB: Mining and quarrying [SIC: 2]	0.432	0.032	0.026	0.374	
S: Secondary sector [SIC: 3-5]	0.913	0.028	0.146	0.739	0.000
SC: Manufacturing [SIC: 3]	0.864	0.030	0.145	0.689	0.000
SC03: Food, beverages and tobacco [SIC: 301-306]	0.562	0.075	0.181	0.210	0.096
SC04: Textiles, clothing and leather goods [SIC: 311-317]	1.643	0.227	0.625	0.617	0.173
SC05: Wood, paper, publishing and printing [SIC: 321-326]	1.108	0.072	0.351	0.423	0.261
SC06: Petroleum products, chemicals, rubber and plastic [SIC: 331-338]	0.686	0.019	0.029	0.356	0.282
SC07: Other non-metal mineral products [SIC: 341-342]	0.828	0.144	0.337	0.276	0.072

Source of basic data: Quantec Standardised Regional Database

Estimated initial impact employment multipliers by sector and skills level in Johannesburg in 2013 (continued)

Industry	Estimated Initial Impact Number of Employment Opportunities Supported by a R1 million Sales Stimulus				
	Average	Highly Skilled Formal	Skilled Formal	Un-skilled Formal	Informal
SC08: Metals, metal products, machinery and equipment [SIC: 351-359]	0.884	0.137	0.398	0.343	0.005
SC09: Electrical machinery and apparatus [SIC: 361-366]	0.925	0.088	0.220	0.463	0.154
SC10: Radio, TV, instruments, watches and clocks [SIC: 371-376]	0.808	0.118	0.204	0.398	0.088
SC11: Transport equipment [SIC: 381-387]	0.539	0.076	0.073	0.390	
SC12: Furniture and other manufacturing [SIC: 391-392]	0.841	0.094	0.236	0.491	0.020
SD: Electricity, gas and water [SIC: 4]	0.417	0.098	0.137	0.182	0.000
SD13: Electricity [SIC: 41]	0.436	0.047	0.136	0.253	
SD14: Water [SIC: 42]	0.396	0.127	0.132	0.137	0.001
SE: Construction [SIC: 5]	0.530	0.133	0.235	0.162	0.000
T: Tertiary sector [SIC: 6-9]	1.574	0.487	0.576	0.483	0.028
TF: Wholesale and retail trade, catering and accommodation [SIC: 6]	3.949	0.199	0.359	1.291	2.100

Source of basic data: Quantec Standardised Regional Database

Estimated initial impact employment multipliers by sector and skills level in Johannesburg in 2013 (continued)

Industry	Estimated Initial Impact Number of Employment Opportunities Supported by a R1 million Sales Stimulus				
	Average	Highly Skilled Formal	Skilled Formal	Un-skilled Formal	Informal
TF16: Wholesale and retail trade [SIC: 61-63]	3.910	0.196	0.353	1.261	2.100
TF17: Catering and accommodation services [SIC: 64]	2.611	0.551	1.081	0.341	0.638
TG: Transport, storage and communication [SIC: 7]	1.362	0.097	0.440	0.143	0.683
TG18: Transport and storage [SIC: 71-74]	1.816	0.117	0.537	0.204	0.959
TG19: Communication [SIC: 75]	0.780	0.062	0.370	0.113	0.235
TH: Finance, insurance, real estate and business services [SIC: 8]	3.689	0.147	0.973	0.490	2.079
TH20: Finance and insurance [SIC: 81-82]	0.719	0.077	0.501	0.141	
TH21: Business services [SIC: 83-88]	3.495	0.245	1.103	0.560	1.587
TI: Community, social and personal services [SIC: 93-96, 98]	3.954	1.233	1.782	0.518	0.421
TJ: General government [SIC: 99]	1.289	0.462	0.747	0.079	

Source of basic data: Quantec Standardised Regional Database

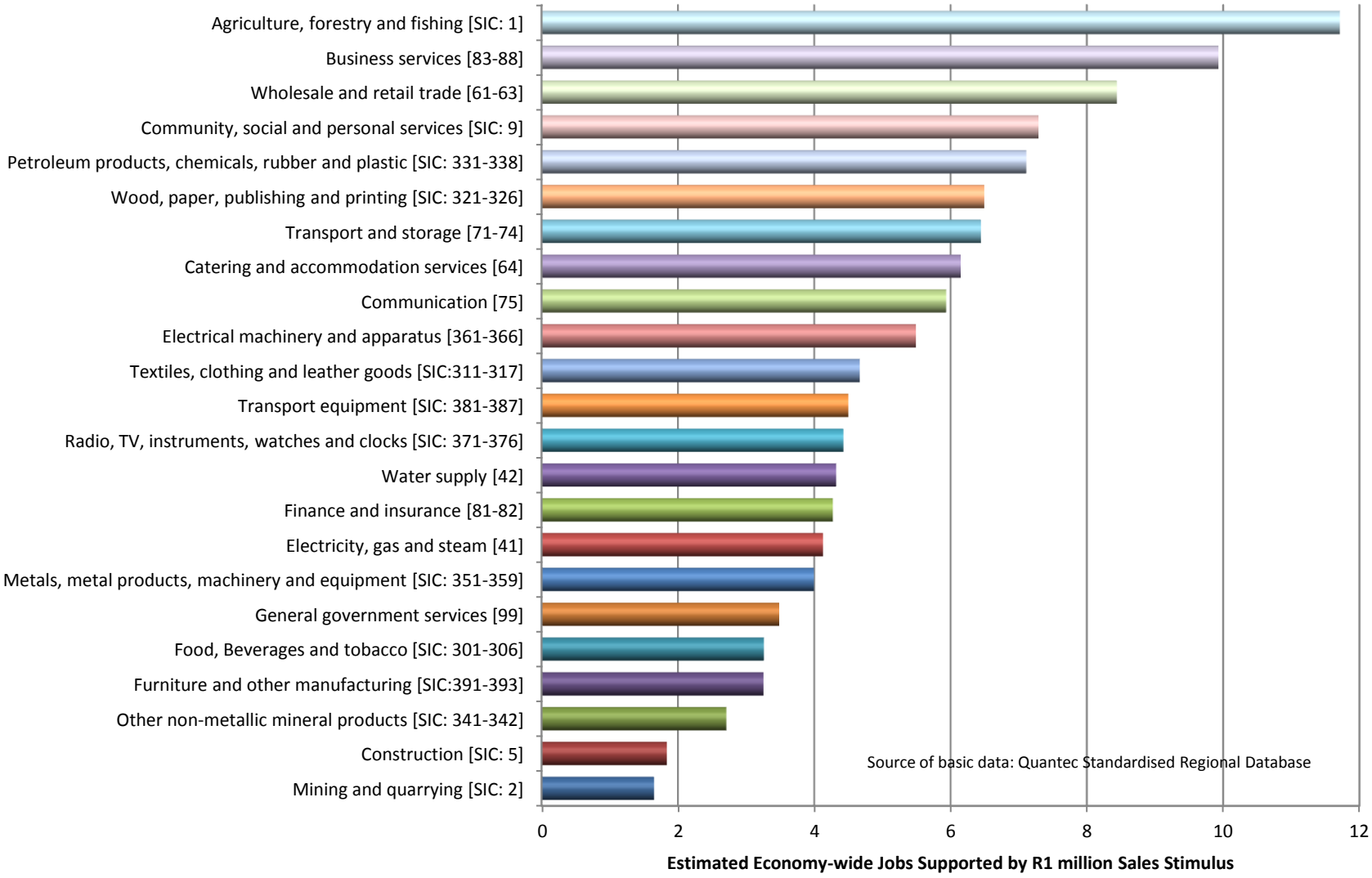
Comparative initial impact employment multipliers – Johannesburg and South Africa

Sector	Estimated Average Number of Initial Impact Employment Opportunities Supported by a R1 million Sales Stimulus	
	Johannesburg	South Africa
0: Total	1.82	2.1592
PA: Agriculture, forestry and fishing [SIC: 1]	6.282	4.9553
PB: Mining and quarrying [SIC: 2]	0.432	1.3428
SC: Manufacturing [SIC: 3]	0.864	0.8763
SC03: Food, beverages and tobacco [SIC: 301-306]	0.562	0.777
SC04: Textiles, clothing and leather goods [SIC: 311-317]	1.643	2.773
SC05: Wood, paper, publishing and printing [SIC: 321-326]	1.108	1.0413
SC06: Petroleum products, chemicals, rubber and plastic [SIC: 331-338]	0.686	0.3799
SC07: Other non-metal mineral products [SIC: 341-342]	0.828	1.5862
SC08: Metals, metal products, machinery and equipment [SIC: 351-359]	0.884	1.1461
SC09: Electrical machinery and apparatus [SIC: 361-366]	0.925	0.9437
SC10: Radio, TV, instruments, watches and clocks [SIC: 371-376]	0.808	0.9761
SC11: Transport equipment [SIC: 381-387]	0.539	0.5428

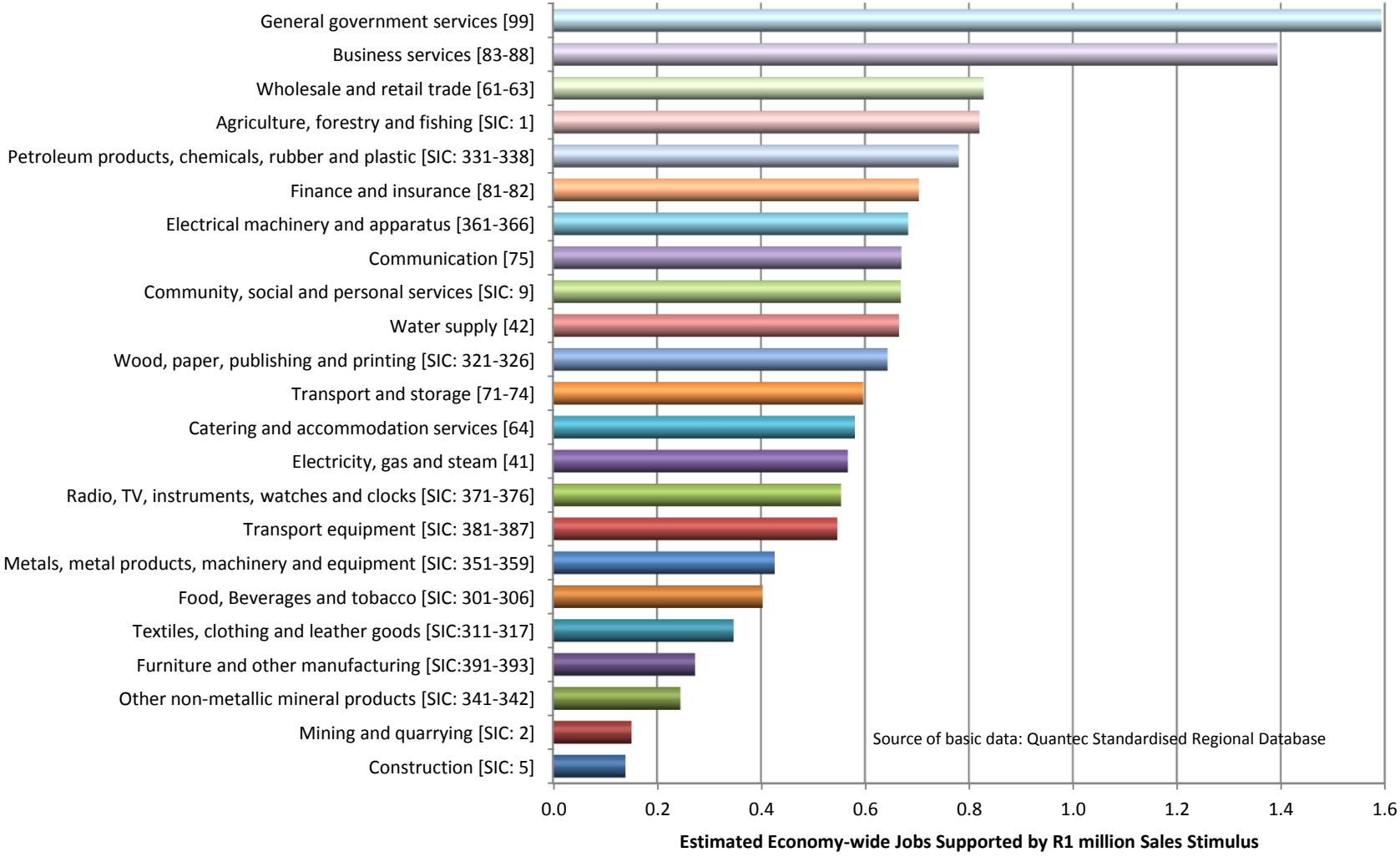
Comparative initial impact employment multipliers – Johannesburg and South Africa

Sector	Estimated Average Number of Initial Impact Employment Opportunities Supported by a R1 million Sales Stimulus	
	Johannesburg	South Africa
SC12: Furniture and other manufacturing [SIC: 391-392]	0.841	1.328
SD13: Electricity [SIC: 41]	0.436	0.449
SD14: Water [SIC: 42]	0.396	0.3422
SE: Construction [SIC: 5]	0.53	1.9446
TF16: Wholesale and retail trade [SIC: 61-63]	3.91	4.0173
TF17: Catering and accommodation services [SIC: 64]	2.611	3.3457
TG18: Transport and storage [SIC: 71-74]	1.816	1.5304
TG19: Communication [SIC: 75]	0.78	0.6931
TH20: Finance and insurance [SIC: 81-82]	0.719	0.8717
TH21: Business services [SIC: 83-88]	3.495	2.3968
TI: Community, social and personal services [SIC: 93-96, 98]	3.954	5.9783
TJ: General government [SIC: 99]	1.289	2.5522

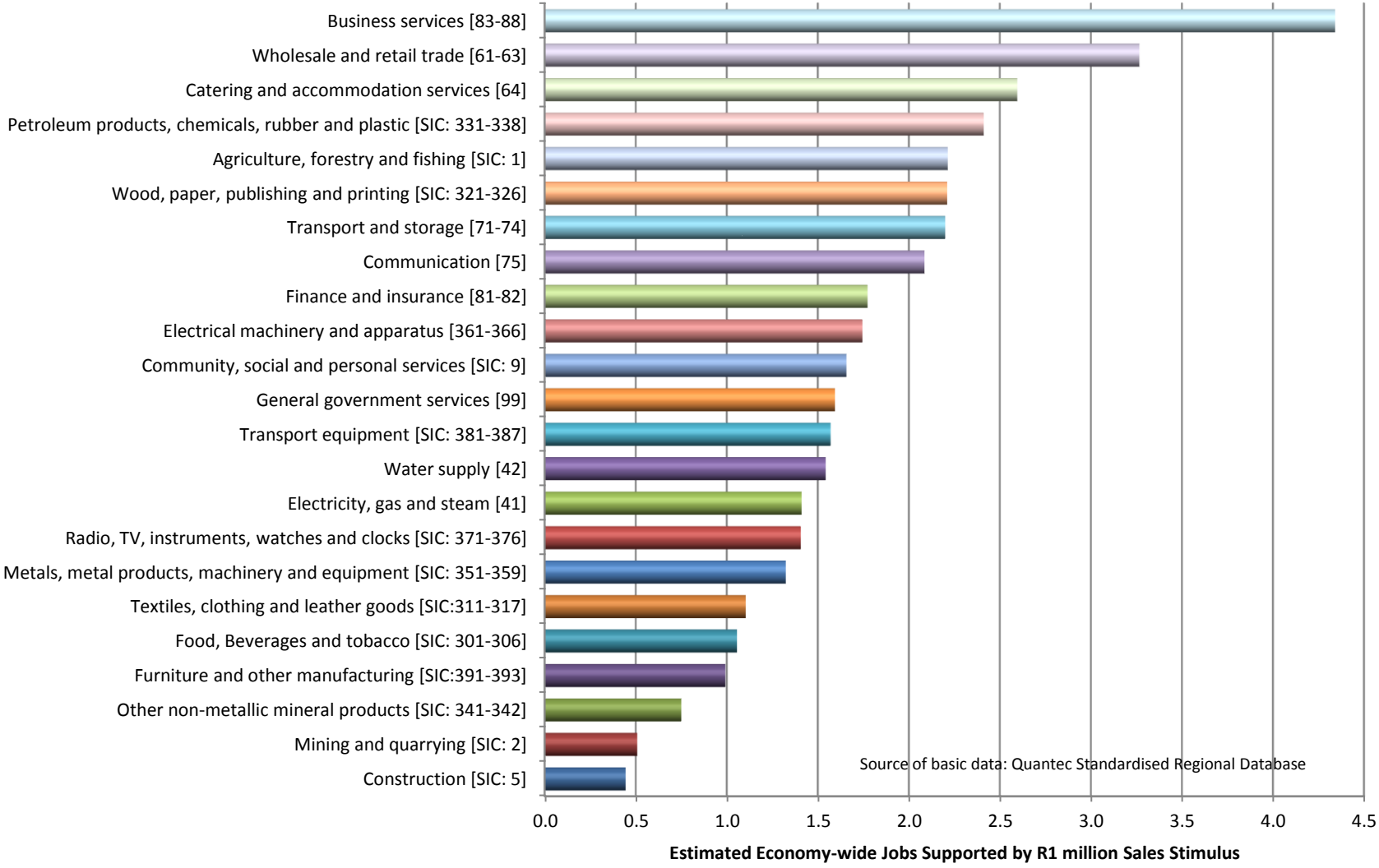
Estimated economy-wide jobs (formal and informal) supported by R1 million sales stimulus



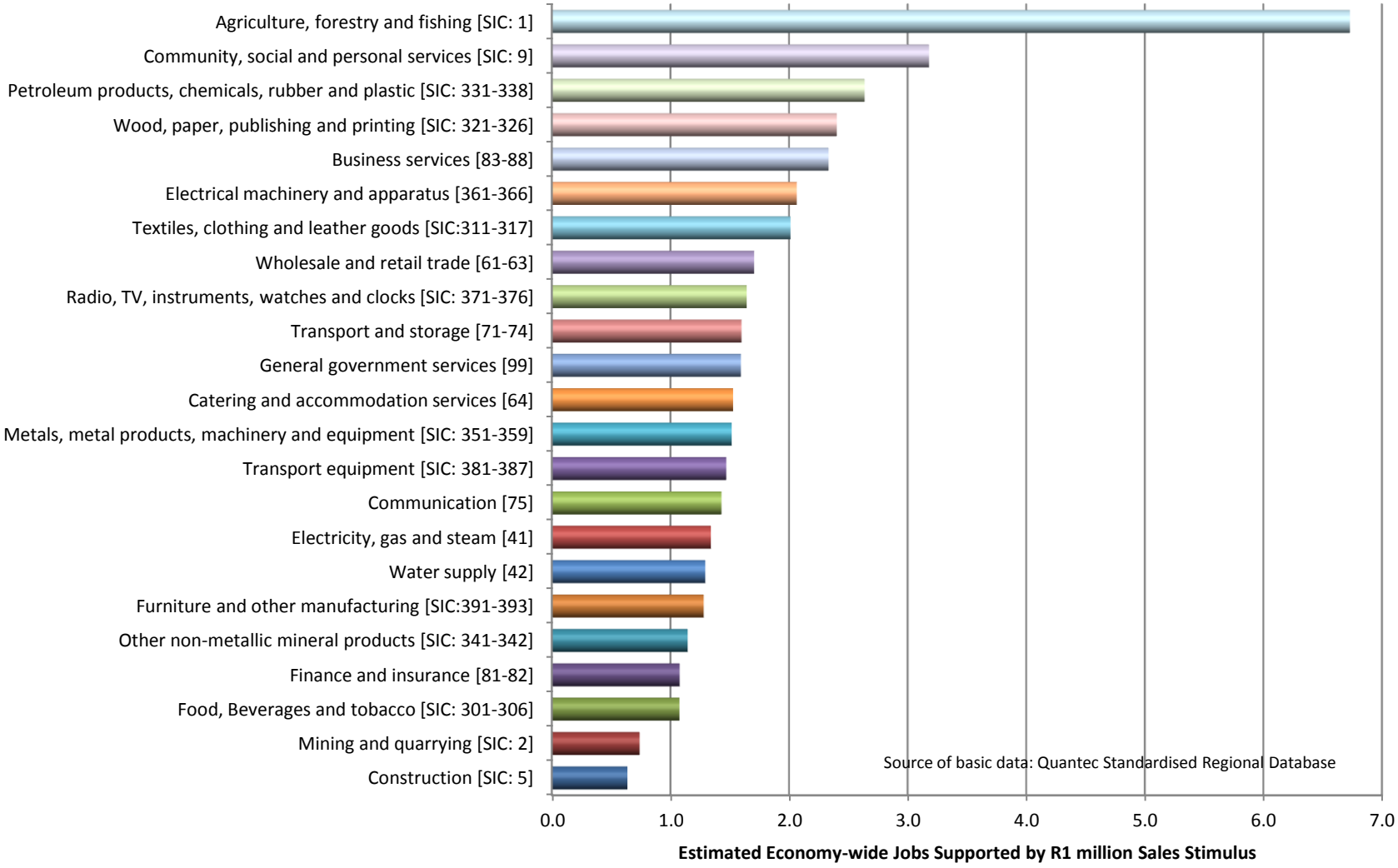
Estimated maximum* formal highly skilled employment supported in Johannesburg by R1 million sales stimulus



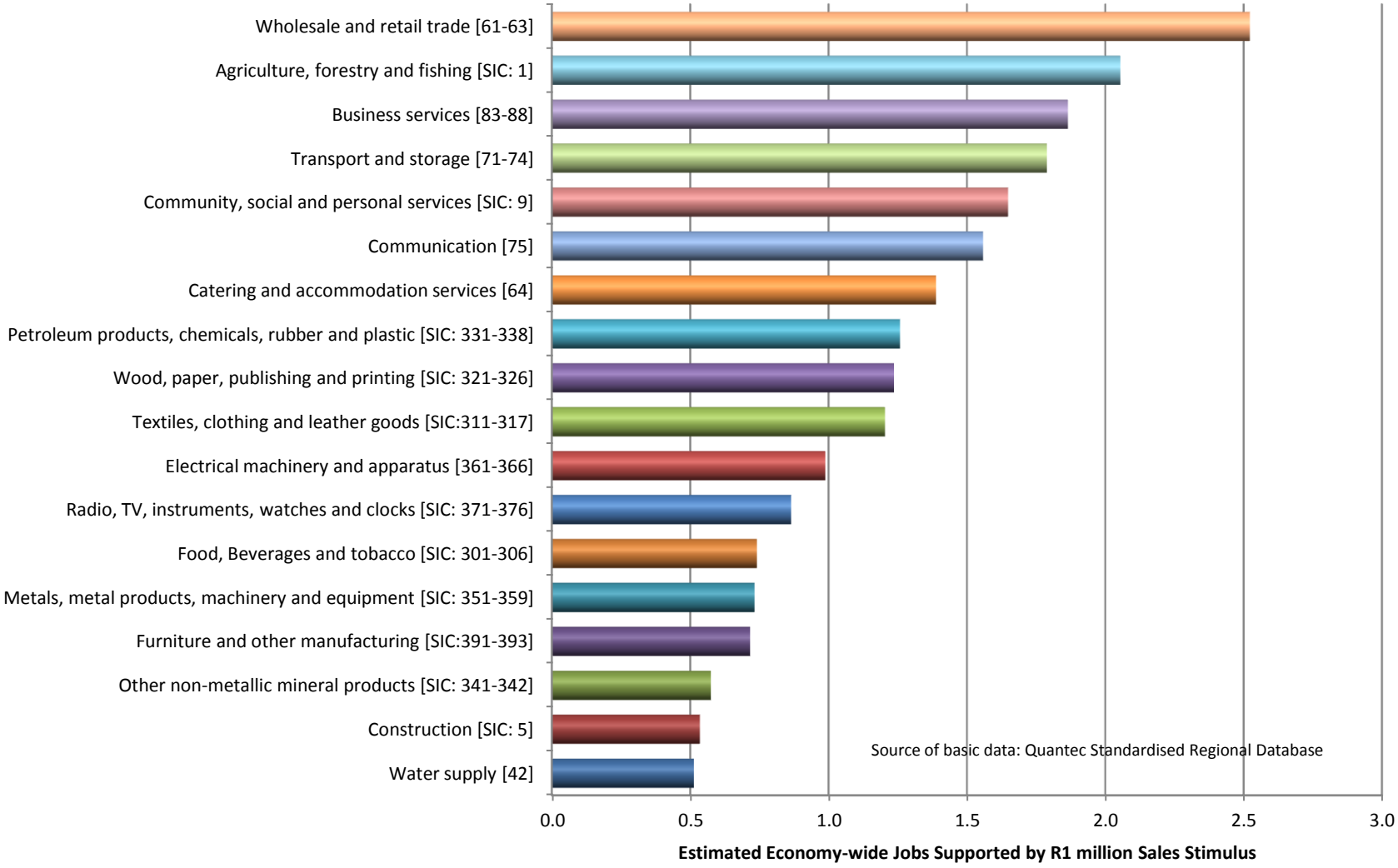
Estimated maximum* formal skilled employment supported in Johannesburg by R1 million sales stimulus



Estimated maximum* formal semi- and un-skilled employment supported in Johannesburg by R1 million sales stimulus



Estimated maximum* informal employment supported in Johannesburg by R1 million sales stimulus



IMPLICATIONS AND CONCLUSIONS

Implications for employment

Value of Sales Required to Support	Indicated Number of Employment Opportunities						
R (billions)							
Number of Employment Opportunities to be Supported	**Initial impact**	**First round**	**Direct impact**	**Indirect effect**	**Direct & indirect impact**	**Induced impact**	**Economy-wide impact**
100,000	55	123	38	156	31	43	18
500,000	275	613	190	778	153	217	90

Key assumptions affecting the ongoing validity of the employment multipliers

- The multipliers reflect the number of jobs ***supported*** by a R1 million sales order.
- Additional jobs will only be ***created*** if additional sales orders are received and the sector is currently operating at, or close to, full capacity.
- The multipliers are based on the estimated structure of the Johannesburg economy as it prevailed in 2013.
- Data from subsequent years should be deflated using relevant price deflators.
- The multipliers reflecting the ***initial*** employment-supporting impact relate specifically to data for Johannesburg. Subsequent employment-supporting effects (1st round, indirect and induced impacts) are derived from national employment multipliers that were adjusted for labour remuneration differentials between Johannesburg and the national average.
- The reflect the ***theoretical maximum*** number of jobs that would be supported within the Johannesburg economy ***if the only leakages arose from imports from other countries***. To the extent that subsequent orders with upstream suppliers (1st round and indirect effects) and the induced spending that arises from these combined effects are not contained within the geographical boundaries of Johannesburg, ***the resulting jobs will be supported in other parts of South Africa***.