Building social cohesion in South Africa

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This paper uses data collected across the five waves of the National Income Dynamics Study (NIDS) to update a measure of social cohesion for South Africa. This updating exercise is important in validating the measure and establishing its credibility and potential use amongst policy makers. The index suggests that social cohesion has been improving over time in South Africa, albeit the gains have been small. These gains have been driven primarily by improvements in perceived trust, and more recently in Wave 5, by reduced perceptions of inequality. Conversely, our results suggest that sense of belonging has been eroded over time. Controlling for individual and time fixed effects, we examine the underlying individual, household and cluster level characteristics that are correlated with these changes in the dimensions of the social cohesion index. Our key results suggest that access to employment and earned income are positively associated with individual perceptions of trust, equality and sense of belonging. Moreover, service delivery, particularly electrification, has positively contributed towards building social cohesion. However, our results do highlight a potential tension over the types of services provided, and the extent to which access to services may expose individuals to risk (e.g. having to collect water from a stand pipe, or use an offsite toilet, both of which reduce trust) and/or the extent to which service delivery may create tensions between an individual or household's actual status relative to the mean status in their community. Incomplete service delivery appears to increase perceptions of inequality.

Introduction

Social cohesion has been the subject of analysis, theory and research since the late 19th century. Increasingly, it has also attracted the interest of international organisations, governments and policy-makers since the 1980s and 90s, as high levels of social cohesion have been linked with positive outcomes such as democratic stability and participation (Cuellar, 2009; Dhéret, 2015; Beauvais & Jenson, 2002), economic growth and greater productivity Easterly, Ritzan & Woolcock, 2009; Dhéret, 2015; Beauvais & Jenson, 2002) and an overall good quality of life for citizens (Pervaiz, Chaudhary & van Staveren, 2013; Dragolov *et al* (b)). Conversely, it has been argued that highly cohesive societies can be insular and even xenophobic, and some remain deeply skeptical that social cohesion is a concept invoked to distract citizens from material inequalities,[1] and to settle fears of powerful economic elites who belong to minority groups. Social cohesion is thus clearly a contentious idea. Nonetheless, its prominence in public policy and discourse mandates definition and measurement in order to settle these debates.

This paper contributes to this literature by using data collected across the five waves of the National Income Dynamics Study (NIDS) to construct a simple, easily replicable measure of social cohesion for South Africa, based on a method proposed in the literature by Langer et al (2016). The obvious advantage of using NIDS lies in the panel structure of the data, which in turn, allows a deeper understanding of the change in social attitudes and values over time (of the same individuals), as well as the ability to explore the kinds of factors that induce such changes.

However, it should be made explicit that social cohesion is a complex notion, and despite an expansive body of literature, there is no universal consensus on a single definition of the term (Schefer & van der Noll, 2016; Dragolov *et al,* 2013b). In order to not stay trapped in debates about definition, we adopt the definition proposed by Burns et al (2017) which defines social cohesion as *the extent to which people are co-operative, within and across group boundaries, without coercion or purely self-interested motivation.* Burns et al (2017) argue that this definition avoids abuse of the term by refraining from covertly writing into the understanding of "social cohesion" specific normative commitments or empirical hypotheses on which there can be reasonable

[1] In the U.K. context, Peter Ratcliffe (2011: 33) has suggested the policy buzzword of "community cohesion" was used to distract attention from material inequalities under the New Labour government.

disagreement[2]. Rather, this definition acknowledges that the question which other values a society should strive to realise together with cohesion, and the question which conceivable forms of social cohesion are actually realisable given human constraints, are both different from the question of what social cohesion is, and both require independent investigation. Burns et al (2017) argue that their proposed definition resonates with the concept of *ubuntu*, and with the qualitative results from a series of focus groups run with South African citizens to discuss the concept of social cohesion.

Adopting the above definition, we use data collected across the five waves of the National Income Dynamics Study (NIDS) to update a measure of social cohesion for South Africa. This updating exercise is important in validating the measure and establishing its credibility and potential use amongst policy makers. The index suggests that social cohesion has been improving over time in South Africa, albeit the gains have been small. These gains have been driven primarily by improvements in perceived trust, and more recently in Wave 5, by reduced perceptions of inequality. Conversely, our results suggest that sense of belonging has been eroded over time.

Constructing a measure of social cohesion

We use all five waves of the NIDS data to construct a measure of social cohesion, based on the approach adopted by Langer et al (2016), who conceptualise social cohesion as being comprised of three pillars or dimensions, namely, individual perceptions of trust, equality and identity. Langer *et al* (2016) rely on the Afrobarometer data to construct their measure of social cohesion. The Afrobarometer data is a multi-year, multi-country series of nationally representative cross-sectional surveys that measure citizen attitudes on democracy, governance and socio-economic issues. As such, it is better-suited, perhaps, than NIDS to measure social cohesion. However, in earlier comparative work, Burns *et al* (2017) use data collected from four different datasets – NIDS, SARB, Afrobarometer, and SAYSAS - to construct four dataset-specific measures of social

[2] The uncoerced, non-self-interested co-operativeness across society which, by common hypothesis, tends to generate peace and prosperity, can conceivably be realised in a large number of different ways. The articulation of a society into sub-groups and the relations between those sub-groups, as well as the attitudes towards one another of members of sub- groups and members of society as a whole, can take many different forms while still exhibiting uncoerced, non-self-interested co-operativeness.

cohesion for South Africa. Despite differences in the variables used to construct the indices, they find a large degree of consistency in trends in the overall index and its constituent components over time across the four datasets. This is encouraging, since consistency is an important characteristic of a robust indicator.

Building on this work, in this paper, we limit ourselves to using NIDS to construct a measure of social cohesion for South Africa over the five waves for which data is present. We select questions from NIDS that are as similar as possible to the Afrobarometer questions used by Langer *et al* (2016), and are the same questions used in the comparative exercise undertaken by Burns *et al* (2017). The questions are categorized to reflect the three pillars of the Langer et al (2016) index, namely, trust, perceived equality and identity.

Perceptions of equality

Table 1 documents the NIDS questions used to construct a measure of perceived equality. We measure perceived equality by using the NIDS data from the ladder question which asks the respondent to position themselves on a six rung ladder of relative income at different points in time (past, present and future). If one characterizes rungs 3 and 4 as being the midpoint, that is, about the same position as the average South African, then rungs one and two represent a position of perceived relative income disadvantage, whilst rungs five and six represent a position of perceived relative advantage. We code all individuals who report themselves to be on rung 3 or 4 as a value of 1, and all others (relative advantage and disadvantage) as zero. In other words, this variable reflects individuals who do not perceive themselves as significantly different than the mean or median citizen, at least in income terms. Those coded as zero we would expect to be more aware of the presence of inequality, since they fall in the tails of the income distribution.

We also construct a measure of mobility optimism using this ladder question. Our measure of optimism captures the relative distance any given individual expects to travel up the ladder in the next five years. For example, an individual who ranks themselves as currently being on step 3, but who anticipates being on step 5 in five years' time, will have an optimism score of 2/6. An individual currently on step 5 who anticipates moving to step 6 will have an optimism score of 1/6.

Finally, respondents were also asked to classify their household's income position relative to other households in their village/suburb. Again, all individuals who reported their household to be average are coded as one (no perceived difference relative to to others on average) whilst all others are coded as zero. This latter measure is very similar to a measure used by Langer *et al* (2016).

Table 1: NIDS questions used to construct measure of Perceived Equality.

Question	**Answers**	**Coding for index**
Please imagine a six step ladder where the poorest people in South Africa stand on the bottom (the first step) and the richest people in South Africa stand on the highest step (the sixth step). On which step are you today? {and on which step do you expect to be 5 years from now?}	6 = Richest	Proportion of respondents who answered three or four
	5	
	4	
	3	
	2	
	1 = Poorest	
How would you classify your household in terms of income, compared with other households in your village/suburb?	1 = Much Above Average	Proportion of respondents who answered "Average"
	2 = Above Average	
	3 = Average	
	4 = Below Average	
	5 = Much Below Average	
Optimism/Hope (constructed from ladder question)	Compares current rung on ladder to expected position in 5 years time	How far respondent expects to travel up the ladder: (Position in 5 yrs – current position)/6

Identity

There are large differences in our approach in the identity domain compared to Langer et al (2016). Whilst Afrobarometer asks directly about an individual's local identity relative to their national/South African identity, these kinds of questions are absent in NIDS. Thus, we are forced to construct a measure of identity that (weakly) proxies for an individual's sense of belonging or rootedness in their community and combine it with a reflection of their overall life satisfaction (or

subjective well-being). Simply put, out of necessity, identity is reconceptualised to "belonging". Respondents were asked to characterize how strong their preference was to continue living in their current neighbourhood. Individuals who report a strong or moderate preference to stay are coded as 1, whilst those who are neutral or express a desire to leave are coded as zero. We combine this with a measure of life satisfaction. Individuals were asked to report their life satisfaction using a 10-point scale. All individuals who reported a satisfaction level of 5 or above, (above average satisfaction) are coded as 1, whilst those expressing below average satisfaction are coded as zero. Table 2 describes the questions used to construct our measure of belonging and the associated coding.

Our approach here represents a significant conceptual departure from Langer et al (2016) and is due to data limitations. The extension of preference to stay in a neighbourhood to a measure of preference to stay in the broader community or even the country is tenuous. Neighbourhood attributes, particularly in South Africa's socio-economically and racially segregated spatial patterns, does little to convince one of the connection to the broader societal level feelings of belonging. However, we contend that an individual who feels marginalized or excluded within their neighbourhood due to their local identity should be more likely to express a desire to leave their neighbourhood and report lower levels of life satisfaction.

Table 2: Survey questions in NIDS used to construct measure of Identity/Belonging

Question	**Answers**	**Coding for index**
Think about the area (village or suburb) in which you live. How strong is your preference to continue living in this area?	1 = Strong Preference to Stay	Proportion of respondents who answered "Strong Preference to Stay" or "Moderate Preference to Stay"
	2 = Moderate Preference to Stay	
	3 = Unsure	
	4 = Moderate Preference to Leave	
	5 = Strong Preference to Leave	
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?	10 = Very Satisfied	Proportion of respondents who answered five to ten
	9	
	8	
	7	
	… 4	
	3	
	2	
	1 = Very Dissatisfied	

Trust

Finally, in the domain of trust, NIDS does not include any questions relating to institutional trust but does ask individuals to report their trust in community members and strangers respectively to return a lost wallet. These questions are similar to the Afrobarometer questions about trust in relatives, neighbours and strangers. Here, individuals who report it likely that a lost wallet would be returned are coded as 1, whilst those who report lower levels of trust (unlikely that wallet will be returned) are coded as zero. Table 3 describes the questions used to construct our measure of trust and the associated coding.

Table 3: Survey questions in NIDS used to construct measure of Trust

NIDS		
Question	**Answers**	**Coding for index**
Imagine you lost a wallet or purse that contained R200 and it was found by a complete stranger. Is it very likely, somewhat likely or not likely at all to be returned with the money in it?	1 = Very Likely 2 = Somewhat Likely 3 = Not Likely	Proportion of respondents who answered "Very Likely" or "Somewhat Likely"
Imagine you lost a wallet or purse that contained R200 and it was found by someone who lives close by. Is it very likely, somewhat likely or not likely at all to be returned with the money in it?	1 = Very Likely 2 = Somewhat Likely 3 = Not Likely	Proportion of respondents who answered "Very Likely" or "Somewhat Likely"

Descriptive statistics

Before presenting the index itself, we present descriptive statistics for the key variables that comprise the index for the five waves of NIDS in Table 4 below. Figure 1 presents the same data graphically.

Table 4: Descriptive statistics

Variables	Wave 1	Wave 2		Wave 3		Wave 4		Wave 5	
Trust Pillar (aggregated)	**0.22**	**0.28**	***	**0.25**	***	**0.26**	***	**0.29**	***
Trust neighbour to return wallet	0.29	0.36	***	0.30	*	0.33	***	0.37	***
Trust stranger to return wallet	0.14	0.19	***	0.20	***	0.19	***	0.21	***
Equality Pillar	**0.40**	**0.40**		**0.40**		**0.43**	***	**0.45**	***
Equal position on ladder	0.48	0.52	***	0.52	***	0.54	***	0.55	***
Optimism re future mobility	0.31	0.24	***	0.24	***	0.28	***	0.29	***
Income equal to others in neighbourhood	0.41	0.41		0.43	***	0.44	***	0.48	***
Belonging Pillar	**0.71**	**0.66**	***	**0.66**	***	**0.72**	*	**0.70**	**
Prefers to stay in neighbourhood	0.73	0.77	***	0.77	***	0.78	***	0.74	
Satisfied with life (score /1)	0.68	0.56	***	0.55	***	0.66	**	0.65	***
Observations	16870	21566		19108		23246		27845	

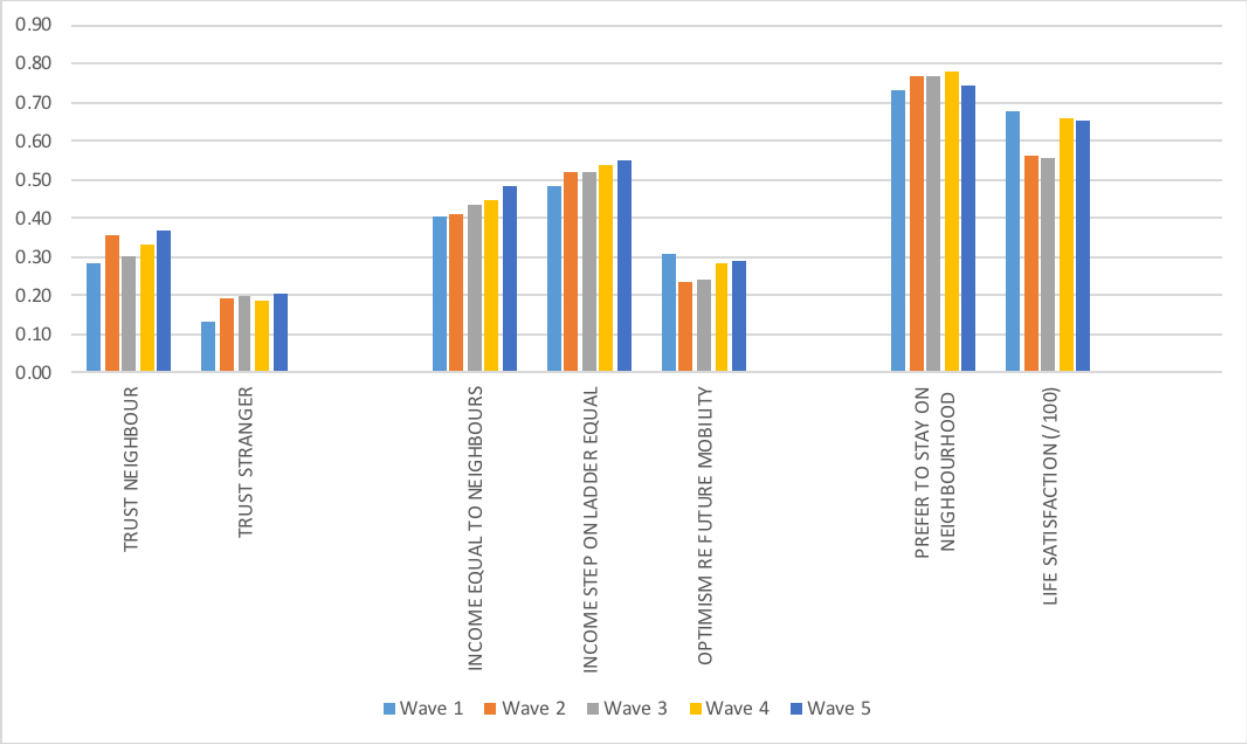
NOTES: This table reports mean differences in attitudes used to compile the three pillars (trust, equality and belonging) of the Social Cohesion Index.
Differences in means are relative to Wave 1 of the NIDS. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Trust levels are low on average. Around a third of respondents report that they think it is likely that a lost wallet would be returned to them if it were found by someone who lived in their community. This lack of trust is fairly consistent across the five waves, and never exceeds 40%. Despite these low levels of community trust, approximately three quarters of citizens report a preference to remain living in their current neighbourhoods, and there is little variation in this measure across the five waves. Unsurprisingly, respondents' trust that a lost wallet would be returned by a stranger is lower, with only 1 in 5 respondents agreeing with this statement, and again, there is little variation across the waves.

There is some variation in reported life satisfaction. Whilst over two-thirds of respondents report above average satisfaction with their lives in Waves 1, 4 and 5, life satisfaction declines significantly in Waves 2 and 3. Why this is the case is not immediately clear. Turning to perceived income equality, in the pooled sample across all five waves, just over half of all respondents characterised themselves as being on rung 3 or 4 at the time of the interview (52%). This varied

from 48% in Wave 1, increasing to 55% by Wave 5. Interestingly, only 4% of respondents classified themselves as being on Rung 5 or 6 (thereby enjoying a relatively advantaged income position) compared to 45% who reported themselves in a position of relative income disadvantage. On average, most respondents expect to advance between one or two steps up the income ladder in the next 5 years. This is fairly consistent across the 5 waves, although the trend does seem to be towards greater optimism concerning future mobility. Finally, just over 40% of respondents reported their household income to be about the same as other households in their neighbourhood (Income equal), and again, this perception improves slightly over time, reaching nearly 50% of the sample by Wave 5.

Figure 1: Trends in perceived trust, equality and belonging over 5 waves of NIDS



Putting it all together

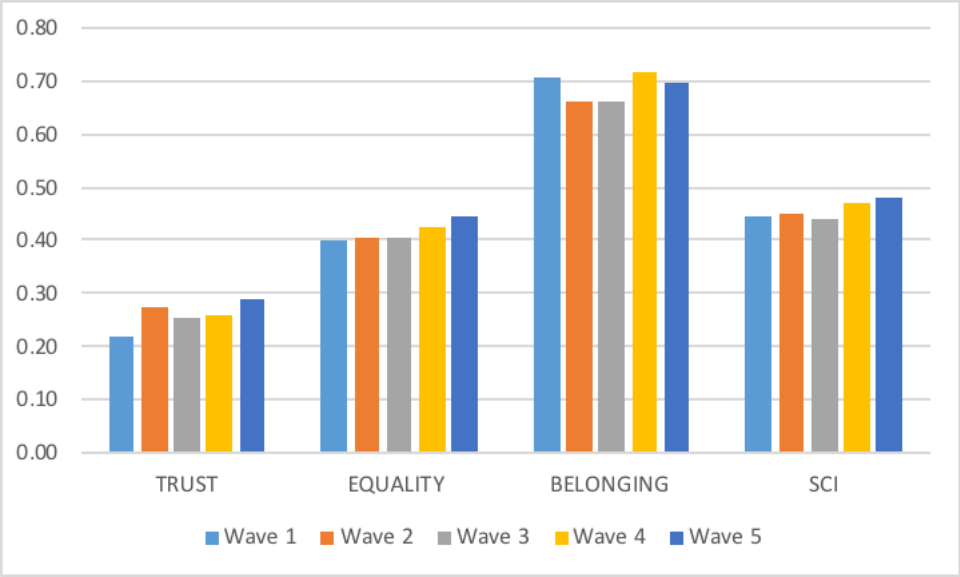
The final social cohesion index (SCI) is weighted equally between the three pillars – perceived equality, trust and identity. The equality measure is calculated by averaging the responses of

interest across the relevant equality questions, namely, household relative income position in the community, perceived individual income rank, and optimism concerning future income prospects. The trust component is calculated in a similar fashion – we obtain an average response for each trust question (since all are coded as 1/0), and then we calculate the average across the different trust measures to obtain the trust component for the index. This means that the trust indicator reflects the weighted average of the belief that a lost wallet would likely be returned either by a stranger or someone living in one's own community. Again, this indicator has a positive interpretation – higher values indicate higher trust. The identity measure reflects a sense of belonging and life satisfaction. This indicator reflects the average of two variables, namely, the number of individuals who report high life satisfaction and the number of individuals who report a preference to stay in their current neighbourhoods.

Figure 2 presents a graphical depiction of the constituent pillars of the SCI, as well as the index itself. Interestingly, since 2012 (Wave 3), all three dimensions/pillars have shown some improvement. Reported trust has increased, as have perceptions of equality, and a sense of belonging. However, relative to baseline, the story is more varied. Trust initially increased between Wave 1 and 2, then declined slightly in Wave 3, before increasing again. But relative to baseline, trust levels in any given wave have been significantly higher. Perceptions of equality have been slower to change, in the sense that relative to Wave 1, differences in the mean perception of equality only becomes significant in Waves 4 and 5. Conversely, the sense of belonging initially declined significantly relative to baseline, recovering only in Waves 4 and 5. Despite these trends, it is also worth noting, however, that the magnitude of the changes has been relatively small. This is to be expected given that these data reflect changes in perceptions and attitudes of the same individuals over time, and thus, one would expect less variation than compared to a series of repeated cross-sections[3].

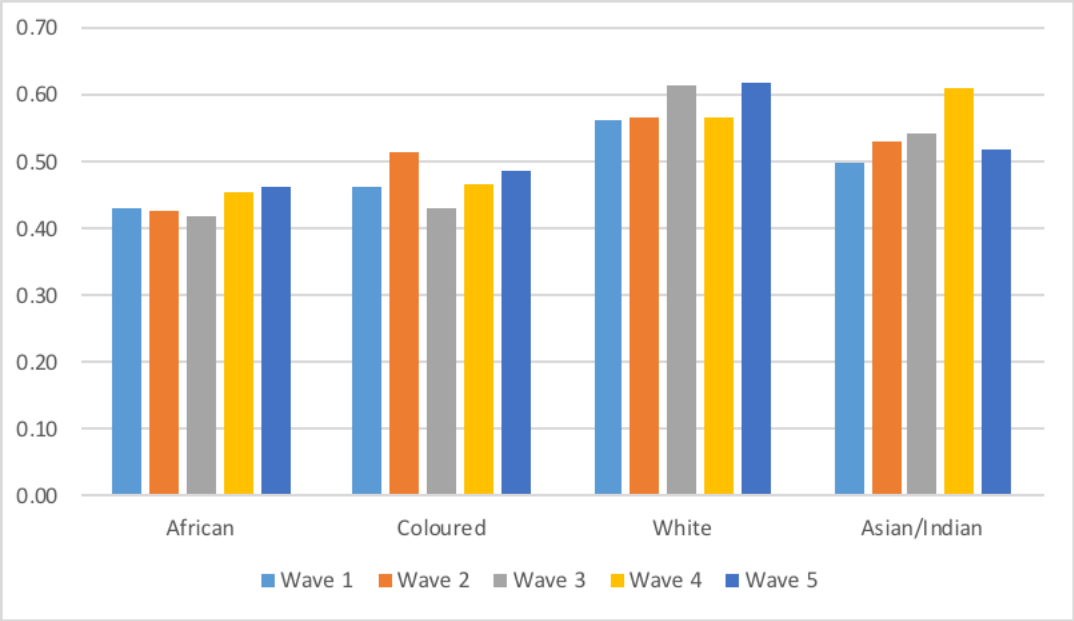
[3] Burns et al (2017) demonstrate this to be the case in their comparative exercise using 4 different data sets.

Figure 2: Variations in perceived trust, equality and belonging by wave



A final issue worthy of consideration is that it may be important to adjust the SCI to control for variation in the survey responses and perceptions of individuals from different sub-groups. If there is considerable variation in responses across groups, this would suggest a society that is less cohesive than one where there is a high degree of consistency in responses irrespective of group affiliation (Langer et al, 2016). In earlier work, Burns et al (2017) have demonstrated that in the South African context, the largest variations in the survey questions used to construct the social cohesion index typically occurs in relation to race. The same holds true for NIDS. This is demonstrated in Figure 3 below which uses the data from the 5 waves of NIDS and constructs a social cohesion index for each race group. What is clear is that there is a fair degree of variation in the magnitude of the SCI by race group as well as variation in the trend over time, and this stems from underlying differences in responses to the variables that comprise the SCI pillars.

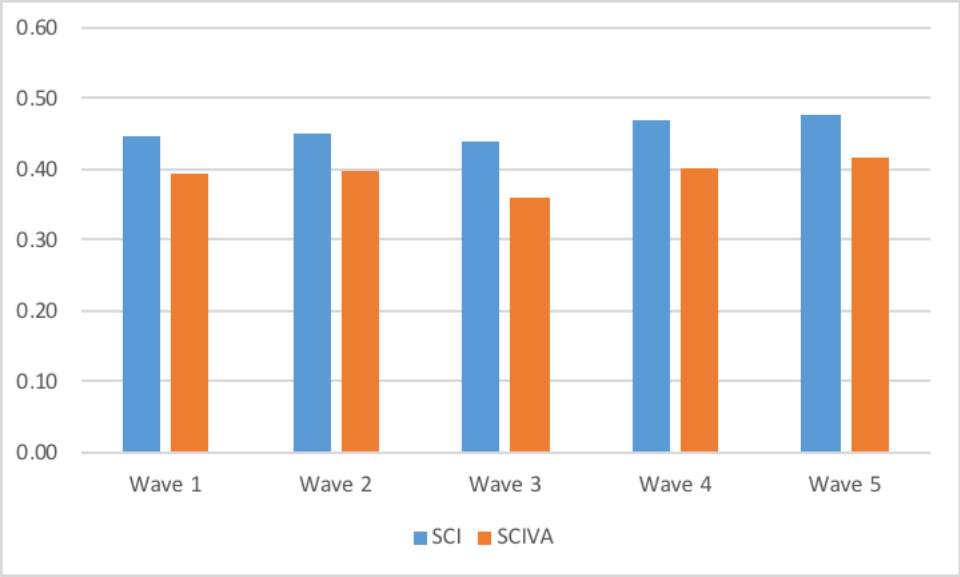
Figure 3: Social cohesion index by race subgroup



Thus, following Langer et al (2016), we produce a Variance Adjusted SCI (SCIVA) by producing an SCI for different race groups, and then modify the national SCI by the co-efficient of variation among the sub-groups. This allows for the computation of an inequality-adjusted SCI at the national level (much like the inequality adjusted Human Development Index). Figure 4 below presents the estimates of the unadjusted and variance-adjusted SCI alongside each other for each dataset. Across all five waves, the effect of controlling for variation in subgroup responses has the effect of reducing the national SCI, and reducing the difference in the final SCI estimates between datasets. The results suggest that between 2008 and 2010, social cohesion may have improved. This accords well with existing narratives around the effects of the 2010 World Cup. However, between 2010 and 2012, social cohesion appears to have dipped slightly before recovering, and following an upward trajectory[4].

[4] Again, it is important to note that similar trends are documented by Burns et al (2017) across 4 different datasets, suggesting that even though the NIDS questions may not be ideally suited to measuring social cohesion, they do a decent job of picking up the trend.

Figure 4: SCI vs SCIVA



Determinants of key indicators that constitute social cohesion

The importance of measuring and tracking social cohesion over time should not be underestimated. This is an important objective in its own right as it allows policy makers to assess whether particular policy initiatives and programmes improve or worsen social cohesion, suing a quantitative and consistent measure. Since there are a vast array of policy possibilities that might be marshalled in the fight to reduce persistent poverty and address structural inequality, measuring and tracking social cohesion rigorously provides a disciplining rule to help in the prioritization of these possibilities. Understanding the interplay between persistent inequality and structural poverty and social cohesion provides a strong, and necessary, disciplining framework within which to make important policy choices.

With this is mind, we now explore which kinds of individual, household and local area characteristics might build trust, improve perceptions of equality, and promote belonging. Simply put, identifying the kinds of characteristics that positively correlate with these dimensions of social cohesion may provide useful insights in terms of which kinds of policy levers might be more effective at building social cohesion.

Tables 5-7 reports the results from OLS regressions[5] which explore whether there are any significant socio-demographic predictors of individual perceptions of trust, belonging and perceived equality. The data are pooled across all four waves of NIDS, and we control for individual and time fixed effects. Importantly, these regressions examine the predictors of an individual response in any given social cohesion indicator domain, that is, what predicts the likelihood that an individual is trusting, perceives no income inequality in their position relative to the average South African, and feels a sense of rootedness and life satisfaction in their existing community. Table 5 examines the correlations between individual characteristics and the SCI dimensions, whilst Tables 6 and 7 examine household and cluster level attributes respectively[6]. In every instance, we focus only on those results which are robust across specifications.

Individual characteristics

Our results suggest that older individuals are significantly less trusting, and are less likely to perceive themselves as having the same economic standing as others (the average). However, older individuals are more likely to report a greater sense of belonging. These results are robust to the inclusion of household controls, but once cluster level controls are included, the only result to remain is that older individuals are significantly less trusting. Perceptions of equality and belonging retain their signs, but lose significance. This is not unexpected since one's perceptions of equality are likely to be determined by one's lived experience and cluster, namely one's neighbourhood, and our measure of belonging depends directly on how individuals feel about their neighbourhood. In sum, there is a trust deficit amongst older citizens relative to younger individuals. Whether this indicates a generational shift in attitudes, or simply reflects a lifecycle effect is not immediately clear.

Education is positively associated with trust and perceptions of equality, but this is an insignificant association. More importantly, as individuals acquire more education, they exhibit lower levels of

[5] See Table A2 in the Appendix for descriptive statistics by wave of the variables included as controls in the regressions.

[6] Whilst the estimates come from a common set of regressions, we present the results separately due to the length of the regression table.

belonging. This need not be unexpected if one expects that more educated individuals have greater mobility prospects and may thus, be more likely to report a willingness to leave their neighbourhoods. Indeed, once one includes cluster attributes, education is no longer significant.

Table 5: Correlation between individual characteristics and SCI dimensions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Trust	Equality	Belong	Trust	Equality	Belong	Trust	Equality	Belong
				Individual Characteristics					
Age in years	-0.81*	-0.77**	1.07***	-0.98**	-0.65*	1.22***	-1.19*	-0.65	0.72
	(0.47)	(0.33)	(0.40)	(0.48)	(0.34)	(0.40)	(0.63)	(0.44)	(0.51)
Years of completed education	0.07	0.03	-0.51***	-0.00	-0.12	-0.54***	0.20	0.05	-0.14
	(0.19)	(0.13)	(0.16)	(0.20)	(0.14)	(0.17)	(0.27)	(0.19)	(0.22)
Employed	-1.66***	3.07***	1.38***	-0.63	1.20***	0.76	-0.22	2.29***	1.40**
	(0.45)	(0.33)	(0.40)	(0.62)	(0.45)	(0.53)	(0.81)	(0.58)	(0.67)
Grant Income	-0.00	0.00***	0.00***	-0.00	0.00*	0.00*	0.00	0.00**	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Married	0.73	1.67***	2.44***	0.98	1.21**	2.07***	0.69	0.43	1.01
	(0.83)	(0.59)	(0.68)	(0.85)	(0.60)	(0.69)	(1.26)	(0.90)	(0.98)
Rural	1.43	0.75	-2.59***	1.22	-1.83**	-4.83***	49.58***	-26.02***	-1.71
	(1.01)	(0.73)	(0.94)	(1.16)	(0.82)	(1.05)	(2.24)	(1.60)	(1.80)
N	93,822	96,222	96,950	91,511	93,798	94,524	37,731	38,611	38,939
R-sq	0.42	0.49	0.45	0.42	0.50	0.46	0.32	0.41	0.36
HH controls	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Cluster controls	No	No	No	No	No	No	Yes	Yes	Yes

At an individual level, individuals who are employed report significantly less perceived inequality, and are significantly more likely to report a stronger sense of belonging. This is robust to the inclusion of household and cluster level controls. Similar trends are seen in terms of grant income receipt, although the co-efficients are negligible.

Household characteristics

We turn now to the associations between household level attributes and dimensions of the social cohesion index. Individuals in households with relatively higher household income report lower

perceived inequality, and a stronger sense of belonging. This accords with the broader literature on the links between economic growth, prosperity and social cohesion, namely that one might expect higher social cohesion as incomes rise. Importantly though, notice that the share of grant income as a proportion of total household income does not have the same effect, and in fact, is negatively associated with trust. So the source of the income, being earned rather than unearned, may be important. This underlines the earlier result concerning the association between employment at the individual level and the dimensions of the SCI. Moreover, to the extent that old age is correlated with grant receipt (in the form of the OAP), this result concerning share of grant income in household income is consistent with the earlier result of a trust deficit for older individuals.

Perhaps some of the more important results have to do with household access to services. In particular, individuals in households with access to electricity are significantly more likely to report a stronger sense of belonging and less perceived inequality. Individual perceptions of inequality are also significantly lower in households with access to streetlights, and their sense of belonging is positively associated with refuse removal (most likely operating through life satisfaction).

Individuals in households with access to electricity report significantly lower levels of trust. Why this should be the case is not immediately clear, although one might speculate that with electrification, one becomes more aware of activities in one's immediate vicinity, or possibly, one becomes a target. However, individuals in households with access to offsite flush toilets report significantly lower trust levels too. This is not surprising in light of recent service delivery protests and unhappiness over sanitation infrastructure in particular.

Table 6: Correlation between household characteristics and SCI dimensions

	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Trust	Equality	Belonging	Trust	Equality	Belonging
Household Income	-0.44	3.33***	2.21***	-0.53	3.40***	1.59***
	(0.29)	(0.20)	(0.25)	(0.42)	(0.30)	(0.35)
Fraction of female household members	0.65	0.99	0.39	0.46	3.26**	-1.36
	(1.24)	(0.87)	(1.07)	(2.12)	(1.52)	(1.68)
Dependency ratio	0.91	1.03	3.13***	1.84	0.01	-0.07
	(1.14)	(0.81)	(0.95)	(1.54)	(1.11)	(1.24)
Mean household years of education	0.23	0.40***	0.11	0.22	0.20	-0.10
	(0.15)	(0.11)	(0.13)	(0.24)	(0.17)	(0.19)
Fraction of employed household members	-2.45***	1.18*	0.21	-1.23	0.16	1.12
	(0.90)	(0.64)	(0.77)	(1.29)	(0.92)	(1.07)
Share of household income from grants	-1.94**	-0.92	0.99	-2.29**	0.04	0.99
	(0.82)	(0.58)	(0.71)	(1.15)	(0.81)	(0.96)
Access to piped water	2.76***	0.90*	-0.86	1.44	0.14	-2.43**
	(0.69)	(0.49)	(0.60)	(1.16)	(0.82)	(0.95)
Access to electricity	-4.33***	2.36***	2.36***	-5.01***	3.15***	1.65*
	(0.62)	(0.43)	(0.52)	(1.11)	(0.77)	(0.90)
Streetlights in neighbourhood	1.83***	2.29***	-0.33	-0.18	2.76***	-0.18
	(0.55)	(0.39)	(0.47)	(0.85)	(0.61)	(0.72)
Flush toilet onsite	0.90	-0.83	0.47	0.57	-1.87*	-0.22
	(0.84)	(0.58)	(0.72)	(1.44)	(1.01)	(1.18)
Flush toilet offsite	-2.73***	0.40	1.42**	-4.15***	-0.32	0.98
	(0.84)	(0.58)	(0.72)	(1.45)	(1.03)	(1.20)
Received housing subsidy	-1.08*	-0.44	0.72	0.35	-0.03	1.02
	(0.56)	(0.41)	(0.48)	(0.90)	(0.66)	(0.74)
Refused collected	-0.19	1.16**	3.94***	-1.42	1.10	3.28***
	(0.68)	(0.49)	(0.61)	(0.99)	(0.72)	(0.86)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Community controls	No	No	No	Yes	Yes	Yes
Observations	91,511	93,798	94,524	37,731	38,611	38,939
R-squared	0.42	0.50	0.46	0.32	0.41	0.36

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Cluster characteristics

Finally, we turn to the association between individual perceptions of trust, inequality and belonging and cluster characteristics. Whilst the cluster controls are imperfect, they serve as a blunt proxy for prevailing neighbourhood conditions.

At the individual level, employment has a positive association with individual perceptions of equality and sense of belonging. However, no significant association exists between mean employment in the cluster and individual perceptions of inequality and belonging. Rather, in clusters with higher mean employment, individual trust appears to be significantly reduced.

As the fraction of households in a cluster with electricity increases, this increases perceived inequality and promotes higher trust. Similarly, being in a well-illuminated cluster (widespread streetlight coverage) promotes trust and reduces perceived inequality. Taken together, one consistent result here is that electrification (both in the household and in the form of neighbourhood lighting) promotes trust. However, the result also suggests that incomplete service delivery could exacerbate perceptions of inequality. As some households in a cluster receive electricity whilst others do not, this may awaken perceptions of inequality. This effect is not present with streetlights since these services are not household specific, and are a public good shared by all. Hence, the provision of public goods services may work better at reducing perceived inequalities.

Conversely, as the fraction of household with access to piped water in the cluster increases, this increases individual trust. This is interesting, and again, points to a tension over the types of services provided, and the extent to which access to services may (a) expose individuals to risk (e.g. having to collect water from a stand pipe, or use an offsite toilet) and (b) create tensions between an individual or household's actual status relative to the mean status in their community. Incomplete service delivery appears to increase perceptions of inequality.

Table 7: Correlation between cluster characteristics and SCI dimensions

VARIABLES	Trust	Equality	Belonging
Mean employment	-14.60***	-0.04	0.12
	(2.39)	(1.72)	(2.02)
Mean onsite flush toilets	-4.71*	1.14	0.85
	(2.58)	(1.90)	(2.13)
Mean offsite flush toilets	-2.23	2.95	2.39
	(2.58)	(1.92)	(2.14)
Fraction of household with access to electricity	3.26*	-3.00**	-0.37
	(1.82)	(1.29)	(1.50)
Mean household income in cluster	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)
Fraction of households with access to piped water	6.14***	0.20	0.41
	(1.88)	(1.35)	(1.55)
Fraction of housing subsidy recipients	-2.38	-0.63	-1.99
	(1.72)	(1.28)	(1.44)
Mean government grant income	-0.00**	-0.00***	-0.00
	(0.00)	(0.00)	(0.00)
Mean dependency ratio	4.15	2.54	-1.42
	(4.99)	(3.41)	(3.85)
Mean streetlights	9.52***	2.27*	1.04
	(1.74)	(1.27)	(1.47)
Fraction of married couples	11.63**	1.81	7.92**
	(4.66)	(3.30)	(3.86)
Wave 2	11.99***	-0.69	-8.60***
	(1.69)	(1.19)	(1.37)
Wave 3	11.01***	0.62	-10.43***
	(2.83)	(1.97)	(2.28)
Wave 4	13.30***	3.98	-5.01
	(4.42)	(3.06)	(3.56)
Wave 5	19.85***	6.83*	-9.27**
	(5.84)	(4.07)	(4.72)
Individual controls	Yes	Yes	Yes
Household controls	Yes	Yes	Yes
Observations	37,731	38,611	38,939
R-squared	0.32	0.41	0.36

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Trends over time

Finally, in table 7, we report the time fixed effects for the individual components of the SCI. As reported earlier, reported trust has shown significant improvements in each subsequent wave of NIDS. In contrast, perceptions of equality have been far more static, only showing a significant increase (relative to Wave 1) in Wave 5. This suggests that shifting perceptions of inequality may be far harder to do. Finally, the results suggest that over time, individual sense of belonging has weakened considerably.

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Still to do:

Public holiday analysis

Conclusion

APPENDIX

Table A1: Underlying dimensions of SCIVA

	AFRICAN			COLOURED			WHITE			INDIAN/ASIAN		
	TRUST	EQUALITY	BELONGING	TRUST	EQUALITY	BELONGING	TRUST	EQUALITY	BELONGING	TRUST	EQUALITY	BELONGING
Wave 1	0.22	0.38	0.67	0.13	0.44	0.81	0.31	0.49	0.88	0.17	0.52	0.79
Wave 2	0.28	0.37	0.62	0.26	0.47	0.79	0.26	0.56	0.87	0.14	0.57	0.88
Wave 3	0.25	0.38	0.62	0.16	0.42	0.70	0.40	0.55	0.88	0.23	0.56	0.84
Wave 4	0.26	0.41	0.69	0.14	0.47	0.79	0.32	0.51	0.85	0.43	0.57	0.82
Wave 5	0.28	0.43	0.68	0.22	0.48	0.75	0.44	0.55	0.86	0.35	0.54	0.63

Table A2: Descriptive statistics for regression controls by Wave

VARIABLES	WAVE 1	WAVE 2	WAVE 3	WAVE 4	WAVE 5
	Individual Characteristics				
Female	0.54	0.53	0.54	0.53	0.53
Age in years	36	36	37	37	37
Black African	0.78	0.78	0.79	0.79	0.79
White	0.11	0.10	0.09	0.09	0.09
Coloured	0.09	0.09	0.09	0.09	0.09
Indian/Asian	0.03	0.03	0.03	0.03	0.03
Years of Education	9.01	9.24	9.36	9.68	10.11
Employed	0.43	0.38	0.41	0.47	0.47
Grant income	144	192	239	259	291
Married	0.31	0.30	0.28	0.28	0.28
Rural	0.63	0.62	0.62	0.62	0.65
Western Cape	0.11	0.11	0.12	0.12	0.12
Eastern Cape	0.12	0.12	0.12	0.12	0.11
Northern Cape	0.02	0.02	0.02	0.02	0.03
North West	0.07	0.07	0.07	0.07	0.05
Mpumalanga	0.08	0.08	0.07	0.07	0.09
Limpopo	0.10	0.10	0.10	0.10	0.09
Free State	0.06	0.06	0.06	0.05	0.05
Kwa-Zulu Natal	0.18	0.19	0.18	0.19	0.19
Gauteng	0.26	0.26	0.27	0.25	0.28
	Household Characteristics				
Dependency ratio	0.32	0.34	0.33	0.32	0.31
Mean years of education	7.39	7.57	7.72	8.02	8.40
Fraction employed	0.43	0.38	0.42	0.47	0.47
Share of household income from grants	0.22	0.20	0.22	0.19	0.17
Access to piped water	0.90	0.93	0.92	0.91	0.93
Access to electricity	0.83	0.82	0.87	0.89	0.90
Access to streelights	0.53	0.55	0.56	0.55	0.59
Access to onsite flush toilets	0.28	0.46	0.36	0.35	0.40
Access to offsite flush toilets	0.29	0.14	0.25	0.27	0.23
Recipient of housing subsidy	0.08	0.18	0.19	0.20	0.19
Refuse collected	0.58	0.57	0.61	0.60	0.64
	Cluster characteristics				

Mean employment	0.44	0.37	0.37	0.41	0.38
Mean onsite flush toilets	0.30	0.41	0.32	0.31	0.31
Mean offsite flush toilets	0.27	0.12	0.20	0.20	0.17
Access electricity	0.84	0.82	0.89	0.90	0.91
Mean household income	6904	8169	8416	12146	10936
Fraction of households with access to piped water	0.91	0.83	0.81	0.80	0.79
Fraction of housing subsidy recipients	0.09	0.19	0.20	0.21	0.23
Mean government grant income	575	569	817	994	1199
Mean dependency ratio	0.40	0.36	0.34	0.30	0.26
Mean streetlights	0.53	0.57	0.56	0.55	0.53
Fraction married	0.26	0.26	0.32	0.30	0.27
Observations	16870	21566	19108	23246	27845