Southern Africa Labour and Development Research Unit

Subjective well-being: Adult South Africans' Life Satisfaction (2008 - 2014)

by
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SALDRU Working Paper
Number 177

N.i.D.S.
NATIONAL INCOME DYNAMICS STUDY

NIDS Discussion Paper
2016/4

About the Author(s) and Acknowledgments

Acknowledgements:
Funding for this research from the Department of Planning, Monitoring and Evaluation is gratefully acknowledged.

Recommended citation

Kannemeyer, C. (2016). Subjective well-being: Adult South Africans' Life Satisfaction (2008 - 2014). Cape Town: SALDRU, University of Cape Town. SALDRU Working Paper Number 177/ NIDS Discussion Paper 2016/4.

ISBN: 978-1-928281-38-2

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University of Cape Town, August 2016

Introduction

This discussion paper examines subjective well-being using the National Income Dynamics Study. The survey is an individual level panel survey, with data collected biannually, with 4 waves available, from 2008-2015. The survey is particularly rich, and in addition to economic measures of well-being, it includes individual level data on subjective well-being. Subjective well-being is measured by asking respondents to rate their level of life satisfaction, at the point of being interviewed, and to think about how their current level of life satisfaction relates to their level of satisfaction historically.

Kahneman and Kreuger (2005) report that "while various measures of well-being are useful for some purposes, it is important to recognize that subjective well-being measures features of individuals' perceptions of their experiences, not their utility as economists typically conceive of it. Those perceptions are a **more accurate gauge of actual feelings** if they are reported closer to the time of, and in direct reference to, the actual experience."

Therefore, studying subjective well-being is worth pursuing, as actual feelings are a relevant gauge of an individual's life satisfaction. These perceptions may be distorted – but are arguably the best measure of how an individual's experience of the world at a given point in time is translated into well-being.

Brief Literature Review

Life Satisfaction

Self-reported well-being is a subjective evaluation of aspects of one's happiness, in the case of life satisfaction scores, a perception captured using a numeric score of one's overall quality of life. A variety of theories exist with various means of interpreting these scores, with different arguments advanced about the relevant determinants of life satisfaction.

Early theories of subjective well-being ascribe the meaning of life satisfaction scores directly to the objective circumstances a person experiences. In other words, to construct a score of one's life satisfaction, one reviews one's situation, weighting relative facets objectively, to calculate an aggregate score. Baird, Lucas & Donnellan (2010) argue that if this is true then is should be feasible to account for a large part of between-person variation in self-assessed well-being using demographic variables. As health, financial status and social relationships all affect well-being one would expect changes in these variables to reflect in life satisfaction, and reports thereof (Baltes and Mayer, 1999 cited in Baird et al., 2010).

Early theory indicates a negative relationship between aging and life satisfaction. Evidence regarding the direction of this relationship has yielded some uncertainty as to whether intuition in this regard is correct. While there is an association between demographic variables and subjective well-being, the size of the effect is smaller than one would imagine. Hence the pass-through of objective circumstances can occur through multiple channels due to subjective processes (Diener et al.,1999 cited in Baird et al., 2010).

Temperament forms an important component of one's response to objective circumstances, the degree of change in one's circumstances, and expectations for the future. This mediates the impact of one's emotional response to and reported feelings about one's circumstances. Psychological research indicates moderate to strong linkages between personality traits such as extraversion, neuroticism, and self-esteem (Steel et al., 2008 cited in Baird et al., 2010) and life satisfaction. Therefore, if temperament is stable, one's life satisfaction should remain stable too. In addition, there are arguments advanced that life satisfaction actually improves as one ages, due to an improvement in how one modulates one's emotions as one ages. (Baird et al., 2010)

Do respondents provide accurate real time reporting on previous levels of life satisfaction? Kahneman and Krueger (2005) report that experimental evidence demonstrates that people are generally correct in classifying a past episode as pleasant or awful, but that retrospective reports are also susceptible to systematic biases. Priming might play a role in the satisfaction reported by individuals, and actual life satisfaction might be more or less persistent across individuals in objectively similar circumstances. However, other measures of well-being can be constructed as appropriate in specific situations.

History features in present measurement of life satisfaction. Kahneman, Fredrickson, Schreiber & Redelmeier (1993) show that retrospective evaluations of past episodes are comprised of components of an episode, which are weighted differently in the generation of remembered (and reported) well-being. In particular, "great weight was placed on the end of the experience and the peak or trough."

It is understandably difficult to characterise the beginning and end of events that might feed into one's life satisfaction. For example, unemployment is demonstrably related to lower life satisfaction, especially the longer one remains without a job. However, the type of transition into unemployment will vary: One might never have been employed, may have resigned, or may have been retrenched. The circumstances leading up to the termination of a job might be different between individuals. The nature of the event might differ, as well as the feedthrough of the event into life satisfaction. Grunow (2014), for example, indicates that the negative impact of unemployment is reduced if high unemployment is common in the individual's locale. Therefore, when one experiences unemployment, both the duration of the event and one's response is mediated by context and individual specific psychological responses.

One might well question the ideal interpretation of responses to questions about global life satisfaction given that it is not objectively directly observed or verifiable, unlike age or location, for example. It is a retrospective judgment of one's overall sentiment about life, most often constructed only when prompted, and partly determined by the respondent's current mood and memory, as well as the immediate context (Kahneman and Krueger, 2005).

Reported life satisfaction has been shown to be influenced by the weather (Kahneman and Krueger, 2005). Arbitrary as it may seem, weather impacts quality of life, commonly measured using reported life satisfaction, and seasonal affective disorder is causally related to the weather. This raises the question of what one hopes to measure when asking respondents how they feel about their life overall: A transient feeling related to one's global satisfaction on a given day, or a meaningful appraisal of well-being, considered objectively.

Kahneman and Krueger (2005) seek to validate the utility of retrospective reports on subjective well-being, and indicate that ignoring context, mood, and duration limit the reliability of standard life satisfaction and happiness questions. However, these are not necessarily grounds for dismissing the method altogether, because representative population samples will lead to the effect of idiosyncratic factors being averaged out. Moreover, research finds that retrospective evaluations are relevant for subsequent choices, despite their shortcomings as an objective measure of real-time experience. For example, job satisfaction is a strong predictor of workers' subsequent turnover (Freeman, 1978 cited in Kahneman and Krueger, 2005).

While this work is largely focused on describing how life satisfaction has changed for the NIDS sample over time, as well as the impact of one's perceptions of social ills on one's life satisfaction, the scope for interesting work using NIDS is enormous. Data is available in NIDS on the reasons respondents might have left employment or been terminated. Data is also collected on duration of employment. All of these represent useful lenses for investigations into the impact of adverse events on one's life satisfaction.

Income and Inequality

The importance of subjective well-being as a concept in economics has by now been firmly entrenched (Stutzer and Frey, 2010). Central to the understanding of subjective well-being and its correlates is the role of the individuals' relative well-being, or relative standing, compared to some well-defined reference group.

Absolute income would seem an obvious predictor of life satisfaction. However, feelings of deprivation relative to an individual's reference group have been demonstrated to be a stronger predictor of life satisfaction scores. Many studies that explore the impact of relative standing on subjective well-being use objective measures of the individual's relative position, such as the mean income of the reference group, or the individual's ranking in the relevant income distribution. Posel and Casale (2011) examine subjective well-being, using the first wave of NIDS, comparing the difference in the effect between actual income and perceived standing in the income distribution on reported life satisfaction. Their findings indicate that perceptions of relative income rank matter more than objective measures of relative status based on reported income, as far as reported life satisfaction is concerned.

The National Income Dynamics Study also contains information about respondents' perception of their current rank in the income distribution relative to their retrospective recollection of income rank in childhood, as well as how they expect their place in the income distribution to evolve. Posel and Casale (2011) find that expected future upward mobility has a smaller effect than recalled historic mobility, and infer that life satisfaction is influenced more by perceived achievement than by anticipated achievement.

The effect of inequality on welfare has been extensively examined by Wilkinson and Pickett (2009). They argue that social inequality undermines a vast array of social outcomes, with all, not only the poor, suffering the effects of inequality on well-being. In particular, they highlight the 'pernicious effects that inequality has on societies: eroding trust, increasing anxiety and illness, (and) encouraging excessive

consumption.' Eleven issues are explored: physical health, mental health, drug abuse, education, imprisonment, obesity, social mobility, trust and community life, violence, teenage pregnancies, and child well-being, and outcomes are demonstrated to be significantly worse in more unequal societies. Estimates of reduced well-being in aggregate are convincing, yet the role of how inequality is perceived, and its impact on life satisfaction, has been linked to how people form comparisons between themselves and their reference group.

The influence of relevant reference groups on perceptions of inequality in South Africa presents an interesting inquiry in the post-Apartheid context. Von Fintel (2015) explores the relationship between relative income and subjective well-being in South Africa, using the first (2008) wave of NIDS. She uses geographic variables to estimate the weight of inequality at different levels on one's life satisfaction. Von Fintel (2015) finds that some racial integration is evident in the Post-Apartheid period, which has led to reference groups becoming more diverse, rather than comprised only of one's own race. She concludes, however, that comparisons with a person's own race are still weighted higher than comparisons with other race groups.

Social Ills

The policy of segregation and accompanying forced removals of communities from their land, implemented under colonialism and intensified under the apartheid government (1948–1994) is understood to have had a significant impact on neighbourhood social order, which has been sustained until the present. Perceptions of violence and criminal activity in these neighbourhoods are frequently reported as concerns, and have a sustained impact on behaviour in society, even when the incidence of crime fluctuates. Friedson & Sharkey (2015) confirm the persistence of negative outcomes associated with criminal activity at the neighbourhood level, even when the level of criminal activity declines.

Tomita, Labys & Burns (2015) examine the relationship between symptoms of depression and neighbourhood social disorder, using NIDS (2010). Social disorder is measured using household level scores constructed in relation to the perceived frequency of violent, criminal and illicit activities in the community. NIDS presents a particularly rare nexus of household information linked to health data, including a module measuring depressive symptomology using a 10-item version of the Center for Epidemiologic Studies Depression Scale.

They find that perceptions of neighbourhood social disorder are related to 'significant levels of depressive symptomatology.' Perceived health status, as well as gender, race, and level of education were significantly correlated with scores indicative of depression. In light of these findings, the authors urge that strategies should be undertaken to reduce the effect of social disorder, and develop positive social norms in neighbourhoods. While this might well be difficult to implement; findings elsewhere indicate the benefits of reclamation of community spaces, broad use of public libraries, and participation in sport for well-being in multiple domains.

Elsewhere, Sharkey & Elwert (2011) analyse how neighbourhood environments experienced over multiple generations influence children's cognitive ability. They argue for a 'revised perspective on "neighbourhood effects" that considers the ways in which the neighbourhood environment in one generation may have a lingering impact on the next generation.' The results confirm a powerful link between neighbourhoods and cognitive ability that extends across generations. Their findings are that a family's exposure to neighbourhood poverty across two consecutive generations reduces child cognitive ability by more than half a standard deviation.

McCoy, Raver and Sharkey (2015) demonstrate novel insight into the relationship between proximity to violent crime, behaviour change, and performance in education. The disruption in cognitive processes as a result of exposure to violent crime perpetuates inequities. For example, such exposure leads to task performance becoming more agitated and inaccurate. This is concerning from the perspective of the impact on mental health as well as the capacity to focus in school and perform well academically. Sharkey,

Schwartz, Ellen and Lacoe (2014) demonstrate the negative impact of community violence on standardised test scores.

"For anxious children in particular, exposure to violent crime was also associated with patterns of avoidant attention that may have negative consequences for their ability to appropriately identify, appraise, and process future threat cues. As a result, these anxious children may be less likely to cope with future incidences of stress, leading to higher rates of psychopathology and increased conflict with peers and adults. Non-anxious children, on the other hand, showed patterns of vigilant attention consistent with normative short-term responses to stress, which are predictive of increased coping, lower mental health problems, and more proactive methods of conflict resolution." McCoy, Raver and Sharkey (2015)

Cognitive ability deficits limit one's capacity to advance through education, and more educated individuals report higher levels of life satisfaction.

Sharkey and Torrats-Espinosa (2016), using the Panel Study of Income Dynamics in the U.S, find that there is a causal relationship between the level of violent crime at a local level and the degree of upward economic mobility. In an effort to explain the link between crime and mobility, they show that the decline in the violent crime rate in the period considered reduced the prevalence of high school dropouts at the local level.

Physical health also feeds into well-being. However, while perceptions of physical health are included in the model presented later, there is no scope for detailed discussion of the literature here.

While an exhaustive discussion of life satisfaction could occupy many papers, it is hoped that the preceding section provides adequate insight into the links between a variety of factors, operating through both direct and indirect channels to impact life satisfaction.

Descriptive Data

The data used in this study relate to the adult population who successfully completed the individual survey in any wave of NIDS. Respondents are asked to construct a global valuation of well-being in response to the question below:

> "Using a scale of 1 to 10 where 1 means "Very dissatisfied" and 10 means "Very satisfied", how do you feel about your life as a whole right now?"

Examining the distribution of life satisfaction scores across the NIDS data, it is worth reporting that both unweighted and cross-sectional weighted distributions were calculated in order to reconcile their differences. In general, the distribution of life satisfaction scores is similar whether weights are applied or not. In relation to the changing distribution of respondents over time, it is worth reporting that non-response is related to greater life satisfaction, which is what might one expect. One caveat - if "non-response" is due to the respondent having died between waves, their average life satisfaction was lower than average life satisfaction for the surviving respondents in the preceding wave. This makes sense, as aging and mortal illness are known to impact life satisfaction as one approaches death. Wave 1 data is drawn from 2008, Wave 2 from 2010-2011, Wave 3 from 2012 and Wave 4 from 2014-2015.

Table 1 is provided for an accurate sense of the numbers and proportions reporting various levels of life satisfaction at each time point. Figure 1 is a direct translation of the tabulated column percentages into a visual representation. Figure 2 is a cumulative distribution of life satisfaction across the population in relation to life satisfaction levels.

Subjective Well-Being

It is difficult to form a clear picture of the distribution of life satisfaction scores, other than to suggest that there is a bias towards the middle of the distribution across waves, a facet of the data which is shown in Figure 1. Respondents in Wave 2 and Wave 3 are marginally less happy than in Wave 1.

Table 1: Subjective Well-Being of South African Adults 2008-2015 (Weighted)

Life Satisfaction	**Wave 1**		**Wave 2**		**Wave 3**		**Wave 4**	
Weighted	n.	Col %	n.	Col %	n.	Col %	n.	Col %
Level 1	2006915	8,4%	2226747	9,2%	1625341	6,8%	1173053	5,0%
Level 2	1221143	5,1%	2084799	8,7%	2214203	9,3%	1399085	6,0%
Level 3	1770896	7,4%	2864386	11,9%	3159645	13,3%	2415972	10,3%
Level 4	2715084	11,3%	3231258	13,4%	3591308	15,1%	3036498	12,9%
Level 5	4478596	18,7%	4124344	17,1%	4254135	17,9%	4734398	20,2%
Level 6	2931347	12,2%	2727118	11,3%	2691303	11,3%	2962647	12,6%
Level 7	2983948	12,5%	2337818	9,7%	1994334	8,4%	2736276	11,7%
Level 8	2736711	11,4%	2065067	8,6%	1950533	8,2%	2605498	11,1%
Level 9	903712	3,8%	794629	3,3%	740971	3,1%	960740	4,1%
Level 10	2182333	9,1%	1619064	6,7%	1524488	6,4%	1460906	6,2%
	23930685		24075230		23746261		23485073	

Figure 1: Subjective Well-Being of South African Adults 2008-2015 (Weighted)

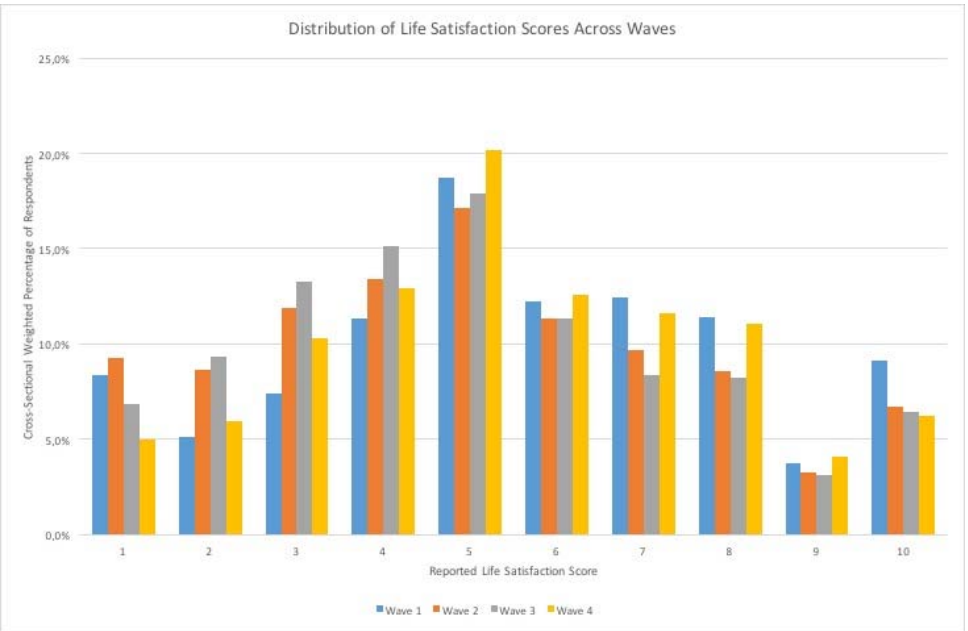


Figure 2 shows the difference between Waves more clearly. Wave 1 and 2 look similar at the lowest point of the life satisfaction distribution, but Wave 2 quickly diverges from the Wave 1 cumulative distribution, indicating that the Wave 2 weighted population is on average less satisfied than the Wave 1 weighted population, at almost every point of the distribution. Wave 3 looks similarly less satisfied than the Wave 1 weighted population, although there are slightly fewer individuals reporting the lowest level of life satisfaction, although only 1.3% fewer people than in Wave 1. The Wave 4 population is also slightly less happy than the Wave 1 population, although the proportion of extremely dissatisfied individuals is lower.

Figure 2: Cumulative Subjective Well-Being of South African Adults 2008-2015 (Weighted)

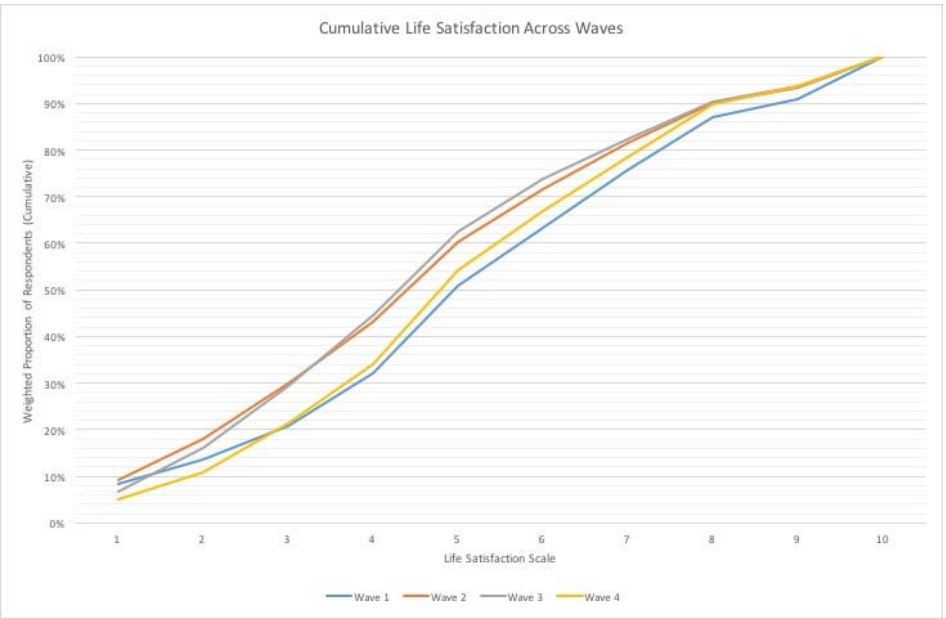
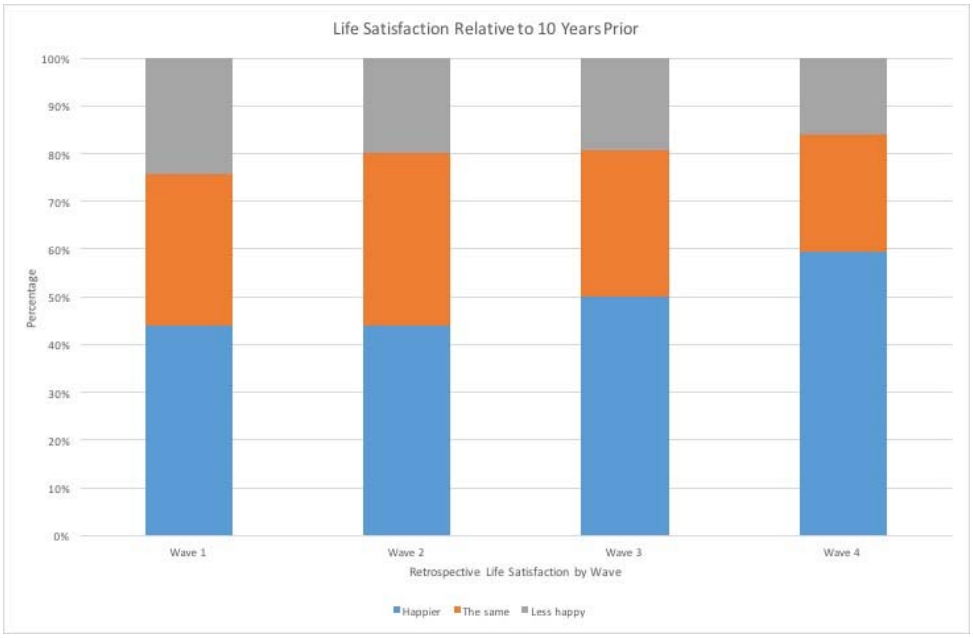


Table 2: Cumulative Subjective Well-Being of South African Adults 2008-2015 (Weighted)

Life Satisfaction	**Wave 1**	**Wave 2**	**Wave 3**	**Wave 4**
(Weighted)	Cum. %	Cum. %	Cum. %	Cum. %
1	8,4%	9,2%	6,8%	5,0%
2	13,5%	17,9%	16,2%	11,0%
3	20,9%	29,8%	29,5%	21,2%
4	32,2%	43,2%	44,6%	34,2%
5	50,9%	60,4%	62,5%	54,3%
6	63,2%	71,7%	73,8%	66,9%
7	75,7%	81,4%	82,2%	78,6%
8	87,1%	90,0%	90,5%	89,7%
9	90,9%	93,3%	93,6%	93,8%
10	100,0%	100,0%	100,0%	100,0%

Figure 3: Comparative Subjective Well-Being of South African Adults 2008-2015 (Weighted)



A comparison of contemporary life satisfaction with retrospective life satisfaction (10 years earlier) is also gathered in the survey. On average, it appears that people consider themselves happier than they were ten years prior to the survey, and that this trend is increasing over time. Recalled happiness is not reconcilable with the picture of life satisfaction between Wave 1 and Wave 4 of the data, which spans 8 years, and the size of the difference in the retrospective valuation is quite large.

When analysing life satisfaction, many variables might be considered influential, directly or indirectly. What follows is insight into the relationship between demographic variables and subjective well-being. Further determinants of self-assessed well-being are explored thereafter.

Gender Related Subjective Well-Being

Table 3 and 4 should be read in conjunction with Figure 4, for precise insight into the weighted population proportions reporting a given level of life satisfaction in each wave by gender. Unfortunately this information is spread across two tables due to space constraints. The first displays weighted frequencies of life satisfaction scores by wave and gender, the second associated proportions.

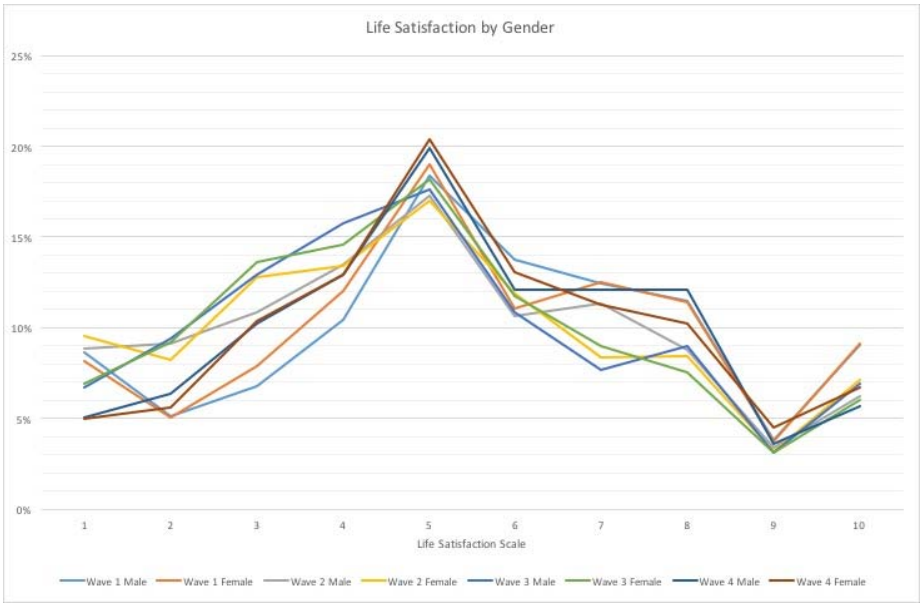
Table 3: Subjective Well-Being by Gender of South African Adults 2008-2015 (Weighted)

Life Satisfaction	Wave 1		Wave 2		Wave 3		Wave 4	
(Weighted)	Male (n.)	Female (n.)	Male (n.)	Female (n.)	Male (n.)	Female (n.)	Male (n.)	Female (n.)
1	918318	1088597	972586	1254161	728865	896476	546964	626089
2	543122	678021	1002954	1081845	1018987	1195216	695125	703960
3	720576	1050320	1189138	1675248	1395939	1763706	1109890	1306082
4	1109793	1605291	1472734	1758524	1698966	1892342	1402333	1634165
5	1944221	2534375	1890109	2234235	1900032	2354103	2160975	2573423
6	1459974	1471373	1165704	1561414	1169895	1521408	1314223	1648424
7	1318433	1665515	1238898	1098920	831927	1162407	1315331	1420945
8	1219110	1517601	959704	1105363	968973	981560	1316700	1288798
9	401370	502342	372238	422391	334698	406273	388983	571757
10	960161	1222172	685996	933068	747240	777248	616739	844167

Table 4: Subjective Well-Being by Gender of South African Adults 2008-2015 (% Weighted)

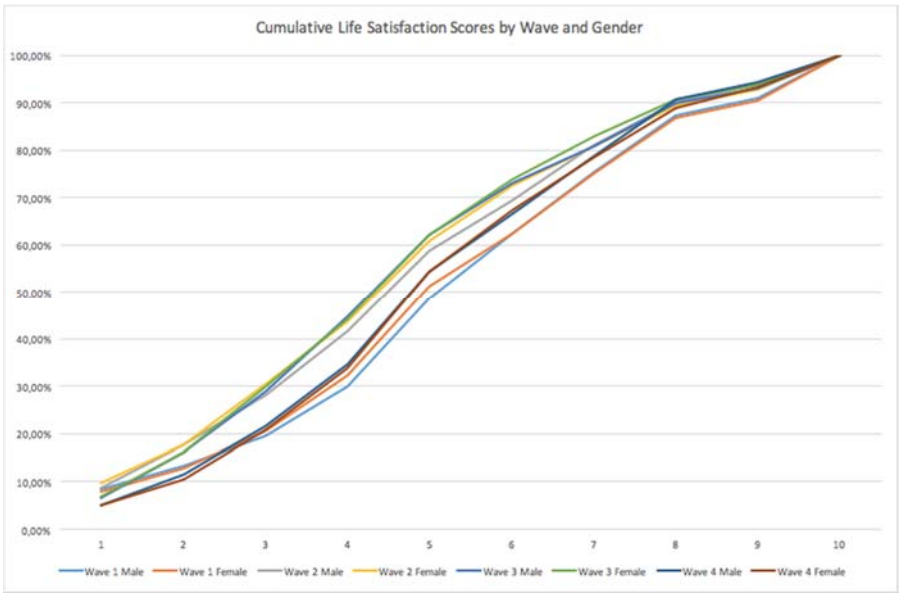
Life Satisfaction	Wave 1		Wave 2		Wave 3		Wave 4	
(Weighted)	Male	Female	Male	Female	Male	Female	Male	Female
1	8,7%	8,2%	8,9%	9,6%	6,8%	6,9%	5,0%	5,0%
2	5,1%	5,1%	9,2%	8,2%	9,4%	9,2%	6,4%	5,6%
3	6,8%	7,9%	10,9%	12,8%	12,9%	13,6%	10,2%	10,4%
4	10,5%	12,0%	13,4%	13,4%	15,7%	14,6%	12,9%	13,0%
5	18,4%	19,0%	17,3%	17,0%	17,6%	18,2%	19,9%	20,4%
6	13,8%	11,0%	10,6%	11,9%	10,8%	11,7%	12,1%	13,1%
7	12,4%	12,5%	11,3%	8,4%	7,7%	9,0%	12,1%	11,3%
8	11,5%	11,4%	8,8%	8,4%	9,0%	7,6%	12,1%	10,2%
9	3,8%	3,8%	3,4%	3,2%	3,1%	3,1%	3,6%	4,5%
10	9,1%	9,2%	6,3%	7,1%	6,9%	6,0%	5,7%	6,7%

Figure 4: Subjective Well-Being by Gender of South African Adults 2008-2015 (Weighted)



The major feature of the life satisfaction data evident in Figure 4 is that the peak of all distributions is in the middle of the life satisfaction scale, although the peaks are at different heights. Cumulative distributions relating life satisfaction to gender over time are provided next.

Figure 5: Cumulative Subjective Well-Being by Gender of South African Adults 2008-2015 (Weighted)



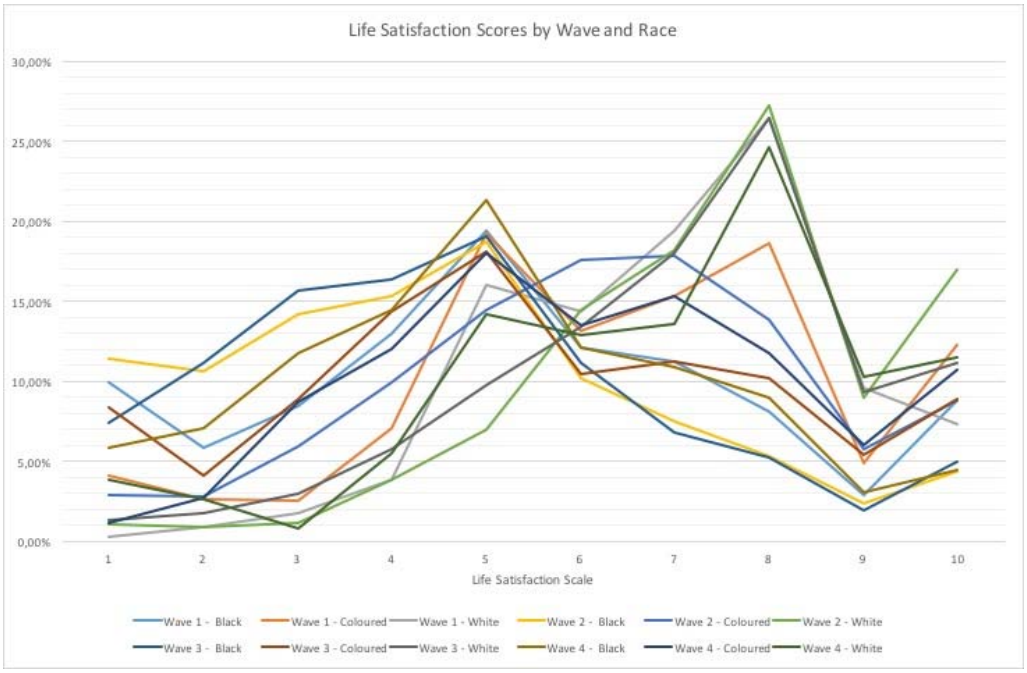
There are differences between genders, exhibited in the above graph, across the board. However these are quite small, with males and females in each of the time periods reporting similar levels of life satisfaction. That said it would appear that, in general, respondents of both genders are happier in Wave 1 and Wave 4.

Race Related Subjective Well-Being

While earlier it was reported that no major difference exists between weighted and unweighted life satisfaction scores overall, there are some discrepancies worth noting when exploring the data in relation to race, mainly for the Coloured population. Weighted visualisations are presented in the text. When considering further analysis the effect of small refined sample sizes should be paid due attention.

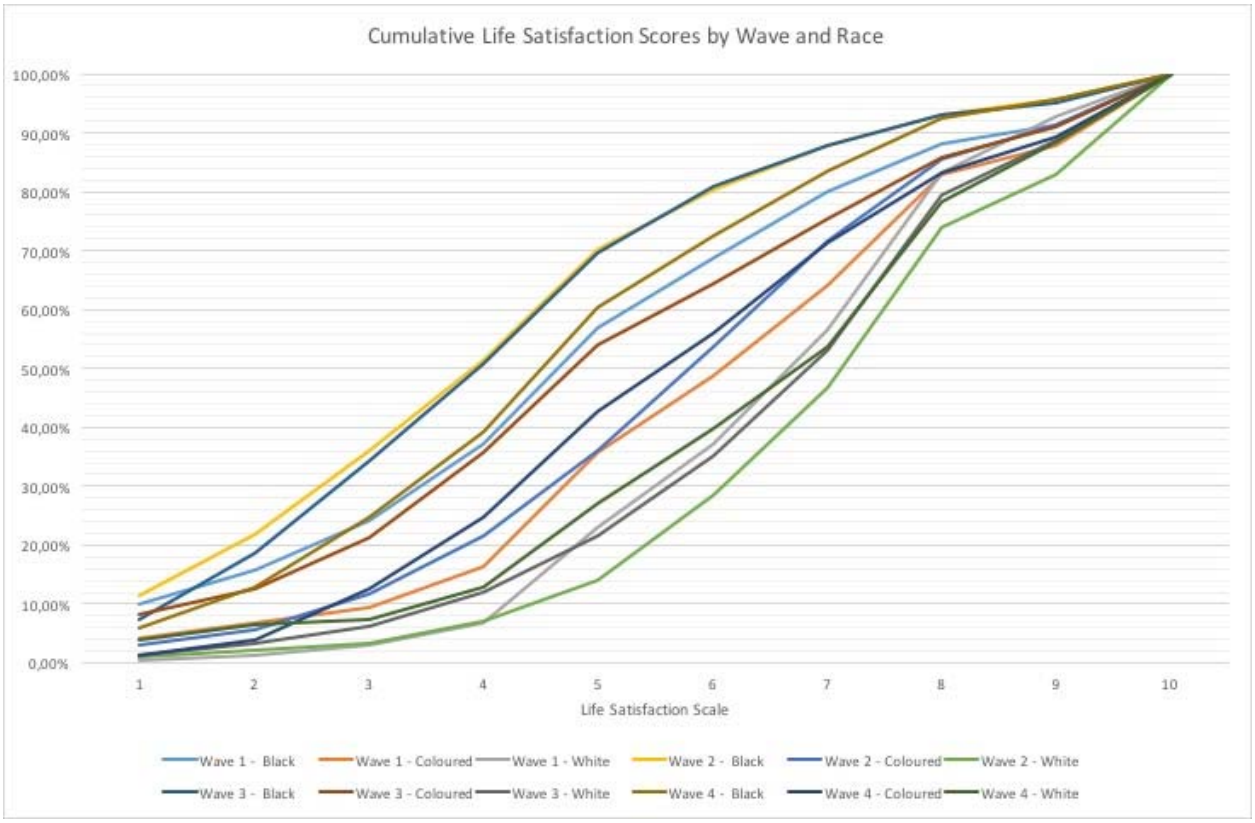
From Figure 6 we can observe that when examining life satisfaction, that there are very different peaks associated with different population groups. Overall, the relationship between life satisfaction and population group is clearest for white people, where the peak of the distribution is consistently high across waves, at satisfaction level 8. It's harder to differentiate the Coloured and Black population groups, who are certainly consistently less happy on average in every period. However, these groups still experience different levels of life satisfaction on average across the populations.

Figure 6: Subjective Well-Being by Race of South African Adults 2008-2015 (Weighted)



To reduce the complexity this has been presented in two graphs, one holding time constant, the other holding population constant over time.

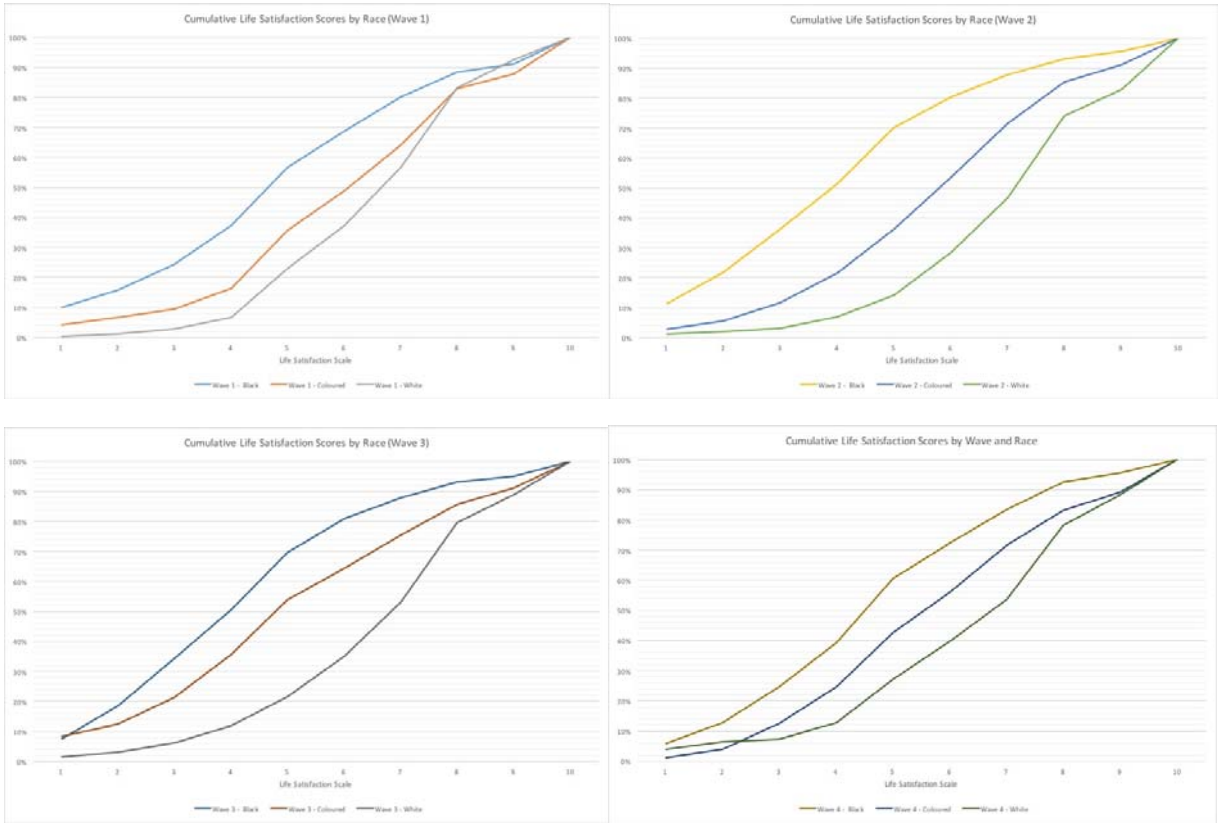
Figure 7: Cumulative Subjective Well-Being by Race of South African Adults 2008-2015 (Weighted)



Examining the cumulative life satisfaction data presented in Figure 7 - we have preliminary insight into differences between population groups. The data for Whites is depicted as green and grey lines, and these lines more or less consistently lie below the other lines. This indicates that Whites report higher levels of life satisfaction consistently over time. The Coloured population is less satisfied overall than the White population, but in general more satisfied than the Black population.

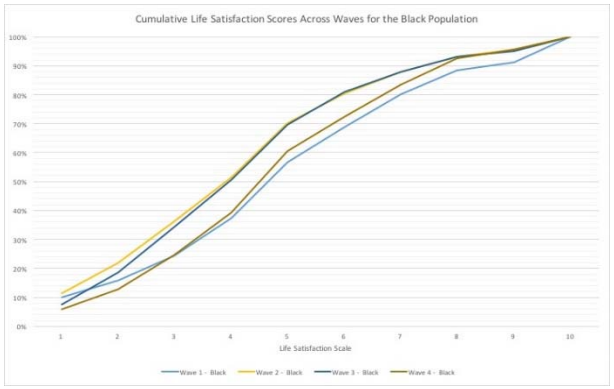
This is depicted more clearly in Figure 8, which depicts reported satisfaction levels by population group for each wave.

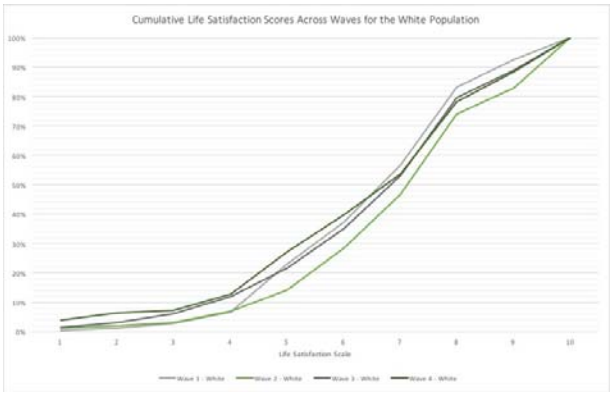
Figure 8: Cumulative Subjective Well-Being by Race per Wave of NIDS (Weighted)

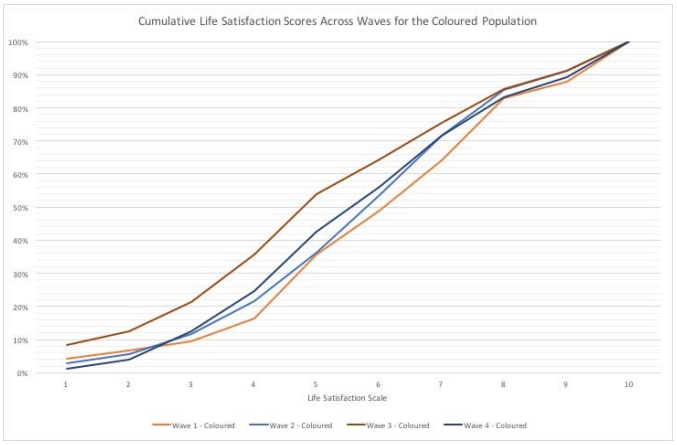


Whites report higher levels of life satisfaction consistently over time. Black people overall report lower satisfaction than the Coloured population across time, and Coloured people in turn report lower life satisfaction than White people.

Figure 9: Cumulative Subjective Well-Being by Race across Waves of NIDS (Weighted)







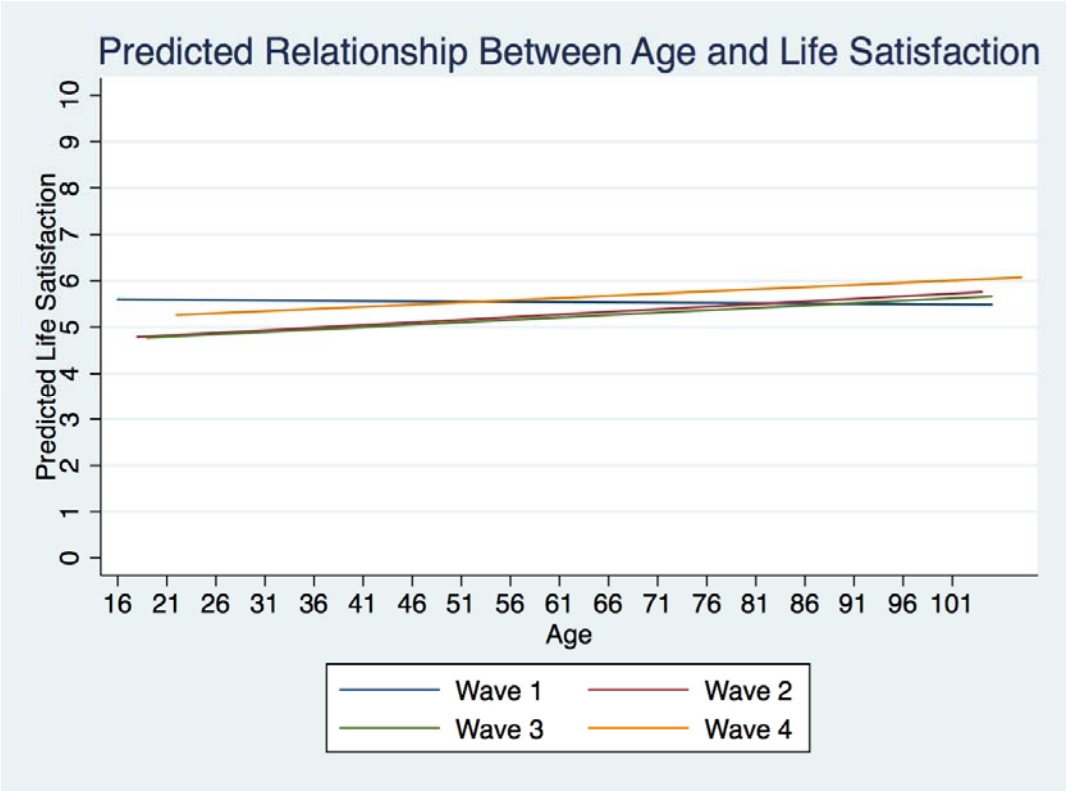
It is certainly hard to conclude that life satisfaction is improving over time, Black life satisfaction is higher in 2008 and 2014 than in 2010 and 2012. Although, at this point it should be apparent that the majority of the population is always on the unhappy side of the life satisfaction scale. There are many intersections in the cumulative distributions of life satisfactions for the White population over time. In contrast with the Black population, the majority of White people report greater life satisfaction over time. A small majority of the Coloured population is on the happier side of the spectrum, aside from in Wave 3, but in general reported life satisfaction is pretty evenly spread across the subjective well-being spectrum.

Age Related Subjective Well-Being

Life cycle effects have been found to exist, albeit differently across societies. In particular, Baird, Lucas and Donnellan (2010) find that adulthood does not predict a decline in life satisfaction on average, using panel data from Britain and Germany. However, they do find a steep decline in reported life satisfaction at the age of 70 for older British adults.

Figure 10 shows the linear prediction of reported life satisfaction as a function of age. On average, it is hard to say much about a consistent life cycle effect related to age, as predicted life satisfaction in relation to age is quite stable, centred around average values 5 - 6. It does seem as though aging is positively related to a marginal increase in average life satisfaction, for all waves except Wave 1.

Figure 10: Mean Estimated Relation of Age and Subjective Well-Being of South African Adults 2008-2015 (Weighted)



Transitions in Reported Life Satisfaction

While a number of theories suggest that life satisfaction is determined by fixed facets of one's being e.g. temperament, others indicate that it might vary quite a bit over time, and that, on average, changing reported life satisfaction is due to concrete changes in individual circumstances. Next, insight into the aggregate transitions in life satisfaction scores is provided. This data is not weighted, as it considers changes between waves.

Table 5: Changes in Subjective Well-Being between NIDS Waves (Unweighted)

△ Life Satisfaction				
Unweighted	Wave 2 - 1	Wave 3 - 2	Wave 4 - 3	Wave 4 - 1
-9	1%	0%	0%	0%
-8	1%	1%	0%	0%
-7	2%	1%	1%	1%
-6	3%	2%	1%	2%
-5	5%	3%	3%	4%
-4	7%	5%	4%	5%
-3	10%	8%	7%	7%
-2	12%	10%	9%	10%
-1	12%	11%	10%	11%
0	14%	14%	13%	14%
1	10%	12%	12%	13%
2	8%	11%	12%	11%
3	6%	8%	10%	8%
4	4%	6%	7%	6%
5	3%	4%	5%	4%
6	2%	2%	3%	2%
7	1%	2%	2%	1%
8	0%	1%	1%	0%
9	0%	0%	0%	0%

Table 5 makes it clear that life satisfaction scores do not remain constant for the large majority of people when captured two years apart. Most changes are close to the baseline score in the preceding wave. This is also true when looking at the pattern of changes between Wave 4 and Wave 1.

Figure 11: Transition in Life Satisfaction scores between Waves

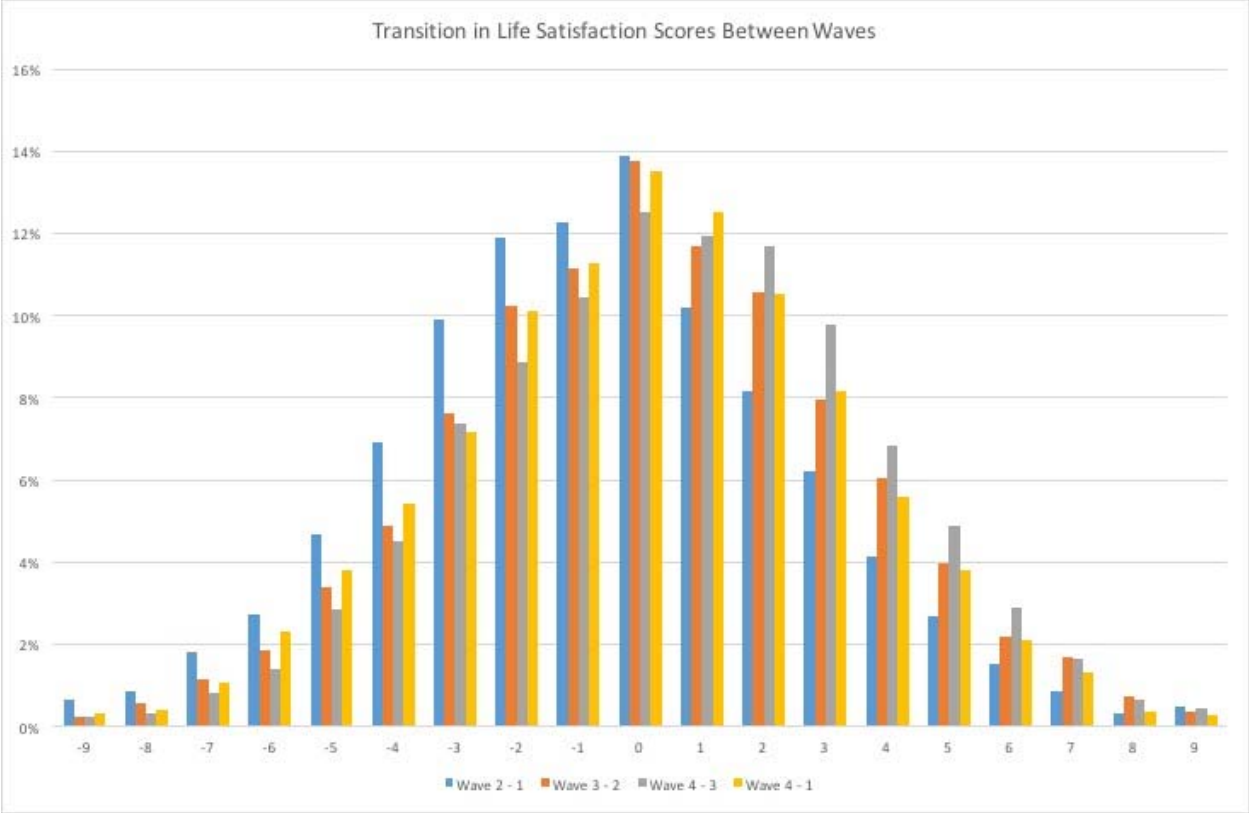


Figure 11 indicates that the distribution of changes in reported life satisfaction is approximately normally distributed, confirming that most changes are quite well anchored to one's baseline score, but also that there is significant change in satisfaction in aggregate between years. Statistics are calculated for individuals who participated in both waves and this is used to calculate a difference. Wave 2's unweighted population is definitely less happy than Wave 1's. 41% of the population present in both Wave 3 and Wave 2 is less happy in Wave 3 than in Wave 2. Only 37% of the population find themselves less satisfied in Wave 4 than in Wave 3. Overall, 42% of individuals report that they are less satisfied in Wave 4 than they were in Wave 1.

Analysis of Data

Model

Four versions of the model are presented for two reasons. First, a pooled version of the regression is presented, in two permutations. The reason for this is that the module on social ills is only captured fully from Wave 2 onwards. Second, a balanced panel is created, on the basis of the individual being a continuing sample member with a complete set of responses for all the relevant variables in each wave.

The model presented here is a generalised squares estimation of a random effects model aimed at understanding the relationship between fixed demographic variables and life satisfaction.

The determinants of self-reported life satisfaction investigated include perceptions of social disorder, an indicative measure of possible depression, perceived physical well-being, income expectations, neighbourhood attachment, education, employment, marital status, the log of household income per capita, age, demographic subgroup, and geographic location.

The construction of the social disorder score is undertaken using the method Tomita, Labys and Burns (2015) conceptualise as "unsettling or potentially threatening" (Skogan, 2012) violent, criminal and illicit public behaviours (with visual signs of substance use, interpersonal violence, gang activity, and street theft as some examples) that cause a sense of danger (Ross & Jang, 2000) and weakened social control (Gracia & Herrero, 2007).

In accordance with Tomita, Labys and Burns (2015), perceived exposure to neighbourhood social disorder is captured at the household level, with each item being scored with a 5-point Likert format including: 1 (never happens); 2(very rare); 3(not common); 4(fairly common); 5(very common). A household composite score is based on the sum of these six scores (range: 6–30). NIDS includes information on the perceived incidence of a variety of social ills: (a) burglaries, muggings, or thefts, (b) violence between members of the same household, (c) violence between members of different households, (d) gangsterism, (e) murder, shootings, or stabbings, and (f) drug or alcohol abuse in study participants' neighbourhoods. A higher composite score reflected greater perception of the level of violence, crime, and poor personal safety (neighbourhood social disorder).

If we examine the social disorder score which is a composite measure derived from the household level perception of the incidence of social ills at neighbourhood level, it is apparent that perceived exposure to social ills is on average quite high. This measure which looks at violence and crime is likely a major reason for low levels of trust being exhibited by the population on average, indicating limited prospects for social cohesion.

The CES-D 10 score is calculated from the abridged 10-item version of the Center for Epidemiologic Studies Depression Scale (CES-D) to elicit depressive symptomatology. The original CES-D is a lengthier, psychometrically tested instrument for screening depression among the general population (Radloff, 1977 cited in Tomita, Labys & Burns (2015)), which has been used in other South African studies (Hamad, Fernald, Karlan, & Zinman, 2008; Myer et al., 2008 cited in Tomita, Labys & Burns (2015)). The shortened form of the CES-D NIDS uses is known to have psychometric validity (Bjorgvinsson, Kertz, Bigda-Peyton, McCoy, & Aderka, 2013; Cole, Rabin, Smith, & Kaufman, 2004 cited in Tomita, Labys & Burns (2015)).

The CES-D 10 is a self-reported measure of symptoms associated with depression, recorded for the week preceding the survey. Respondents indicate one of four possible responses in a Likert format: 0 (rarely or none of the time; less than 1 day); 1 (some or little of the time; 1–2 days); 2 (occasionally or a moderate amount of time; 3–4 days); 3 (almost or all of the time; 5–7 days). The CES-D composite score was based on 10 items ranging from 0 to 30. In accordance with work by Andresen, Malmgren, Carter, and Patrick (1994), a cut-off score of 10 or higher is used in NIDS to indicate the presence of significant depressive symptomatology.

Data on perceived physical well-being is collected in NIDS by asking respondents to report whether their overall physical health is excellent, good, or poor. Perceptions on income are captured by asking the interviewee which of 6 income categories they perceive themselves to be in. Neighbourhood attachment is measured on the basis of whether the respondent wishes to stay in their current neighbourhood, wants to leave, or is uncertain. Education is measured in years of successfully completed education. Employment is measured as whether one has a job or not, and marital status whether one is married or not. The log of household income per capita is constructed using the supplied derived income variable. Geographic locations are considered as either urban formal, urban informal, rural formal or rural informal. Age and demographic subgroups are included on the basis of the derived variables for best race, gender, and age.

Summary Data

Table 6: Means and Standard Deviations for All Adult Respondents

Variable	Population: Unbalanced Panel of All Adults with Complete Information in Any Wave									
	2008		2010		2012		2014		Total	
	mean	std. dev.	mean	std. dev.	mean	std. dev.	mean	std. dev.	mean	std. dev.
life satisfaction score	5.446609	2.462938	4.800539	2.496782	4.98214	2.413485	5.493374	2.31251	5.192095	2.440794
social disorder: Composite Score 6-30	.	.	16.90226	6.478441	17.7142	6.157144	17.22687	6.011721	17.29008	6.224832
depressed: CESD10 Score > 10	.342618	.4746009	.2505239	.4333337	.2715997	.4448036	.2503351	.4332242	.2829064	.4504159
poor health	.2180748	.4129523	.1380659	.3449841	.1504871	.3575635	.1503728	.3574514	.1677745	.3736697
good health	.2433608	.4291254	.2146146	.4105726	.298496	.4576178	.3086203	.4619434	.2651855	.4414364
great health	.5337481	.4988765	.6467113	.4780122	.5506751	.4974467	.5406719	.4983639	.5653033	.4957221
perceived income step	2.464343	.9792794	2.481276	1.024687	2.490087	.949379	2.550306	.9592065	2.49473	.9788522
leave neighbourhood	.1301549	.3364851	.085	.2788939	.1127279	.3162734	.0961458	.2948034	.1076445	.309934
don’t know	.1060149	.307867	.1158772	.3200916	.1203458	.3253794	.0936267	.2913209	.1086665	.3112234
stay in neighbourhood	.7638302	.4247419	.7991228	.400674	.7669263	.4228069	.8102276	.3921374	.783689	.4117329
years of education	7.984636	4.222846	8.164124	4.263929	8.342866	4.304952	8.599296	4.250316	8.257761	4.265228
employed	.3445246	.4752268	.2468721	.4312051	.3168842	.4652754	.360862	.4802646	.3184434	.465876
married	.2523337	.4343644	.2114023	.4083157	.2111628	.4081455	.2315465	.421833	.2268367	.4187892
income (log, p.c.)	6.427306	1.119719	6.517975	1.119108	6.844183	1.052258	7.162314	1.040294	6.71642	1.123781
age in years	38.36029	17.43387	40.14838	17.02248	41.61906	16.8074	43.47379	16.29113	40.83468	17.01371
african women	.4446061	.4969365	.4410266	.496526	.4459544	.497086	.4452465	.4970092	.4442313	.496884
african men	.3272431	.4692205	.325208	.4684676	.322279	.4673637	.3211081	.4669174	.3240372	.4680177
coloured women	.0857093	.2799424	.0886051	.2841821	.0868969	.2816927	.0873326	.2823309	.0870962	.2819782
coloured men	.0672059	.2503855	.0689366	.2533545	.0671986	.2503734	.067369	.2506681	.0676618	.2511666
white women	.0314791	.1746137	.0322435	.1766518	.0328513	.1782527	.0334244	.1797478	.0324739	.1772564
white men	.0277551	.1642753	.0277294	.1642018	.0284877	.1663667	.0288074	.1672703	.0281846	.1655013
rural formal	.1060747	.3079422	.1008414	.3011284	.1017953	.3023883	.1004032	.3005466	.1023792	.3031487

tribal	.3931107	.4884553	.3550162	.4785337	.3513901	.4774194	.3285863	.4697145	.3579836	.479411
urban formal	.4369836	.4960275	.4264078	.4945705	.4385363	.4962233	.4416049	.4965944	.4359311	.4958821
urban informal	.063831	.2444588	.0565049	.2309015	.0650168	.2465632	.067369	.2506681	.0632103	.2433428

Table 7: Means and Standard Deviations for Adult Continuing Sample Members

Variable	Population: Balanced Panel of Continuing Sample Members Observed in Every Wave									
	2008		2010		2012		2014		Total	
	mean	std. dev.	mean	std. dev.	mean	std. dev.	mean	std. dev.	mean	std. dev.
life satisfaction score	5.358331	2.432539	4.775211	2.458765	4.91486	2.39382	5.456835	2.29748	5.126652	2.411012
social disorder: Composite Score 6-30	.	.	17	6.448501	17.79569	6.055448	17.35418	6.032129	17.39459	6.181759
depressed: CESD10 Score > 10	.3489861	.4766814	.2464614	.4309818	.2733564	.4457119	.2568161	.4369061	.2821455	.4500515
poor health	.2215561	.4153215	.1340595	.340741	.1471332	.3542622	.1679745	.3738685	.1683828	.3742122
good health	.2501998	.4331569	.2094408	.4069391	.3063722	.4610169	.3190584	.4661427	.2726068	.4453078
great health	.5235811	.4994769	.6559187	.4751023	.5460955	.4979038	.5127012	.4998719	.5575152	.4966894
perceived income step	2.438241	.9386587	2.467538	1.004203	2.481176	.9315722	2.514962	.9588547	2.475668	.9581042
leave neighbourhood	.1133511	.3170427	.0812473	.2732345	.1049547	.3065155	.0903639	.2867214	.0978454	.2971105
don’t know	.1025367	.3033731	.1105255	.3135666	.1201385	.3251451	.0854325	.2795428	.1045275	.3059488
stay in neighbourhood	.7841121	.4114643	.8082272	.3937241	.7749068	.4176715	.8242037	.3806722	.7976272	.4017755
years of education	7.710101	4.18298	7.895812	4.242282	7.95004	4.356036	8.073398	4.339057	7.907671	4.283356
employed	.3911537	.4880412	.3417056	.4743161	.3982407	.4895682	.4577784	.4982473	.3984676	.489591
married	.3089159	.4620773	.313777	.4640608	.3153621	.4646909	.3277032	.4694072	.31651	.4651223
income (log, p.c.)	6.271029	1.01946	6.452536	1.07216	6.776682	1.015739	7.089174	.9992874	6.651839	1.073205
age in years	38.99933	16.57846	41.25054	16.46987	43.12385	16.53254	45.65195	16.5157	42.27947	16.70746
african women	.557554	.4967096	.556427	.4968419	.5580684	.4966497	.556989	.4967747	.5572773	.4967169
african men	.2775113	.4478007	.2785766	.4483312	.2773713	.4477311	.2786275	.4483536	.27801	.448026
coloured women	.0900613	.2862886	.09252	.2897796	.0895304	.2855268	.0892406	.2851097	.0902912	.2866034
coloured men	.0413003	.1989971	.0409586	.1982087	.041639	.199776	.0414949	.1994451	.0413566	.1991169
white women	.0149214	.1212465	.0136529	.1160535	.0146335	.1200886	.0148956	.1211432	.0145445	.1197222

white men	.0090594	.0947552	.0081336	.0898256	.0091792	.0953737	.0091768	.0953611	.0089034	.0939384
rural formal	.1008527	.3011536	.1035585	.304709	.10443	.3058378	.1054662	.3071736	.1035783	.3047179
tribal	.4472422	.4972419	.4277415	.4947871	.4221099	.4939287	.4098949	.4918468	.426717	.4946088
urban formal	.3920863	.4882483	.4049383	.4909157	.4074764	.4913975	.4170767	.4931086	.40541	.4909796
urban informal	.0598188	.2371666	.0598402	.2372078	.0659838	.2482702	.0675622	.2510098	.0633772	.2436443

Summary data presented shows the population proportions for categorical variables, and average for continuous variables. Life satisfaction is close to the mean in both samples presented.

In both the balanced and unbalanced panel, the white population forms an extremely small proportion of the overall sample in each wave. Age does not trend upwards quite as one would expect, considering the same group of people are being followed over time, in the case of the balanced panel. Being married remains quite stable in the balanced panel, although it is less likely and more variable in the unbalanced panel, as expected.

The proportion employed increases quite significantly for the balanced panel in 2014, but not the the unbalanced panel, which is interesting but not remarkable, as the balanced panel is no longer nationally representative, and the figures presented are unweighted, as the random effects specification does not allow the inclusion of panel weights in Stata 14. Education remains more or less constant for the balanced panel, as well as for the unbalanced panel.

Perceptions of social disorder remain more or less constant, which one might have hoped varied more if one suspects the incidence of social ills is quite variable., However, social ills are in general quite persistent, at least in the short to medium term, and perceptions might take some time to update. Expectations of the incidence of suspected depression are difficult to substantiate, shown by the fact that it shifts about differently to self-reported life satisfaction. This is worth noting, but not much should be read into it. On average people report that they have great physical health, whether this is borne out in reality is an open question.

When ranking themselves in terms of income category, on average people consider themselves to be below the average in terms of their income, which suggests that on average they underestimate their rank in the income distribution.

A strong level of attachment to one's current neighbourhood is reported across both samples, which is interesting in the context of segregation and the pervasive notion of the incidence of social ills.

Results

Panel Regression: Determinants of Life Satisfaction
Error Corrected Generalised Least Squares Model (Random Effects)

	(I)	(II)	(III)	(IV)
Determinants	**Life Satisfaction**	**Life Satisfaction**	**Life Satisfaction**	**Life Satisfaction**
	Unbalanced	Balanced	Unbalanced	Balanced
social disorder: Composite Score 6-30			-.02444448***	-.02472501***
depressed: CESD10 Score > 10	-.55900415***	-.58489756***	-.7444156***	-.75493539***
great health	.2575489***	.23120298***	.22912767***	.22367425***
good health	.08527986**	.09528196*	.07190269	.09766913*
income perceptions	.5557316***	.53671462***	.49616473***	.47645027***
stay	.21521006***	.2472677***	.24853878***	.29313236***
leave	-.02789572	.02180555	.12925774*	.14383331*
years of education	.0047061	.00994358*	.00529189	.01165091*
employed	.14864088***	.16191161***	.14691363***	.14313159***
married	.16934367***	.12915468***	.12667142***	.08273707*
log of household income (p.c)	.19085963***	.19121749***	.26147324***	.25194758***
best age in years	-.03109148***	-.03024436***	-.01220638**	-.01450625**
best age in years (s.q.)	.00035473***	.00036615***	.00018767***	.00022825***
african women	-.96500529***	-1.0112136***	-.92434459***	-.85095993***
african men	-.99508892***	-1.0273334***	-.9950614***	-.90913206***
coloured women	.26960104***	.20247925	.23850464**	.28441429*
coloured men	.09105198	.07613838	.06041581	.14840289
white women	.03718902	-.04776285	-.09835871	-.0831203
urban informal	-.25345676***	-.34181195***	-.16923324***	-.28900754***
tribal	-.10094508***	-.11617058***	-.02923144	-.07667393*
rural formal	.00495332	.03356085	.04213538	.04569101
constant	3.5615324***	3.5593352***	3.0577679***	3.0880923***
n. (Observations)	47806	7560	34634	21648
n. (Groups)	16939	28222	14923	7559

legend: * p<0.05 ** p<0.01 ***p<0.001

Base categories: Perceived Health Poor, Uncertain About Remaining in Current Neighbourhood, No Job, Single, Rural Formal

Both the perception of social ills and indicators of depression negatively impact on one's subjective well-being. The effect is stronger for Waves 2-4, for which social disorder scores could be calculated. However, results between waves in the balanced panel, which has a far smaller sample size, are quite similar, and the effect of suspected depression actually grows once the household perception of social disorder is controlled for. Positive perceptions of physical health also increase reported life satisfaction relative to having perceived poor health.

Although low on average, perceptions of one's current rank in the income distribution does have a positive relationship with life satisfaction, as does the log of household income per capita. A preference to remain in one's neighbourhood increases life satisfaction slightly on average, relative to being uncertain about whether one would want to stay in the current neighbourhood.

The effect of education on life satisfaction is tiny, and rarely significant, it seems having a job has a bigger positive effect on life satisfaction. Being married increases life satisfaction across all the specifications. There is a slight increase in life satisfaction associated with aging, but this ultimately declines slightly.
Relative to being white and male, being black (male or female) has a strong significant negative impact on life satisfaction. The result for Coloured women is odd, and might be driven by representivity of the white sample who participate in NIDS, who might be more similar to the middle-class component of the Coloured population than to the broader White population on average. Urban informal dwellers are less satisfied than urban formal dwellers, and while tribal areas report significantly lower life satisfaction on average, this is less true for them than urban formal dwellers.

Conclusion

While one might have thought that the effect of social ills would exert more of an effect on life satisfaction, it is possible that perceptions of the actual incidence of social disorder are skewed, and that empirical data on the actual incidence of crime and disruption in the community would shed more light on the relationship between disruptive neighbourhoods and life satisfaction. The association between suspected depression and life satisfaction should be apparent, and support for mental illness should be made easily accessible to those affected. Strategies should be undertaken to improve physical health, reduce factors that exacerbate mental illness and the effect of social disorder, and develop positive social norms in neighbourhoods.

The demographic results essentially reinforce the need to enhance inclusion in South African society, through economic means i.e. improving jobs and incomes, as well as alleviating vulnerability experienced meeting basic needs.

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southern africa labour and development research unit

The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.

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