

Working with Regional Labour Force Data in South Africa: How Reliable are our Estimates?

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South African policy makers in national, provincial and local spheres of government are dependent on national household surveys to derive regional trends and analysis for key socio-economic indicators as administered by the national statistical agency, Statistics South Africa. This paper sets out to demonstrate the validity and limits of national household surveys when working with regional data. This is demonstrated through analysing labour market statistics derived from the Quarterly Labour Force Survey (QLFS). The results show that sample variance at provincial, district and metropolitan levels of disaggregation are generally large enough to make comparisons over time problematic. Even at national level, average changes need to be of reasonable size to be statistically significant. Nevertheless, distinct patterns can be identified between heterogeneous groups at sub-national levels and longer-term trends are more reliable. The results highlight the need to create greater awareness around the implications of sample variance within government, civil society and the media and the central role of Statistics South Africa in this regard. Census data is of critical importance for reliable information at regional levels of disaggregation. Further consideration should be given to the regular generation of reliable provincial and metropolitan data.

1. INTRODUCTION

South Africa is well-resourced with a number of national household sample surveys that are administered on a regular basis through the national statistics agency, Statistics South Africa (StatsSA). These surveys form the backbone of regular and reliable socio-economic data that are used extensively by public policy-makers and those in the academy. Despite the ubiquitous nature of this information, the robustness of routine descriptive statistics are not necessarily appreciated. Working with sample data inherently implies a degree of sampling error which is not always made explicit – at least not within the public discourse and public policy formation.





Taking cognisance of sampling errors becomes particularly important for research and policy at a regional level due to the inverse relationship between sample size and sample variability. This paper then sets out to demonstrate the reliability of basic descriptive statistics for household surveys in South Africa specifically within the context of working with regional data. This is done through interrogating labour market data generated from the Quarterly Labour Force Surveys (QLFS).

2. METHODOLOGY: STANDARD ERRORS AND THE STATSSA MASTER SAMPLE

Apart from the national census (which attempts to survey the entire population), household surveys collect only a comparatively small representative sample of the broader population. This means that there is always a margin of error between the sample mean and the true population mean. Hence, proper [correct] analysis of household sample data needs to be explicit about the degree of sample variability.

The approach used in this paper is to highlight the degree of sample variation through various intuitive representations of the standard error. This is estimated by first calculating the standard deviation of the variable of interest:

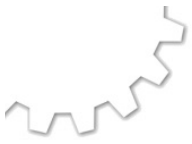
$$sd_x = \frac{1}{n} \sqrt{\sum_{i=1}^n (x_i - \bar{x})^2}$$

And then calculating the standard error:

$$se_x = \frac{sd}{\sqrt{n-1}}$$

Where: n = total sample size
 x = variable of interest
 \bar{x} = mean of the estimate
 sd = sample standard deviation
 se = standard error





The exercise itself is fairly rudimentary, however the practical implications are very important for academics and policy makers alike. In practice, attention to sample variability is too often neglected, and is chronic within the public sector.¹ Ignorance of standard errors becomes even more important when smaller samples are analysed, as is the case for regional data.

Table 1: Household Surveys administered by Statistics South Africa

Statistics South Africa Household Surveys
Quarterly Labour Force Survey (QLFS)
General Household Survey (GHS)
Living Conditions Survey (LCS)
Domestic Tourism Survey (DTS)
Income and Expenditure Survey (IES)
Victims of Crime Survey (VOCS)

The table above provides a list of household surveys administered by Statistics South Africa which are all based upon the same master sample. The sample is derived from a “stratified two-stage design with probability proportional to size sampling (PPS) of Primary Sampling Units (PSUs) in the first stage, and sampling of dwelling units with systematic sampling in the second stage” (StatsSA, 2015). There are 3080 PSU’s and approximately 30,000 dwelling units in each sample. The weights generated by StatsSA adjust for original selection probabilities; sub-sampled, segmented or excluded PSU’s; weight trimming; non-response; and final benchmarking to demographic population estimates. Imputation is also applied to instances of item non-response and edit failures.

The master sample is designed to be representative only at national, provincial, and metropolitan municipality (metro) levels. Within metro’s the sample is also representative for urban, tribal and farm levels. The master sample is not intended to be used at the

¹ In my personal experience of working in provincial government for over four years I did not encounter even a single standard error reported in any government research or policy document – be it national, provincial or local.





district level or local municipality level.² Therefore this paper excludes analysis at local municipal level with the exception of the metropolitan municipalities.

The Quarterly Labour Force Survey (QLFS) is selected from this list of surveys in table 1 in order to interrogate the reliability of key labour market indicators. The reason for selecting the QLFS is that labour market indicators receive consistent attention in the media, government, and civil society. In particular, the rate of unemployment is thoroughly tested.

The QLFS is analysed over the period 2008 Quarter 4 to 2014 Quarter 4 at yearly intervals. This period has been selected for the best comparability of the data over time as the QLFS was only introduced in 2008 – prior to this the bi-annual labour force survey which was based upon a different master sample – and after 2014 StatsSA updated the master sample to be based upon the Census 2011.

3. RESULTS: THE ROBUSTNESS OF LABOUR MARKET INDICATORS IN THE QLFS

The unprecedented rate of unemployment in South Africa rightly receives constant attention by government, the academy and within the media. Therefore primary attention is given to the unemployment rate in the analysis as disaggregated by region.

As seen in figure 1 the rate of unemployment in South Africa (using the expanded definition of unemployment)³ between the years 2008 and 2014 experienced a sharp increase between 2008 and 2010, rising from 28.7% to 35.2% (consistent with the 2008 financial crisis and lacklustre economic performance thereafter), and stabilising around a much

² Under the old master sample, the October Household Survey and Labour Force Survey were representative at district level, but this was changed to only metropolitan levels with the introduction of the new master sample. However district and local municipalities rely on regular annual socio-economic data for Integrated Development Planning (IDP). Such statistics may be provided by private research companies who model regional data year-on-year. Whatever the model, these estimates ultimately rely upon data collected by Statistics South Africa.

³ The expanded definition of unemployment includes discouraged job-seekers which are defined as “any person who was not employed during the reference period, wanted to work, was available to work/start a business but did not take active steps to find work during the last four weeks, provided that the main reason given for not seeking work was any of the following: no jobs available in the area; unable to find work requiring his/her skills; lost hope of finding any kind of work.” (StatsSA, 2014)





higher rate of roughly 34 to 35%. Error bars are included in the graph to represent visually the robustness of the estimates which in this instance are calculated at twice the standard error (corresponding to a 95% level of confidence). The figure also fits dashed lines where the change between two consecutive years is not statistically significant at a 95% level of confidence. At a national level, the year-on-year comparisons are fairly robust, with shifts greater than 1 percentage point seen to be significant.⁴

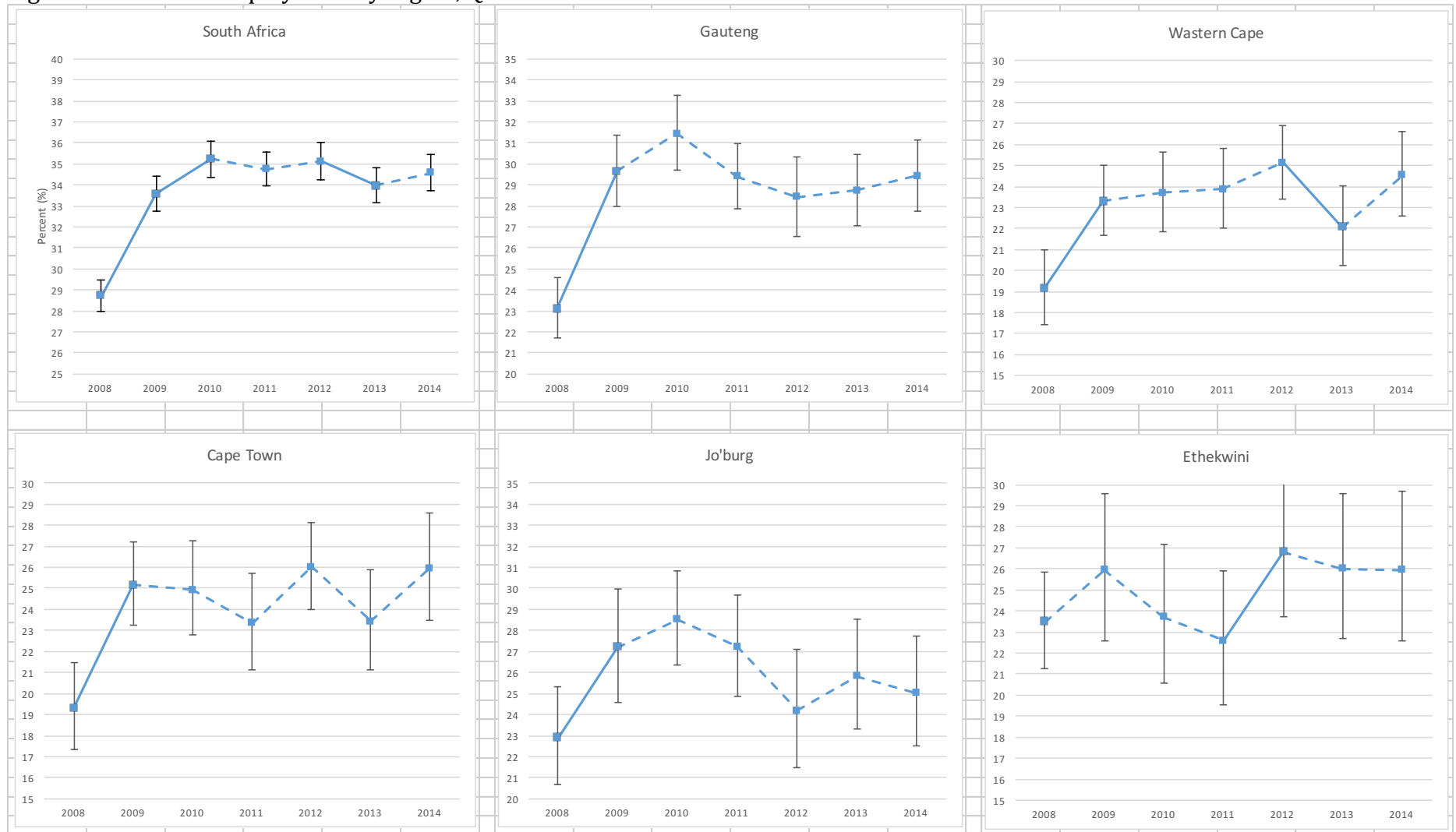
The figure also displays the rate of unemployment in the two largest provinces and three largest metros. Here the graphs each have the same scale of axis (vertical axis of 15 percentage points) such that comparisons can be more readily visualised. The relative size of the error bars are roughly double in size for both Gauteng and the Western Cape in comparison to national, whereas in the case of Johannesburg metropolitan municipality (metro) they treble and for eThekweni metro they reach nearly four times the size. If anything, trends in unemployment for these regions follow the same pattern as South Africa with the possible exception of eThekweni. The initial large increase in the rate of unemployment between 2008 and 2009 is generally significant for all regions (with the exception of eThekweni), but thereafter it takes a change of three percentage points in the rate of unemployment to be significant at a 95% level of confidence.

Table 2 is more precise in revealing the level of sample variability in the rate of unemployment over the period. The second column in the table calculates the averaged standard error over the period (2008Q4 to 2014Q4) which is broken down into national, provincial and metro levels. This corresponds to the average number of observations per region shown in column one. Column three then shows the size of the standard error as a factor of the national estimate. As seen in the table, the standard error is 0.42 for South Africa and rises to a high of 3.91 for Tshwane metropolitan municipality. This pattern

⁴ A common misconception is the assumption that if the 95% error bars of the point estimates overlap the null hypothesis (that the estimates are the same) can be rejected (Schenker and Gentleman; 2001). In fact the bars must overlap by more than 50% for the null hypothesis not to be rejected at a 95% level of confidence (Cumming and Finch, 2005).



Figure 1: Rate of unemployment by region, QLFS 2008 – 2014



Source: Quarterly Labour Force Survey; own estimates



corresponds neatly to the average number of observations across the period, with larger samples having lower standard errors and *vice versa*. As a factor of the standard error of South Africa, provincial standard errors are at least double to triple in size in comparison (and 4.7 times the size in the case of the Northern Cape). The metro's show much greater variation rising from 2.7 times the national standard error in the case of Cape Town, to 4.2 times the national standard error in Ekurhuleni and more than 7 times the national standard error in Buffalo City or Tshwane.

Standard errors may also be expressed by a confidence interval (the bandwidth within which the true population estimate will fall as seen by the error bars in figure 1), which differs in size depending on the level of confidence selected – this is typically at a 95% level of confidence as shown in column four of the table. The confidence interval is then further associated with a 'rule of thumb' in the table which provides an intuitive interpretation to the robustness of the estimate. As discussed by Cumming and Finch (2005), a general rule of thumb is that error bars (lower and upper) should not overlap by more than half to be certain that the null hypothesis (that there is no significant difference between the estimates) will be rejected at a 95% level of confidence. This rule is understandably conservative (there are some cases in our example where the change is still significant) hence a more generous rule of thumb of a 0.75 overlap is applied in order not to overstate the variation in sampling.

This rule of thumb can then be applied to translate the confidence interval into the average percentage point change that would be required for the unemployment rate to be tested as statistically significant at a 95% level of confidence. In other words, if we assume that the confidence interval is fairly similar for each region over time, we can then calculate the average proportional shift that would be needed to ensure that the (lower and upper) error bars do not overlap by more than three quarters. This gives a very ready interpretation of the standard errors for each region and its implications for the statistical significance of the changes reported over time.



Table 2: Standard errors for the unemployment rate at national, provincial and metro levels, QLFS 2008 to 2014

		Average no of obs	Average standard error (SE)	SE as factor of RSA	Bandwidth of confidence interval @95%	Rule of thumb*	Bandwidth of confidence interval @75%	Rule of thumb*
	South Africa	33168	0.42	n/a	1.66	1.04	0.97	0.61
Provincial	Gauteng	6217	0.86	2.0	3.35	2.10	1.97	1.23
	Western Cape	4377	0.86	2.0	3.69	2.30	2.16	1.35
	KwaZulu-Natal	5186	1.09	2.6	4.26	2.66	2.50	1.56
	Limpopo	3393	1.42	3.4	5.55	3.47	3.26	2.04
	Free State	3028	1.30	3.1	5.10	3.19	2.99	1.87
	Eastern Cape	3275	1.35	3.2	5.28	3.30	3.10	1.94
	Mpumalanga	3132	1.42	3.4	5.56	3.48	3.26	2.04
	North West	3009	1.35	3.2	5.27	3.30	3.09	1.93
	Northern Cape	1552	1.99	4.7	7.79	4.87	4.57	2.86
Metro	Cape Town	2928	1.13	2.7	4.44	2.78	2.61	1.63
	Jo'burg	2522	1.29	3.0	5.06	3.16	2.97	1.85
	Ethekwini	2042	1.63	3.9	6.41	4.01	3.76	2.35
	Ekurhuleni	1511	1.76	4.2	6.91	4.32	4.06	2.53
	PE	899	2.44	5.8	9.54	5.96	5.60	3.50
	Mangaung	872	2.12	5.0	8.31	5.19	4.88	3.05
	Buffalo City	534	2.99	7.1	11.69	7.30	6.86	4.29
	Tshwane	314	3.91	9.3	15.22	9.51	8.93	5.58

Source: Quarterly Labour Force Survey; own estimates

* The rule of thumb is the average percentage point change needed to be significant (see in text)



Applying our rule of thumb at a 95% level of confidence to the average standard error for the period, the rate of unemployment at a national level would need to increase/decrease by more than 1.04 percentage points for the change to be statistically significant. Taking into consideration that even half of a percentage point change in the rate of unemployment garners much attention in the media, a better appreciation of the robustness of our labour market estimates clear needs to be fostered.

At provincial and metropolitan levels the assessment becomes striking. In Gauteng (the province with the smallest standard error) the confidence interval for the period is on average 3.35 percentage points, meaning that the unemployment rate must fluctuate by more than 2.1 percentage points for anything to be concluded about how unemployment might have changed in Gauteng. For the Free State, which is mid-way in the spectrum of standard errors for the provinces, the unemployment rate needs to change by more than 3.19 percentage points for this change to be deemed more than just a function of variance in sampling. This becomes as large as 4.87 percentage points for the Northern Cape, the smallest of provinces.

Understandably, the metro's display even higher degrees of uncertainty in the extent to which changes in the unemployment rate are large enough to be statistically significant at a 95% level of confidence. Cape Town is most robust amongst the metros but must still on average must experience a 2.78 percentage point change to be statistically significant. This is followed by Johannesburg at 3.16 percentage points. All the remaining metro's have confidence intervals greater than 6 percentage points which translates into a 4 percentage point change or more to be significant at a 95% level of confidence applying the rule of thumb. For Buffalo City and Tshwane metropolitan municipalities, the change in the rate of unemployment is arguably too large to be of any use at 7.3 and 9.5 percentage points respectively.

It might be argued that using a 95% level of confidence (which is standard accepted practice) is too rigorous for pragmatic purposes in light of the fact that no other data is





available for policy-makers on a regular basis and hence a lower level of confidence should be considered. Columns 6 and 7 adjust the confidence interval and associated rule of thumb to a level of confidence of 75%. By construction the reported confidence interval, with associated error bars shrink – they are smaller by approximately 40% (or 3/5ths their size at the 95% level). However, in light of the large size of the standard errors, even dramatically lowering the level of confidence still means that for all provinces and metros in the country a change in the rate of unemployment of 1 percentage point is not statistically significant at a 75% level of confidence. For all provinces, with the exception of Gauteng and the Western Cape, the unemployment rate needs to change by more than 1.5 percentage points. For all the metros, with the exception of Cape Town and Johannesburg, the rate of unemployment needs to change by more than 2 percentage points at a 75% level of confidence (and more than 4 percentage points for Buffalo City and Tshwane).

It is clear from this exercise that without due consideration for the size of the standard errors, conclusions about changes in the rate of unemployment across time may be erroneous, particularly when working with regional data. Arguably expectations regarding the reliability of such estimates should be revised downwards and in particular for smaller provinces and metros.

However an important caveat is that labour market indicators such as the rate of unemployment when compared across time may experience on average little change in comparison to much larger differences between the rate of unemployment amongst heterogeneous groups (such as the rate of unemployment by race). This means that comparisons may tend to be statistically significant even where the sample size is small.

Figure 2 below demonstrates how certain patterns can be identified by region which are robust at a 95% level of confidence. Comparing provinces, the Western Cape has a significantly lower level of unemployment than all other provinces at 24.5%, followed by Gauteng at 29.2%. The remaining provinces have rates of unemployment ranging between 36% and 42%, but the error bars are staggered such that differences are less conclusive.



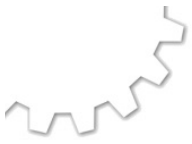
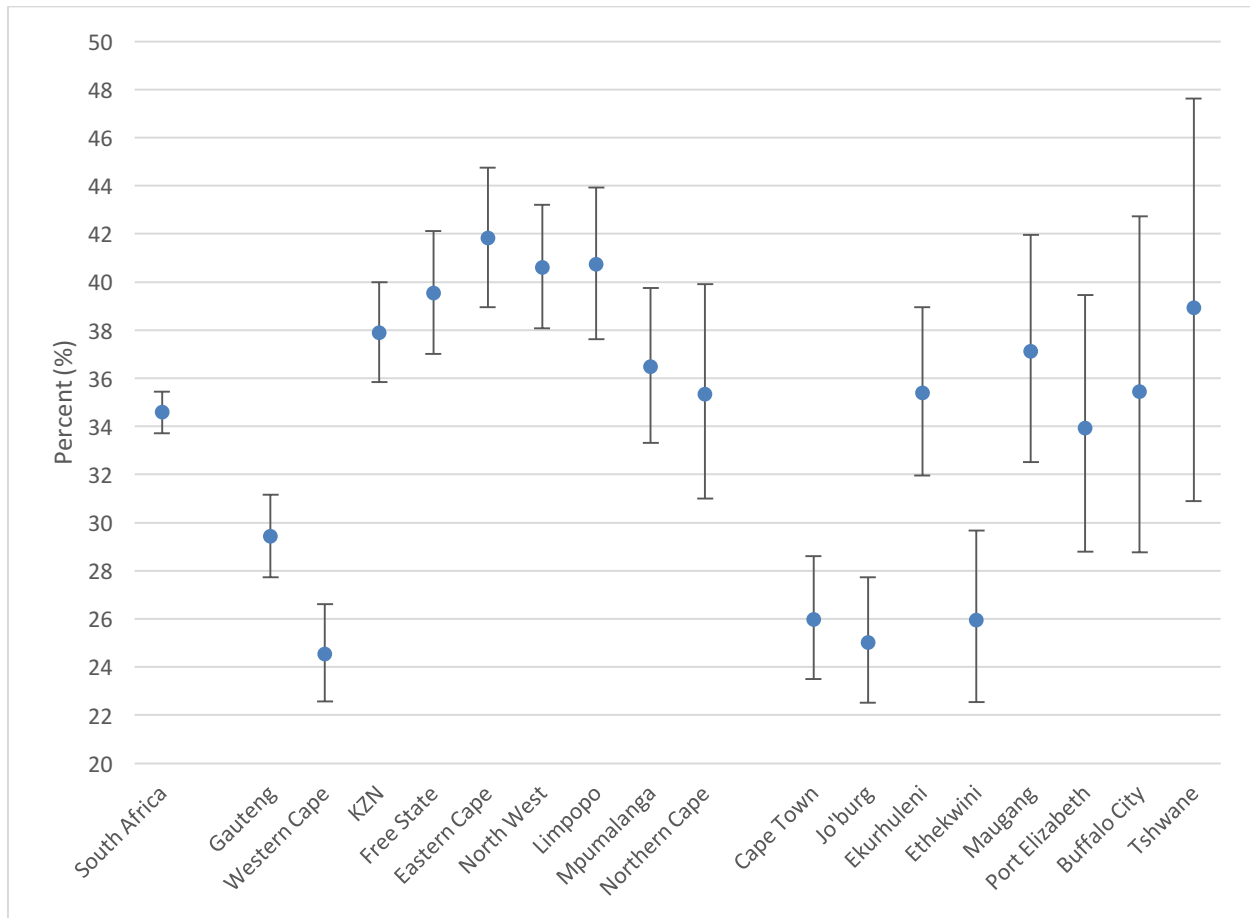


Figure 2: The rate of unemployment by region, QLFS 2014 Q4



Source: Quarterly Labour Force Survey 2014 Q4; own estimates

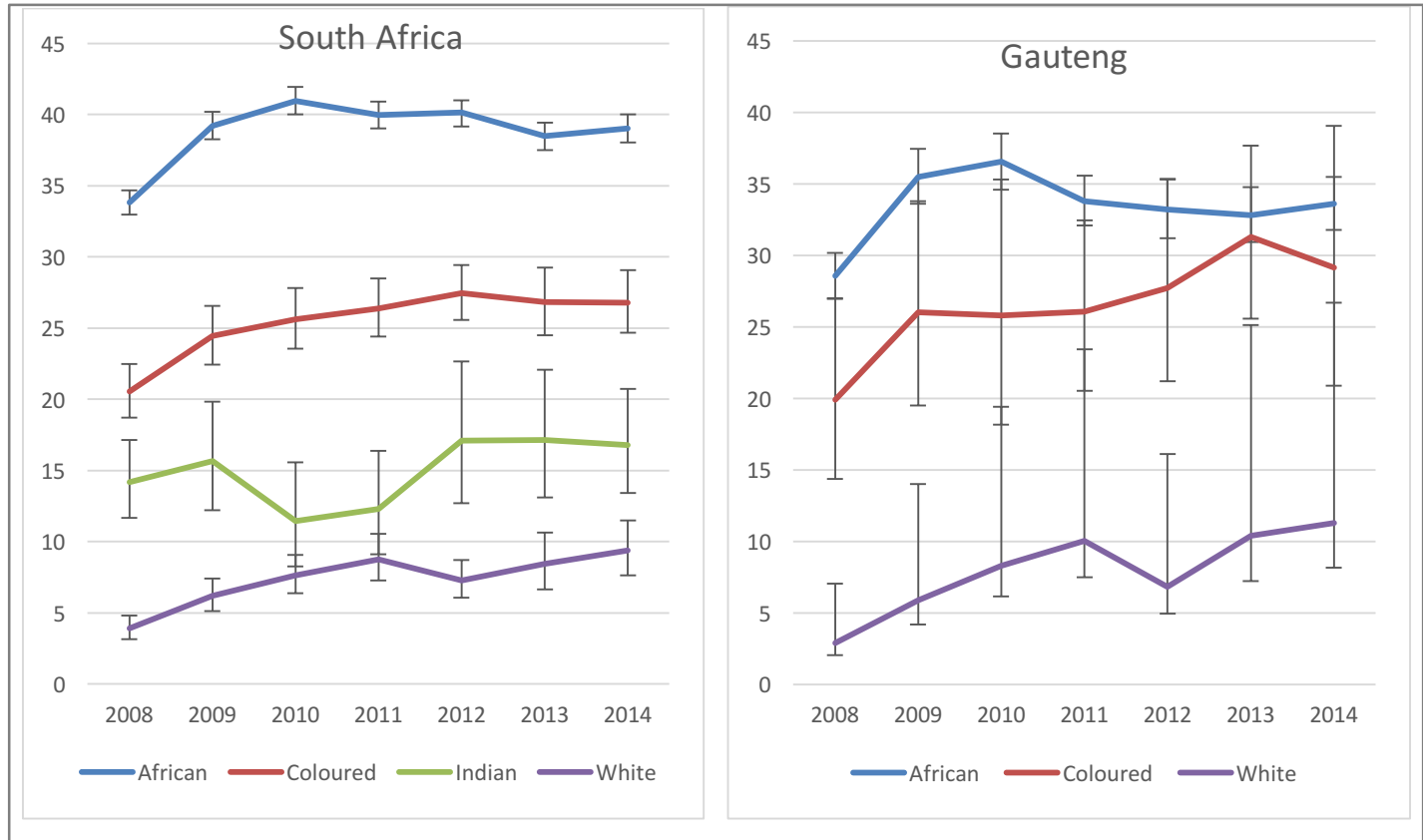
Examining the metros shows that Cape Town, Johannesburg and eThekweni have much lower levels of unemployment in comparison to other metros at roughly 26%. These are significantly different from the remaining metros at a 95% level of confidence. However the error bars for the remaining metros are prohibitively large (Tshwane error bars range between 31% and 48%), and not much further can be concluded.

Descriptive statistics may be divided into further sub-categories which limits the sample considerably if already disaggregated by region. Figure 3 demonstrates this effect by considering the rate of unemployment by race *and* region. At national level, there is a clear distinction in the rate of unemployment between race groups (ranked from lowest to highest as White, Indian, Coloured and African), and a general trend of rising levels of





Figure 3: The rate of unemployment by race, QLFS 2008 - 2014



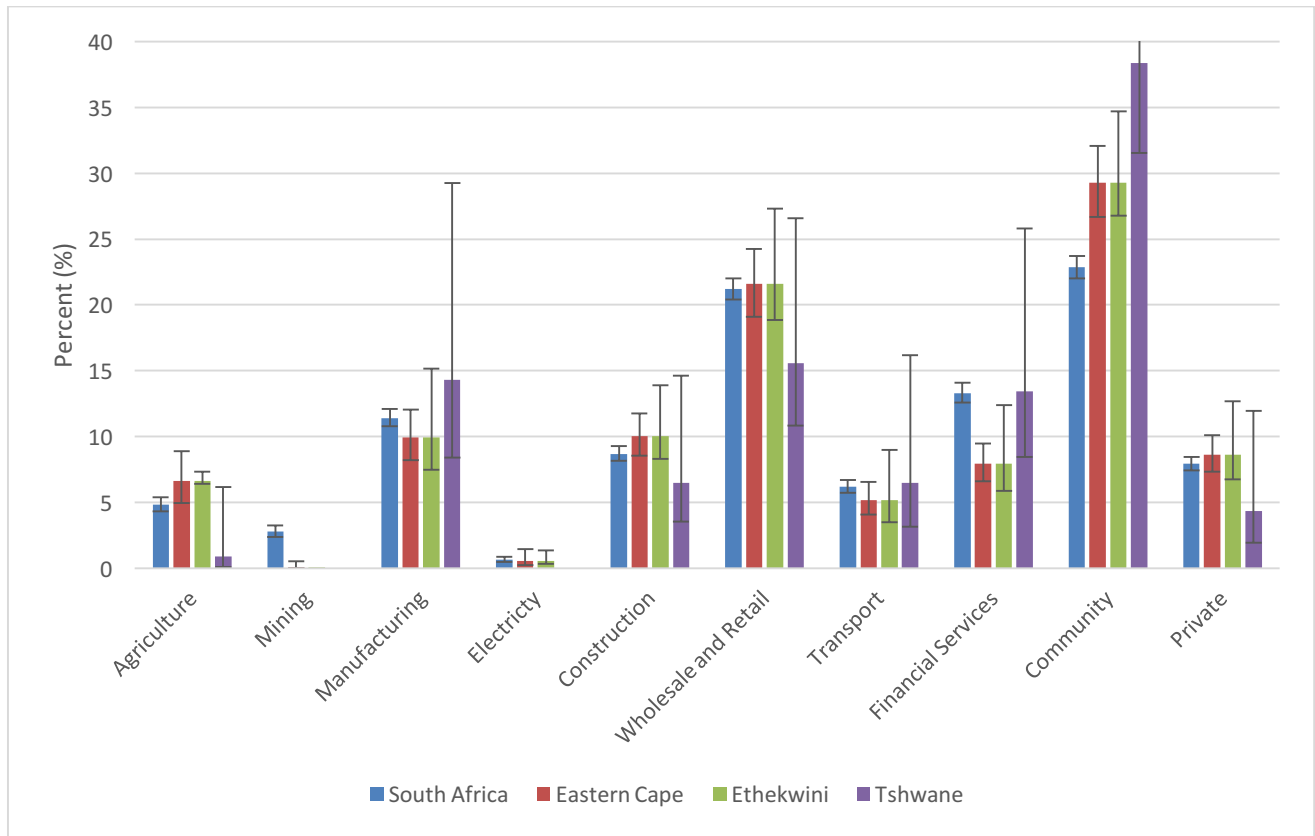
Source: Quarterly Labour Force Survey; own estimates

unemployment over time (with the exception of Indian). When the rate of unemployment is further disaggregated by region (it has been divided by race and then sub-divided by region) the estimates of unemployment by race become very imprecise. In the case of Gauteng, which has the smallest standard error of all provinces, identifying significant differences in the rate of unemployment between African and Coloured populations becomes troublesome in certain years and trends over time are similarly difficult to identify (although the general pattern resembles the national picture). The point is that examining sub-categories by region will further divide the samples compounding the problem of the precision in the estimation of labour market statistics.





Figure 4: Employment by industry, QLFS 2014 Q4



Source: Quarterly Labour Force Survey 2014 Q4; own estimates

Figure 4 highlights a further important labour market indicator which is the distribution of employees per industry. This is compared across South Africa, the Eastern Cape, eThekweni and Tshwane. At a national level a robust structural pattern of employment by sector can be identified. The same pattern still exists when broken down for the Eastern Cape and eThekweni with some nuances (mining and financial services are significantly lower whilst community services are significantly higher compared to the national picture). However, between the Eastern Cape and eThekweni no differences can be identified at a 95% level of confidence. It would indeed be surprising to find that in reality no distinct pattern of employment exists for the Eastern Cape and the eThekweni regions respectively considering the large underdeveloped and rural parts of the Eastern Cape in comparison to the established manufacturing and logistics base of eThekweni. The figure also includes estimates for Tshwane, but it is fair to conclude that the standard errors are simply too large to make the comparison useful.





In summary, working with data from the Quarterly Labour Force Survey requires attention to the variability in sampling. Even at national level, standard errors are large enough that changes over time should not automatically be assumed as statistically significant. In the case of the rate of unemployment, only changes beyond a one percentage point change at a 95% level of confidence. This is compounded when the sample is further disaggregated by region where standard errors become prohibitively large amongst the smaller provinces and metros. Whilst changes from one year to the next may vary little making robust analysis difficult, distinct patterns are easier to identify between heterogeneous groups. Nevertheless the overall conclusion remains – comparisons at a regional level are fraught with a large degree of inaccuracy which should not be ignored.

4. SURVEY DATA IN THE PUBLIC SPHERE

In light of the care that is required in reporting on descriptive indicators at national and sub-national levels as demonstrated as demonstrated in the section above it is useful to consider how such results are disseminated within the public domain.

Central is the role of Statistics South Africa as the institutional custodian for statistics in South Africa. Investigating the official statistical release of the QLFS surveys suggests some room for improvement. Whilst detailed information is provided on sample variability in the appendix, the ‘body’ section of the report where the results are analysed and discussed (approx.. 15 pages of tables, figures and accompanying narrative) makes no reference to variability in sampling, nor to the appendix. It is therefore strongly recommended that more is done to explicitly factor in the margin of error in the main section of the report.



Table 3: Key Labour Market Indicators; QLFS 2014Q4

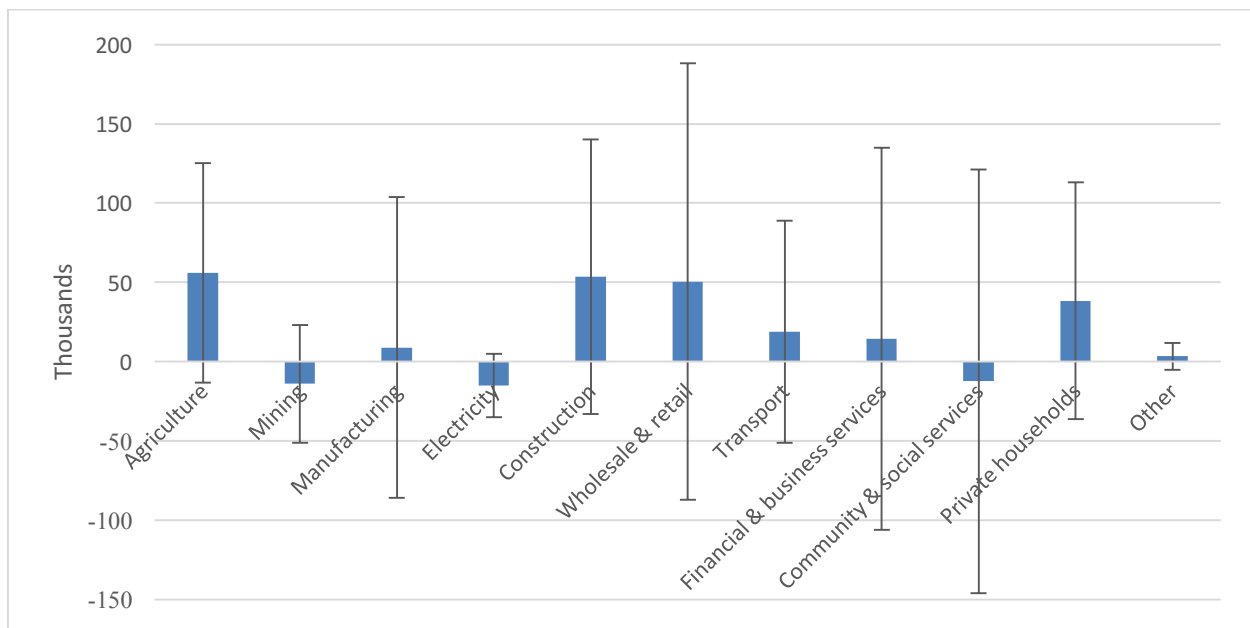
	Jul-Sep 2014	Oct-Dec 2014	Absolute change	Percentage change	Statistically significant change at a level of confidence of:					P-value
	Thousands				95%	90%	85%	80%	75%	
Population aged 15-64	35 489	35 643	155	0.4	X	X	X	X	X	0.70
Labour force	20 268	20 228	-40	-0.2	X	X	X	X	X	0.92
Employed	15 117	15 320	203	1.3	X	X	X	X	X	0.30
Formal sector (non-agricultural)	10 843	10 911	68	0.6	X	X	X	X	X	0.66
Informal sector (non-agricultural)	2 407	2 448	41	1.7	X	X	X	X	X	0.51
Agriculture	686	742	56	8.2	X	X	✓	✓	✓	0.11
Private households	1 180	1 219	38	3.2	X	X	X	X	X	0.31
Unemployed	5 151	4 909	-242	-4.7	✓	✓	✓	✓	✓	0.05
Not economically active	15 221	15 415	194	1.3	X	X	X	X	X	0.35
Discouraged job-seekers	2 514	2 403	-111	-4.4	X	X	✓	✓	✓	0.15
Other (not economically active)	12 707	13 012	305	2.4	X	X	✓	✓	✓	0.09
Rates (%)										
Unemployment rate	25.4	24.3	-1.1	-4.5	✓	✓	✓	✓	✓	0.01
Employment/population ratio (absorption rate)	42.6	43.0	0.4	0.9	X	X	X	X	✓	0.22
Labour force participation rate	57.1	56.8	-0.4	-0.6	X	X	X	X	X	0.29

Source: QLFS 2014 Q4; Statistics South Africa (2015); authors own estimates



Table 3 demonstrates this point by reproducing the summary table of “key labour market statistics” taken from ‘page v’ of the StatsSA statistical release for the QLFS 2014 Quarter 4 (StatsSA, 2015). The original table from the StatsSA report includes no indication of sample variation (rather these would need to be assembled through searching through the appendix). As shown in table 4, by adding in the p-value for each labour market indicator, only two of the fourteen labour market indicators changed significantly between 2014 Quarter 3 and 2014 Quarter 4 at a 95% level of confidence. If a less stringent level of confidence of 85% is applied then the total number of labour market indicators which are statistically significantly rises from two to five.

Figure 5: Change in formal-sector employment by industry, QLFS 2014 Q4



Source: QLFS 2014 Q4; Statistics South Africa (2015); authors own estimates

Figure 5 displays changes in formal-sector employment by industry between Quarter 3 and Quarter 4 2014 and replicates the figure from ‘page x’ from the StatsSA report, but now with error bars at a 95% level of confidence included.

Clearly, none of the changes over the period are statistically significant at a 95% level of confidence. Of course, if the total magnitude of the change in employment is greater, which is generally the case over longer periods of time, than the analysis would become more





worthwhile. However the point remains that routine descriptive statistics reported in official statistical releases must be properly accompanied by associated measures of sample variance.

Such issues are not an exercise of academic abstraction. The media, government and civil society pay close attention to reports that emerge from the Quarterly Labour Force Survey. For example, following the release of the QLFS 2014 Quarter 4 report which was released on the 10th February 2015, table 4 highlights the degree of coverage in the media which followed. The findings from the QLFS (mainly the rate of unemployment) were widely publicised in the days after – reflecting the importance of labour market statistics as part of the public discourse in South Africa.

Table 4: News headlines from the QLFS 2014 Q4

News Headline	Source
10-Feb	
SA employment stats improve slightly, unemployment still huge issue	All4Women
Unemployment decreases in 4th quarter	SANews.gov.za
Construction Industry biggest contributor to y/y increase in employment	SA Construction News
Unemployment rate eases	Moneyweb
South Africa's jobless rate eases to 24.3 percent in Q4 2014	Sharet
Unemployment falls in fourth quarter	BDlive
Jobless rate eases to 24.3%	News24, Fin24
SA's jobless rate dips	IOL
South Africa's jobless rate eases to 24.3% in Q4 2014	Engineering News, Polity.org
SA's unemployment rate dips	iAfrica.com
S.Africa's jobless rate eases to 24.3% in Q4 2014	CNBC Africa
Rand extends losses as commodity currencies remain under pressure	BDlive
Unemployment rate in South Africa declines 24.3% in fourth quarter 2014	eProp
11-Feb	
Unemployment rate drops to 24.3%	CapeArgus
Survey: Drop in Joblessness	The Witness
Unemployment rate dips to 24.3%	Daily News
12-Feb	
EC bucks Q4 trend and loses jobs	Daily Dispatch

Source: Meltwater media monitoring database; own estimates





In fact, table 4 arguably understates the case due to a bias towards reporting on negative events in the media. For example, the unemployment rate in Quarter 3 of 2015 increased by just 0.5% between Quarter 2 and Quarter 3 (a statistically *insignificant* change at 95% level of confidence) but generated nearly three times the number of news articles in comparison to table 4. All this matters because economic decision-makers are influenced by reports in the media. Engelberg and Parsons (2011) find evidence of a causal relationship between announcements in the media and investment decisions in financial markets (see also Dougal et al, 2011; Garcia, 2013; Solomon et al, 2014).

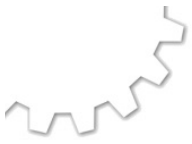
CONCLUDING REMARKS

Robust descriptive statistics are foundational for monitoring the status of national and sub-national communities and economies as derived from national household sample surveys. This paper brings into focus the limits of national household sample surveys for descriptive analysis, using South African labour market data from the QLFS as a case study.

As demonstrated by interrogating the labour market indicators in the QLFS, even at a national level of aggregation, standard errors are not small enough to assume that trends are ‘automatically’ statistically significant. In this instance the rate of unemployment in South Africa would need to change by more than 1 percentage point for the change to be statistically significant at a 95% level of confidence. When disaggregated to the level of provinces, the change needs to be more than 2 percentage points in the case of the largest province Gauteng, or greater than 4.5 percentage points in the case of the smallest province the Northern Cape. In the four smallest metros, rates of unemployment need to change by more than 5 percentage points in order for this to be statistically significant at a 95% level of confidence.

Evidently the sample sizes as disaggregated by region are too large to allow for very effective monitoring of regionally-based labour market trends over time (and changes must be of truly sensational magnitude to be significant for smaller provinces and metros). Comparisons between different heterogeneous groups are more successful albeit still





limited. The implications are that household survey data, even at a national level, must as a matter of necessity be accompanied by relevant representations of the sample variability.

For researchers and public-policy makers who work within provincial and local spheres of government, the findings may be discouraging. The apparent neglect (or ignorance) of basic standard errors appears to be ubiquitous in public policy documents and policy formation is therefore vulnerable to error. Similarly, the media popularises labour market statistics (and particularly, negative statistics) without any regard for its accuracy, which may give wrong impressions on the true performance of the economy and can have a real impact on investment decisions by compounding negative sentiment. Greater awareness of the limitations of household survey data needs to be fostered in order to encourage a healthy scrutiny of routine statistics.

Central is the role of StatsSA. The large resourcing of household survey data is undoubtedly an invaluable asset for robust research in South Africa. With respect to regional data, emphasis needs to be placed on the population census and community survey as sanity checks. Public policy-makers should be directed towards these surveys as primary reference points and resist the temptation to trade reliability for currency. Awareness also needs to be raised amongst government, civil society and the media on how to appropriately interpret sampling errors. It is strongly recommended that in all StatsSA statistical releases care is taken to readily represent the degree of sample variability in the main analytical section of the report, rather than just in the appendices.

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