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Social Cohesion and inequality in South Africa

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Social Cohesion and inequality in South Africa

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Abstract

We examine recent trends in social cohesion and inequality, and the relationship between the two in South Africa using date from the South African Reconciliation Barometer Surveys. Given that the country's history of long-term racial and socioeconomic segregation, we use the extent of inter-racial interactions as our main approximation of social cohesion. We show that although there is some improvement in the extent of inter-racial interactions over time, even today less than a third of South Africans often or always talk or socialize with someone from a different racial group. We use a multidimensional Living Standards Measure to assess the level of well-being and the level of inequality. Our inequality analysis of this measure indicates that since 2008 both vertical and horizontal (between races) inequality declined significantly. These trends can be attributed to progress made in the provision of basic services (i.e. water, electricity) and ownership of household assets in South Africa. In contrast, when we focus on subjective or perceived inequality, it is clear that large proportions of South Africans (about 70 percent) perceive that the extent of inequality (the gap between the poor and the rich) has not changed much or has even worsened over time.

The key finding of our quantitative work is a significant relationship between individuals' perception of inequality and their level of inter-racial interactions. Individuals who perceived that the gap between the rich and the poor is getting worse are less likely to participate in inter-racial socializations, while those who perceived that the gap is getting better are more likely to participate in inter-racial socializations. This finding remains strong and significant even after controlling for the influence of LSM, race, education, trust and other factors. Indeed, a number of these factors are also correlated with higher inter-racial interactions. Individuals who have higher education levels, a higher LSM and a better relative economic position are more likely to be involved in inter-racial socialization. In both the descriptive and multivariate analysis Africans and Whites are shown to have lower levels of inter-racial interactions than Coloureds at all LSM levels.

The provincial-level multivariate analysis is able to examine the relationship between a full social cohesion index and inequality in LSMs. These results suggest that vertical inequality in living standards is correlated with the level of social cohesion. Higher inequality may adversely affect social cohesion as it reduces inclusiveness.

Key words: Social cohesion, inequality, living standards measurements, South Africa.

JEL Classification: D63, I31, Z13.

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Introduction

Despite various progressive policies and legislation that have been put in place to redress the inequalities of the past, structural inequalities continue to persist in post-Apartheid South Africa (NPC, 2012).[‡‡] Currently, the estimated Gini coefficient for income inequity is 0.68 and more than half of the country's population lives under the national poverty line of R992 per month per person (Stats SA, 2017a, 2017b). In addition, although progress has been made in integrating schools and other public places, South Africans remain sharply divided along racial and socioeconomic lines (Durrheim & Dixon, 2010; NPC, 2012). These challenges could further exacerbate the existing social problems and may have an adverse effect on long-run economic development and sustainability of democracy in the country (NPC, 2012: p. 458; MISTRA, 2014). As a response to these challenges, in recent years, social cohesion and nation-building strategies have resurfaced in policy discussions as a means to achieving an inclusive and united South Africa (DAC,2012, Palmary, 2015; Abrahams, 2016).

The importance of social cohesion in promoting an inclusive economy is also documented in some international literature (see Ritzen et al., 2000; Easterly et al., 2006). Among other factors, sufficient social cohesion is expected to play a key role in building quality public and private institutions, which in turn may affect policy reforms and development outcomes that promote economic and social inclusiveness (Easterly et al., 2006). In the context of South Africa, it is emphasized that building a cohesive society requires putting more emphasis on reducing poverty, inequalities, social divisions, and exclusions (DAC, 2012; NPC, 2012). However, empirical research that analyses the potential relationships between the level of social cohesion and the factors that relate to the building of social cohesion is very limited.

In this paper, we examine recent trends of social cohesion and inequality in South Africa, and the relationships between the two. Rigorous quantitative analysis of social cohesion requires reliable measures of social cohesion based on a coherent definition. Indeed, the development of such an indicator of social cohesion is the objective of another component of the AFD-IJR-UCT partnership project, under which this paper is prepared (see Burns et al., 2017a). This social cohesion index (SCI) is compatible with a non-normative definition of social cohesion and builds on the concepts of solidarity and cooperation, within and across group boundaries. It is constructed to fit, as much as possible, the South African reality and is computed using five dimensions: the feeling of belonging, cooperation, institutional trust, relationships, and identity. In the latter part of the paper, we make use of this full SCI to examine the relationship between social cohesion and both vertical and horizontal measures of inequality

For most of the paper, we focus on one key component of the SCI that belongs to the social relationships dimension; namely, the extent of inter-racial interactions and socialization (IRIS). This particular component of the SCI is an important starting point for promoting social integration and social cohesion in South Africa given that such interactions were institutionally segregated along race lines during the Apartheid era and this has left a challenging legacy for South Africa's post-apartheid society (Hofmeyr & Govender, 2015). Some argue that an increase in the quality interactions between South Africans from different racial groups is important for reducing prejudice and bias (Bornman,2016), which in turn may improve intergroup cooperation

[‡‡] National Planning Commission. 2012. National Development Plan 2030.

on joint projects and policies aiming to reduce inequality and poverty (Dixon, Durrheim & Tredoux, 2007,2010; Durrheim & Dixon, 2010).

We draw on data from the South African Reconciliation Barometer Surveys (SARBS) for our analysis. SARBS is a nationally representative public opinion survey that has been conducted by the Institute for Justice and Reconciliation (IJR) since 2003. The 2001 census enumerator areas (EAs) are used as a sampling frame for the survey (IJR, 2014). Three stage sampling is used to select individuals aged 16 and above. In the first stage, sample EAs are selected using random sampling. Within each EA households are randomly selected. Then, the specific respondent from each household was selected for an interview. A final sample of about 3500 individuals who are aged 16 and above are selected (2000 from metro areas and 1500 from non-metro areas) to represent adult South Africans.

In this paper, we examine both objective and perceived inequality measures. To measure economic inequality objectively we use the LSM provided by IJR. The LSM is a composite score (an asset index) that combines various living standard indicators. The composite score is divided into 10 LSM deciles. Thus, the LSM deciles represent respondents' relative position in the socio-economic distribution. We calculate both vertical inequality (the Gini coefficient) and horizontal inequality between race groups (the group coefficient of variation) measures using the LSM indicator. In addition to LSM deciles, SARBS reports the respondents' perceived assessments of inequality in South Africa. Respondents were asked whether they feel that inequality has reduced or increased, or remained the same in recent periods in South Africa compared to its level in 1994.

In calculating horizontal inequality, we use race as a grouping variable in measuring horizontal inequality. The four historical racial categories in South Africa are- African/Black, Coloured, Asian/Indian and White.[§§] The use of historical racial categories is particular to analysis pertaining to social cohesion in the South African context, given structural legacies and socioeconomic inequalities following decades of colonial rule and apartheid. Apartheid-era laws and policies were implemented to separate citizens by racial categories through the segregation of public facilities, interaction, social events and limiting social contact. More than two decades since the demise of apartheid rule, the legacy of racial categorisation continues to form part of the everyday realities of South Africans (Wale & Foster, 2017). Living spaces are still mostly segregated along the lines constructed during apartheid (Christopher, 2005), and the centrality of racial categories in various facets of South Africans' lives – including in the form of incidents of racism, individual and cultural identities, as well as in considering redress and restitution strategies (Leko-Everett et al, 2017).

Furthermore, the importance of both inequality and race in terms of social cohesion is evident from SARB findings - as they had been identified as the primary sources of social division by the majority of respondents to SARB's survey in 2015 (Hofmeyr & Govender, 2015). It can be argued that, for contemporary South Africans, both of these (historical) sources of division continue to pose limitations to building a cohesive society and we explore both in our quantitative analysis.

[§§] Four racial categories were used during apartheid in South Africa, namely African/Black, Coloured, Asian/Indian and White. These categories – and "race" are used in this paper for analytic purposes only.

Thus, our contribution in this paper is an attempt to add a quantitative discussion of social cohesion and inequality to the South African literature, while paying due regard to the continuing importance of race. In section 2 we provide a brief overview of the literature and of the conceptual framework on which we base our analysis. We then focus, in section 3, on analyzing the recent trends in IRIS and inequality. In section 4 we provide a first attempt at modelling the link between social cohesion and inequality and section 5 concludes.

1. Brief overview of the literature and conceptual framework

Social cohesion is a complex concept to define and measure (Chan et al., 2006). The complexity of defining social cohesion entails that, quite often, in order to characterize social cohesion, we describe it by its absence. Thus, an uncohesive society can be defined by mistrust, violence, social conflicts and marginalization of its individuals. In the literature, however, there are theoretical confusions as to what the term social cohesion constitutes (see Chan et al., 2006). The term social cohesion is often linked with ideas of trust and solidarity, or social integration, and often it also incorporates notions such as social capital, poverty and inclusion (Chan et al., 2006). For instance, according to the OECD, one of the major dimensions of a cohesive society is one that fights "excessive inequalities" – placing emphasis on active involvement of society in achieving social cohesion and not only to social cohesion as being an outcome or status quo, while the International and Ibero-American Foundation for Administration and Public Policy sees social cohesion as an attribute of societies implying "equality of opportunity". Along similar lines, Langer et al. (2016) use the perception of inequality as one of the three dimensions defining the level of social cohesion of a society along with identity and trust.

Chan et al., (2006) argue persuasively that in defining social cohesion, it is important to distinguish between the constituents of social cohesion and the factors that may deter or promote the level of social cohesion in a society. For instance, considering inequality or poverty as one dimension of social cohesion means it is difficult to empirically investigate the potential relationship between the level of social cohesion and the level of inequality or poverty in a society. It can be argued that equality in access to services and economic opportunities are important in improving participation in a society, particularly for disadvantaged communities, and may improve social cohesion (Dieckhoff & Gash, 2015). Furthermore, an equitable distribution of resources is a basis for trust in institutions, reducing social tensions both within families, communities, and society at large (Rothstein & Uslaner, 2005).

The definition of social cohesion we will be adopting in this paper is based on the work of Burns et al. (2017a, b), who propose an approach to social cohesion which avoids normative commitments or empirical hypothesis which can be subject to disagreement. Thus, social cohesion is seen as the extent to which people are co-operative, within and across group boundaries, without coercion or purely self-interested motivation. Based on this definition, Burns et al. (2017a) constructed a social cohesion index (SCI) for South Africa at province level. The SCI proposed builds on the concepts of solidarity and cooperation, within and across group boundaries, and is computed using five dimensions: the feeling of belonging, cooperation, institutional trust, relationships and identity. (Indicators for each dimension are provided in Table 3A in the Appendix). Thus, one of the main differences between our approach of social cohesion and those proposed by the OECD, the EU or Langer et al. (2016) is that it does not make any

claims on the state of inequality. This allows us to acknowledge that a hierarchical society can also be seen as cohesive by its members and that a certain type of social cohesion (that mostly implies trust) can co-exist with some level of inequality. Such an approach leaves open for investigation the specificities of the relationship between social cohesion and inequality in the context of South Africa, which is the main aim of this paper.

In line with this, for most of this paper we use the extent of inter-racial interactions as one approximation of social cohesion in South Africa. These inter-racial social interactions constitute one element of the SCI (belonging to the social relations dimension) and allow for a focus on SCI at the level of individuals. The SARB data allow us to distinguish between two different types of social interactions that capture different phenomenon: - how often do people talk to individuals from other racial groups on an everyday basis and how often do people socialize with individuals from other racial groups. The first outcome gives an indication of social and racial mix in terms of public spaces - while the second relates to how and with whom people choose to dedicate their free time. Both measures are very complementary.

The frequency and types of social interactions are first indicators of the 'glue' that binds together a society, as social cohesion has often been described. Indeed, when going above the individual level, we can think of social cohesion as a sum of various dimensions that make the 'ideal society'. Considering that South Africa suffered long-term racial and socioeconomic segregation imposed by apartheid, looking at how interactions among racial groups have evolved and how much do racial groups interact is particularly relevant in that context.

We acknowledge that a society with a higher inter-racial interaction does not necessarily have a higher cohesion. In fact, under certain circumstances, a society can be more cohesive even with lower social interactions. Inter-racial social interactions may be more closely related to social integration. However, contact theory posits that an increase in positive and sustained contact between members of different groups (e.g. racial or ethnic groups) reduces intergroup prejudice and builds positive relations between communities that are historically divided (Allport, 1954; Shinew, 2004; Pettigrew & Tropp, 2006). Moreover, social interaction is a necessary condition for social cohesion in South Africa (Hofmeyr & Govender,2015), and may contribute to increasing consensus among individuals from different racial groups around issues of transformation policies aiming to reduce inequality and poverty (Dixon et al, 2010; Durrheim & Dixon, 2010).

Most of the literature analyzing the link between inequality and social cohesion focuses on the effect of horizontal inequality. Stewart (2006) finds that when it comes to conflict or social discontent of a nation, it is group behavior, for example, of a racial or ethnic group, or a labor union, that matters most. This implies that a measure of inequality that correlates well with conflict is not the Gini coefficient, which measures inequality among individuals in a society, but horizontal inequality that measures inequality between groups (Stewart, 2006).

In contrast, when we consider social cohesion with a broader view than the absence of conflict, various studies find that vertical inequality plays an important role too. For instance, Easterly et al. (2006) consider social cohesion under the angle of divisions within a society and argue that the existence of income inequality (vertical inequality) is one of the vectors that create cleavages. In addition, it is argued that in order for objective inequalities (both vertical or horizontal) to have an impact on creating cleavages, individuals have to be aware of these inequalities and consider them unjust (Reitz & Banerjee, 2007; Miodownik & Nir,2015;Must, 2016). This suggests that

individual's perception of inequality is a key dimension of inequality that is important in social cohesion analysis. For these reasons, we consider both objective and perceived inequality measures.

Although inequality may have various dimensions (e.g. political, cultural) we restrict ourselves to economic inequality here, as measured by the LSM. This LSM is a composite score (an asset index) that combines various indicators including dwelling type, access to services (water, sanitation, electricity, telecommunications, and home security), ownership of household consumer items (refrigerator, microwave oven, and television), access to domestic workers, and residence in a rural or metropolitan area (See SARBS, 2013, p. 11). The composite score is then divided into 10 LSM categories (deciles), with 1 being the lowest and 10 the highest. The LSM deciles measure individuals' relative position in the distribution of the living standard measures. Using the LSM deciles we calculate both vertical inequality (the Gini coefficient) and horizontal inequality between the four race groups (the group coefficient of variation) measures.

In addition to LSM deciles, SARBS reports each respondent's perceived assessment of inequality in South Africa. Respondents were asked whether they feel that inequality has reduced or increased, or remained the same in recent periods in South Africa compared to its level in 1994. In other words, this measure of inequality presents a respondent's perception of how the gap between the poor and the rich changed over time. Given that the individual's perception of inequality change is the driver of one's feelings and behavior, this paper greatly benefits from the use of this variable, along with the objective inequality variables. To examine the relationship between inequality and social cohesion measured as the extent of IRIS, we use both an individual's LSM decile (which measures their relative position) and that individual's perception of inequality assessments.

In the section of the analysis in which we make use of the aggregate SCI measure, we use provinces as the unit of analysis in measuring SCI as well as horizontal and vertical inequalities. While provinces might not be the most natural geographic units in the context of South Africa, they differ in the role they play in provision and quality of goods and services, and in their institutional setups, and thus may differ in their role in reducing inequity and promoting social cohesion. Thus, horizontal inequality measures inequalities in living standards between different racial groups within provinces, while vertical inequality measures inequalities between individuals within provinces.[***]

We hypothesize that the higher one's relative position in the national distribution of LSM, the more likely he/she will participate in more frequent IRIS. The perception of inequality, if worsened, could reduce trust and goodwill between different individuals and hence may reduce the extent of IRIS. Likewise, a higher level of inequality within provinces (both vertical and horizontal) is expected to be associated with lower level of social cohesion. At the end of the day, though, social cohesion and inequality are simultaneously determined and reinforce one another,

[***] Information on the row variables used to calculate the LSM deciles in the IJR datasets is only available from 2009. Thus, in section 3, we use the LSM deciles to show long term trends in inequality (during 2003-2013). However, for the purposes of analysing the relationship between SCI and inequality in our regression analysis (in section 4), we calculate our own LSM index using data from 2009 onwards. In calculating our own indices, we used the uncentered principal component analysis, which is proposed by Wittenberg and Leibbrandt (2017). The variables included in the indices are similar to the ones used by IJR to calculate the LSM indices and deciles.

and this makes it very difficult to identify a causal relation (Ferroni et al., 2007; Klasen et al., 2016). Nonetheless we think that there is value to be added to the national discussion by this careful, empirical analysis of the relations between social cohesion and inequality. Notably the use of different types of inequality may help us identify the relative importance of each dimension.

2. Trends in social cohesion and inequality in South Africa

In this section, we examine trends in social cohesion measured using the IRIS and SCI. Then, we analyse inequality trends using both objective and perception measures.

2.1. Trends in social cohesion

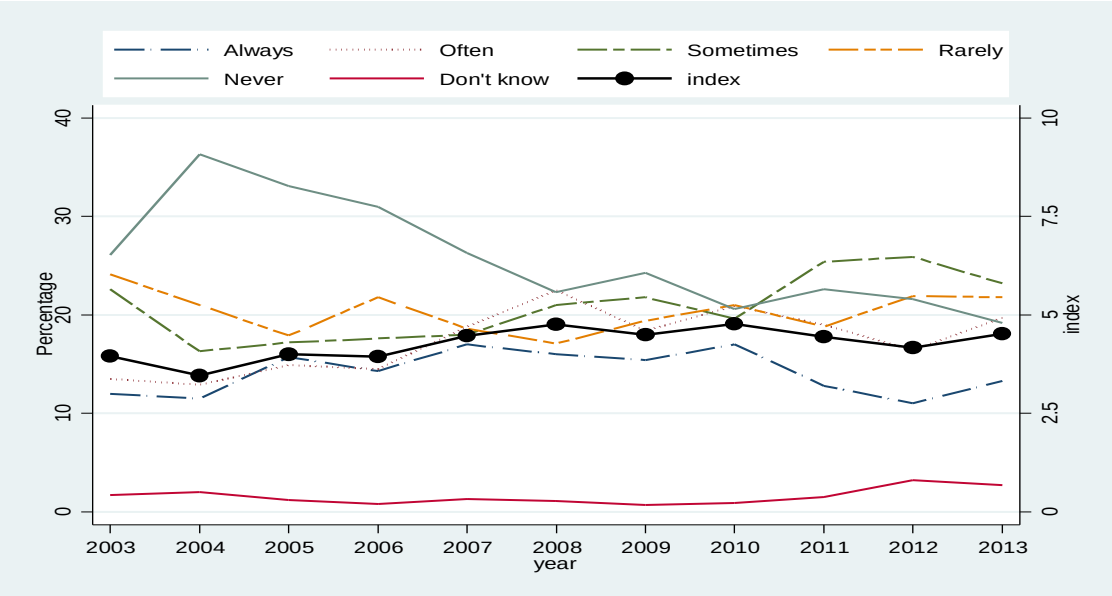
We first examine how indicators of individual IRIS evolved over the period 2003-2013. As mentioned earlier, four racial categories were used during apartheid in South Africa, namely African/Black, Coloured, Asian/Indian and White and we make use of these variables in SARBS – and "race" - as it is analytically meaningful and relevant to the tracking of public opinion in post-apartheid South Africa. Then, we consider trends in social cohesion measured using the aggregate index, SCI. SARBS contains two indicators of inter-racial social interactions: the frequency of actual interactions on an everyday basis and the frequency of socialization with people from other race groups. Two questions are posed to respondents regarding actual interactions:

(1) *On a typical day during the week, whether at work or otherwise, how often do you talk to [other race group] people?* and, (2) *When socialising in your home or the homes of friends, how often do you talk to [other race group] people?*

Figure 1 shows that less than a third of South Africans often or always talk with someone from a different racial group. However, the percentage of South Africans who never interact with people from other racial groups declined sharply since 2004. At the same time, the percentage of South Africans who always interact with people from other racial groups also declined, particularly from 2010. Overall, measured by an index that is the weighted average of the frequencies of interactions[†††], the frequency of inter-racial talk increased steadily from 2004 to 2008, but this positive trend halted thereafter.

[†††] The index is created as a weighted average of five response categories (never /don't know- 0; rarely – 2.5; sometimes – 5.0; often – 7.5; and, always – 10.0).

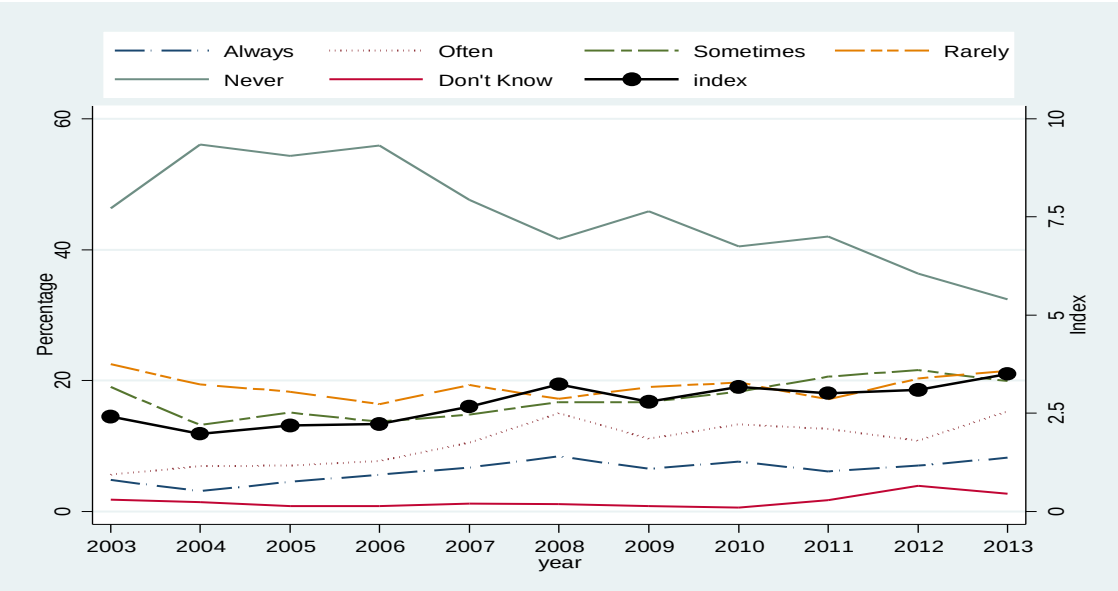
Figure 1: Frequency of everyday inter-racial talk, 2003-2013



Source: Own calculations from weighted SARBS, 2003-2013.

Figure 2 shows that in 2013, more than 30 percent of South Africans never socialised with someone from a different racial group at his/her home or the home of friends while only a quarter of South Africans socialised always or often. The percentage of South Africans who never socialize inter-racially fell sharply over the whole period from 2004 through 2013. Overall, as measured by the weighted average, inter-racial socialization maintained a moderately positive trend during 2003 and 2013 (abstracting from a blip in 2008).

Figure 2: Frequency of inter-racial socialising, 2003-2013

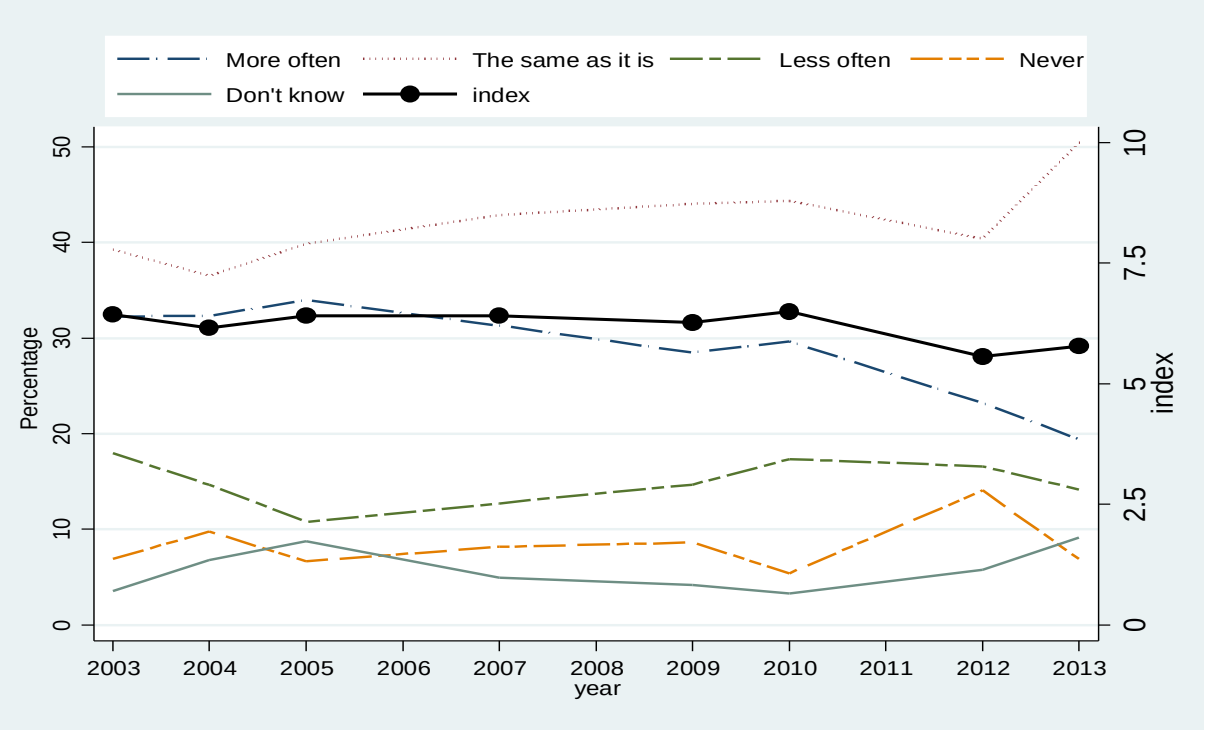


Source: Own calculations from weighted SARBS, 2003-2013.

Are the moderately positive trends of inter-racial social contacts a reflection of changes in social attitude and dispensation, or are they a result of geographical integration? The frequency of inter-racial interactions does not necessarily reflect the desire to do so or the extent of cohesiveness of a society. It is possible that individuals may want to interact, but geographic and other kind of segregations may prevent them from doing so. Alternatively, they may not want to interact but their circumstances require such interaction. Thus, individual's desire to interact inter-racially could be a more relevant indicator of social cohesion. At least, the frequency of actual interactions and the desire to do so should be read together. In SARBS, respondents are asked their desire for more inter-racial interaction through the following questions: *If you had a choice, would you want to talk to [other race group] people?*

Figure 3 shows that the percentage of South Africans who want to maintain the same level of inter-racial interactions has been on a rise since 2004 (except for a dip in 2012), and reached 50 percent in 2013. At the same time, however, the percentage of South Africans who desire to interact more often was on a declining trend since 2003, and the negative trend accelerated sharply from 2010 to 2013 (reaching 19 percent in 2013). Similarly, the percentage of South Africans who desire not to interact at all increased sharply from 2010, although it declined to the 2010 level in 2013. Again as measured by the weighted average, overall, the desire to interact inter-racially remained more or less unchanged to 2010, but this trend changed in a negative direction since then. A similar trend is observed if we look at individuals' desire to know the customs of people of other races (Figure 1A in the Appendix). Throughout the period, the percentage of South Africans who want to learn more about the customs and ways of people from other race groups is higher than those who want to know less. However, the percentage of South Africans who want to learn the customs of others declined significantly between 2008 and 2013, while those who do not want to learn about others' customs remain more or less unchanged.

Figure 3: Desire to talk to people of different races, 2003 - 2013



Source: Own calculations from weighted SARBS, 2003-2013.

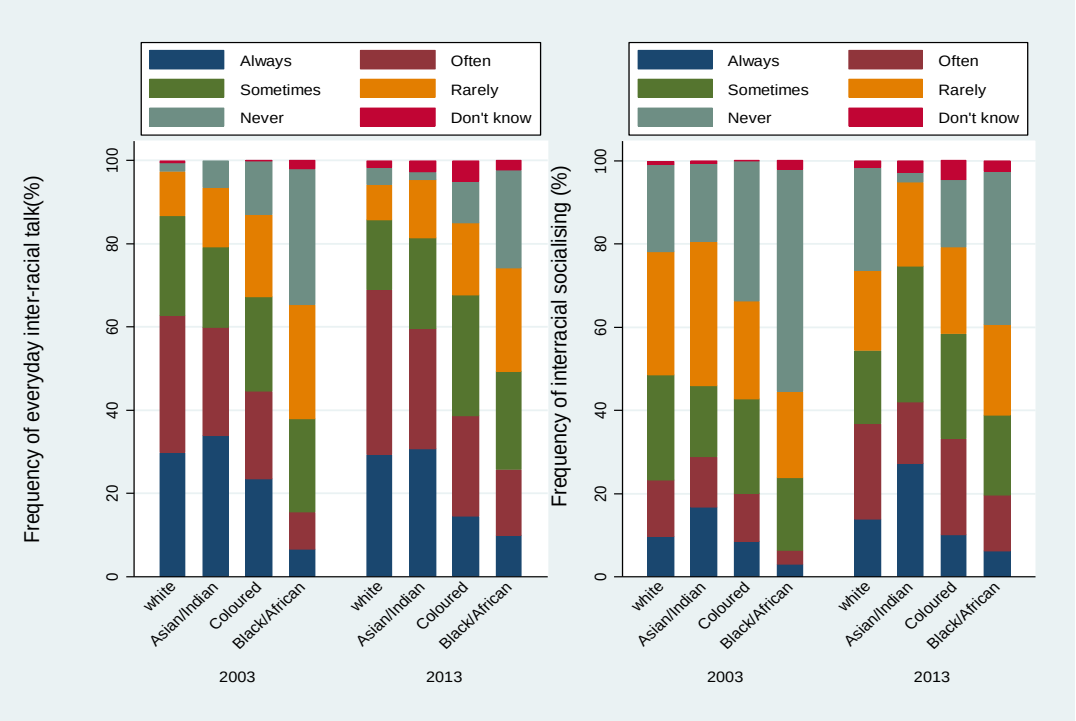
The trends of actual inter-racial social interactions, the desire to do so, and the desire to know the customs of people of other races all seem to point to consistent patterns. There was a moderately positive trend to 2010, which has reversed since then. While one could not conclude from these observations alone that South African society has become less cohesive since 2010, it certainly indicates that it is important to closely examine the factors that influence inter-racial social interactions.

Before looking at how economic well-being and inequality influence IRSI, we first examine how IRSI vary with racial groups. In the context of South Africa, it may be taken for granted that race is an important predictor of the attitudes of individuals towards people from other racial groups and this, in turn, may affect inter-racial interactions. Indeed, the frequency of actual inter-racial social interactions as well as the attitude toward such contacts differs substantially across racial groups.

Figure 4 presents the frequencies of interracial talk and interracial socialization by the racial groups, in 2003 and 2013. The proportion of people from the white group and the Asian/Indian group that engage in interracial talk and socialization always or often is much higher than the Coloured group or the Black group. The variations are much larger for inter-racial talk (about 65% for the White group compared with about 30% for the Black group in 2013) than inter-racial socialization (about 35% for the White group and 20% for the Black group in 2013).

What may be surprising is that the frequency of inter-racial socialisation increased substantially from 2003 to 2013 across the race groups – in 2013, 35-40% of the white group, the Asian/Indian group and the Coloured group always or often engaged in inter-racial socialization while 20% of the Black group did so.

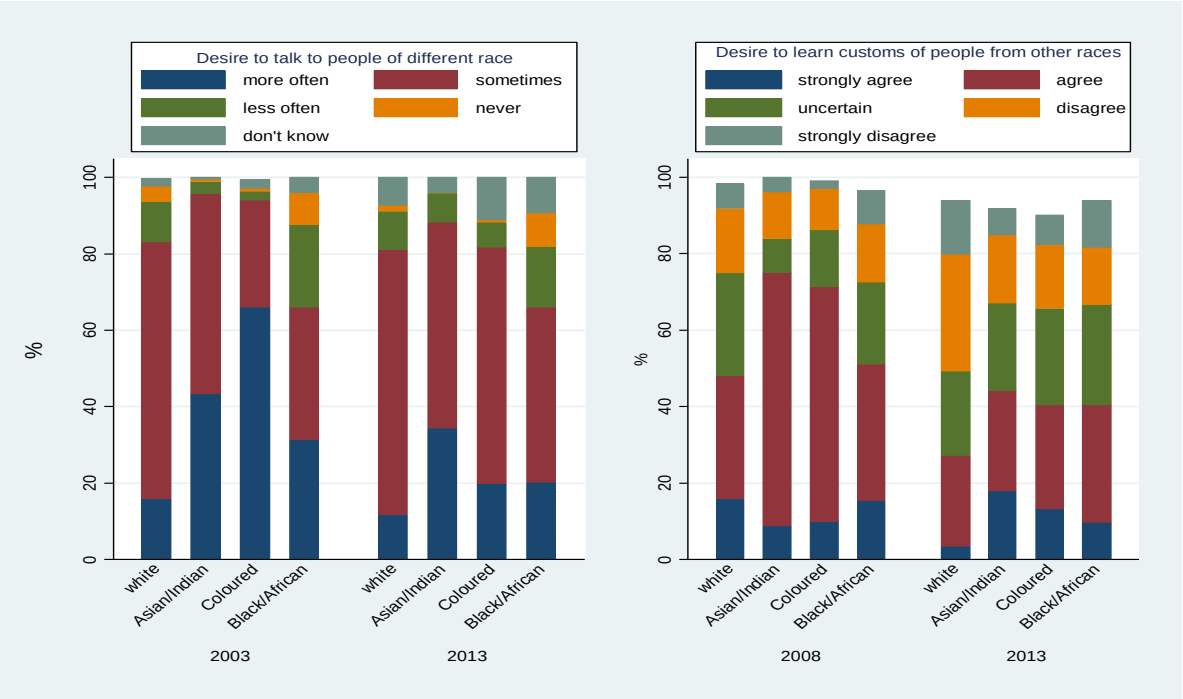
Figure 4: Frequency of everyday inter-racial talk and socialization by race, 2003-2013



Source: Own calculations from weighted SARBS, 2003 and 2013.

Regarding the desire to interact, Figure 5 shows that for the White group, a vast majority preferred the status quo in 2003, and this was an even larger majority in 2013. In contrast, two thirds of the Coloured group desired to have greater inter-racial interactions in 2003 while only a fraction wanted less or no interactions. The situation changed fundamentally in 2013 -- only 10 percent of the Coloured group desired to have more inter-racial interactions and a large majority wanted to keep the status quo. As for the Black group, a much smaller share desired to have more interactions or maintain the status quo in 2003. There was a further shift away from greater interactions by 2013 as a significant portion of Blacks preferring status quo.

Figure 5. Desire to talk and learn customs of people from other race groups by race, 2003, 2008, and 2013

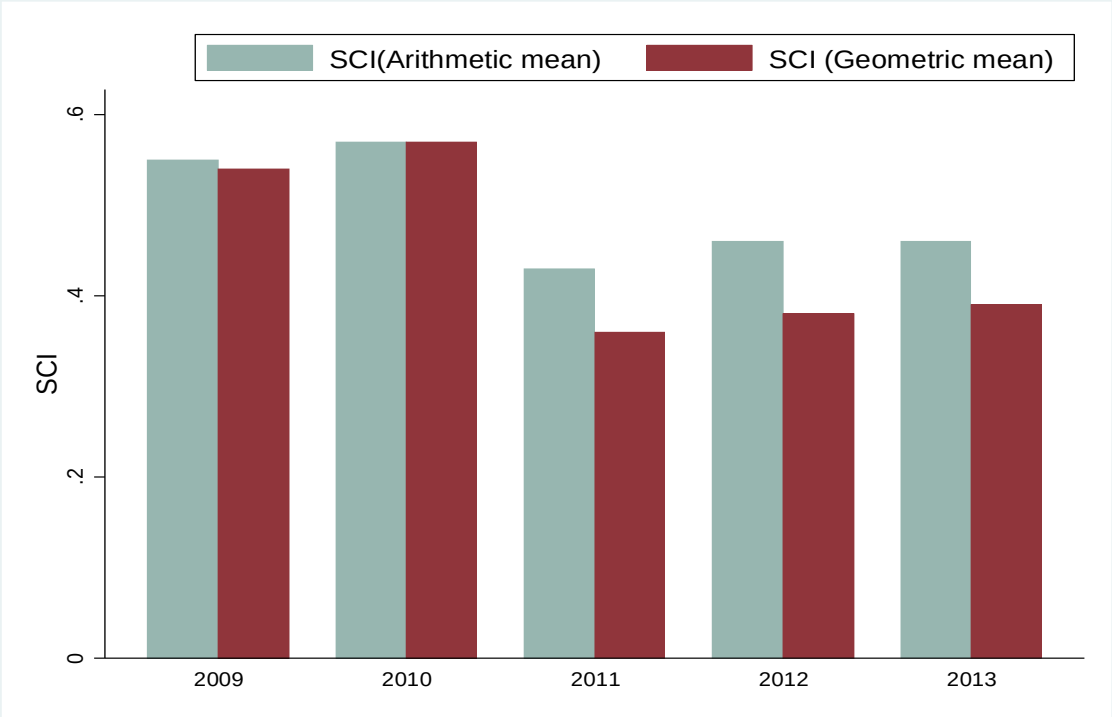


Source: Own calculations from weighted SARBS, 2003, 2008, and 2013.

The extent of IRSI is only one component of a multidimensional concept of social cohesion. Figure 6 provides trends of social cohesion between 2009 and 2013 based on the more aggregated social cohesion measure, the SCI. The figure indicates that there is a slight increase in social cohesion in 2010 compared to its level in 2009, then the social cohesion measure decreased significantly afterward.

All in all, the attitude towards inter-racial social interactions moved significantly toward fewer interactions between 2003 and 2013, across all race groups. Thus, by 2013, only a small minority wanted to have more interactions across all races, and those who want less or no interactions or do not know came to occupy a significant portion in all races. Similarly, South Africans are less inclined to learn about the customs of others, across all races. The trends in actual inter-racial interactions or the desire to do so suggest no improvement in recent years among all race groups. These trends are consistent with the trends observed when we use our aggregate and multidimensional SCI.

Figure 6: Trends in SCI, 2009-2013



Source: data from Burns et al (2017).

2.2. Objective and perceived assessments of inequality

To correctly understand the relationship between inequality and social cohesion, it is not enough to highlight one element of many important aspects of inequality in a society, such as the Gini coefficient of the national income distribution. Rather, in the South African context, in particular, inequality needs to be assessed in terms of race (both horizontal and vertical inequality), and in terms of broader measures of the quality of life. In addition to objective measures of inequality, individuals' perception of inequality is a key dimension of inequality to consider for social cohesion analysis (Reitz & Banerjee, 2007; Must, 2016).

In this sub-section, we present results from both objective and subjective assessments of inequality in South Africa. As previously mentioned, for analysis of inequality objectively, we use the LSM deciles, provided by IJR. The LSM measure is seen as a more reliable and stable measure of long-term well-being of individuals than income. However, we do not have access to raw LSM data since 2003. Thus, our inequality analysis here is based on the LSM deciles.

Figure 7 shows significant improvement in living standards over the past decade in South Africa. The percentage of South Africans in the lower half of LSM categories, LSM 1_5, declined from 71 percent in 2003 to 46 percent in 2013. On the other hand, the percentage of those in the LSM 6_8 categories doubled, and the percentage of those in the highest LSM categories (LSM 9_10) increased by about a third.

Figure 7: Improvement in living standards over the past decade in South Africa

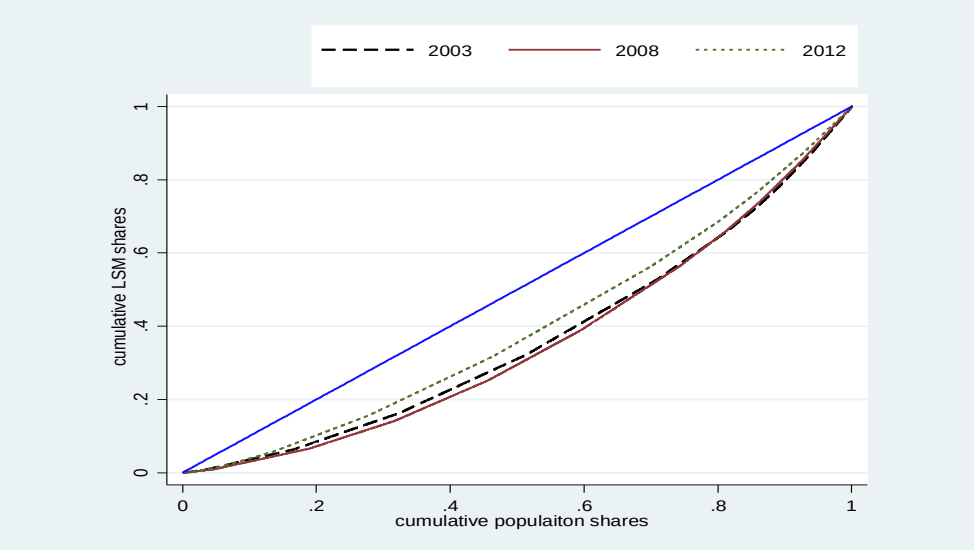
Source: Own calculations from weighted SARBS, 2003-2013.

2.2.1. Vertical inequality

Figure 8 below presents the Lorenz curves of LSM, created using LSM deciles.[###] As we can see, the 2003 and 2008 Lorenz curves lie almost on top of each other. The 2012 curve is closer to the line of equality. The figure suggests that vertical inequality slightly increased from 2003 to 2008, and then significantly declined in 2012.

[###] Recall that the further a Lorenz curve lies from the 45° line of equality, the more unequal the distribution and the higher value of the Gini coefficient.

Figure 8: Lorenz curves for LSM, 2003 to 2012



Source: Own calculations from weighted SARBS, 2003, 2008, and 2012.

Table 1 presents Gini estimates for LSMs by race. Based on the Gini estimates, inequality increased from 2003 to 2008 for all race groups, but decreased by a larger margin by 2012, except for the Asian/Indian group. The Gini coefficient of the Black group is the highest among the four groups in each of the data sets.

Table 1: Gini estimates of LSM by Race, 2003, 2008, and 2012

	2003	2008	2012
Population	**0.267**	**0.284**	**0.207**
Race			
African/Black	0.214	0.265	0.193
Coloured	0.144	0.173	0.111
Indian/Asian	0.107	0.098	0.099
White	0.072	0.097	0.067

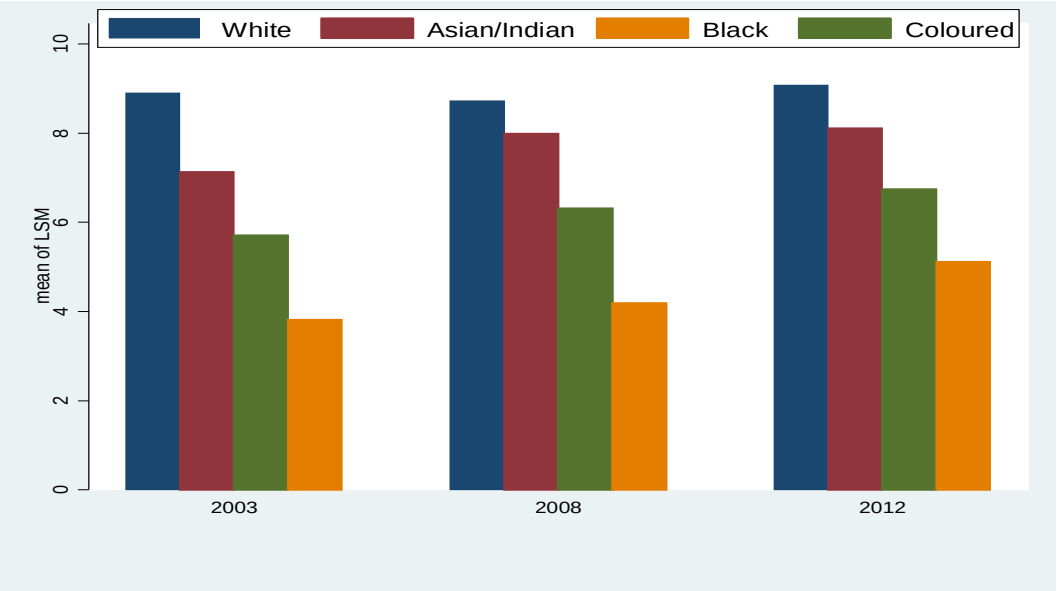
Source: Own calculations from weighted SARBS, 2003, 2008, and 2012

To be noted as well is that the national Gini is higher than any of the intra-group Ginis. This suggests that disparities between inter-group LSM distributions are a major factor for overall inequality.

2.2.2. Horizontal inequality between race groups

Figure 9 presents means of LSM scores by race, for 2003, 2008 and 2012. In 2003 and 2008, the mean LSM scores for the White group were at least two times greater than the Black group, and this gap was significantly reduced in 2012. Overall, Figure 9 indicates that horizontal inequality as measured by the means is very large between race groups. However, it declined steadily and substantially over the period. Table 1A (in the Appendix) shows that the LSM scores of Blacks were less than half that of whites in 2003 and 2008. In 2012, the positions of the black group relative to the Coloured and Indian groups improved significantly, although it only improved marginally relative to the white group. The relative LSM scores between racial groups suggest that while the black group' relative position improved between 2003 and 2013, the LSM scores of the Coloured group declined relative to both the whites and the Indian groups.

Figure 9: Change in LSM by Race, 2003, 2008, and 2013



Source: Own calculations from weighted SARBS, 2003, 2008, and 2012.

Moving beyond averages, horizontal inequality in LSM can be measured by the Group coefficient of variation (GCV). This is the standard deviation of the group means divided by the grand mean or mean of means. Following Stewart et. al. (2010), we weight by group sizes to ensure that changes in the position of different groups have different effects. As can be seen from Table 2 for racial groups, horizontal inequality steadily declined between 2003 and 2012.

Table 2: Horizontal inequalities of LSM, GCV by race and ethnicity

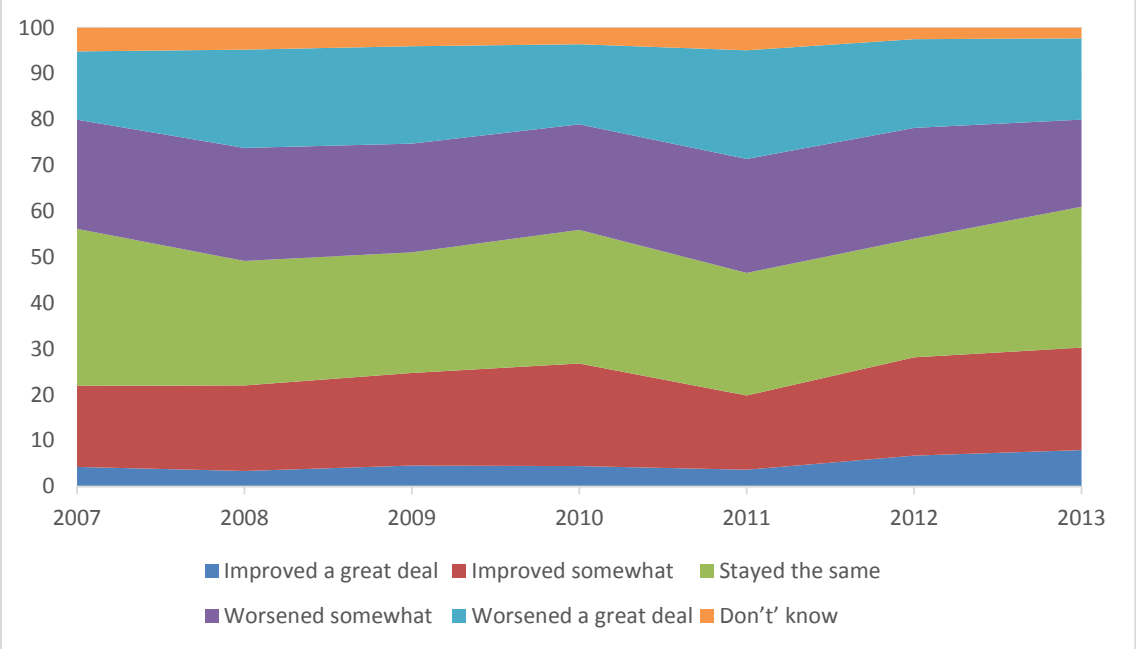
	2003	2008	2012
Race	0.3813	0.3237	0.2270

Source: Own calculations from weighted SARBS, 2003, 2008, and 2012.

2.2.3. Perceived inequality

Figure 10 provides trends in the perception of recent changes in inequality in South Africa. In the IJR dataset, each individual was asked to evaluate how the extent of inequality, the gap between the poor and the rich, changed since 1994 in South Africa. The perceived inequality measure variable is coded from 1 to 5 (1 –improved; 2 – stay the same; 3-worsened somehow; 4-worsened a great deal; 5-Don't know). Results from Figure 10 suggests that the proportion of South Africans who perceived that the gap between the poor and the rich has improved a great deal or improved somewhat has increased over time.[§§§] However, about 70 percent of South Africans perceived that this gap either remain the same or worsened over time.

Figure 10: Perceived inequality gap between the poor and the rich (2007-2013)



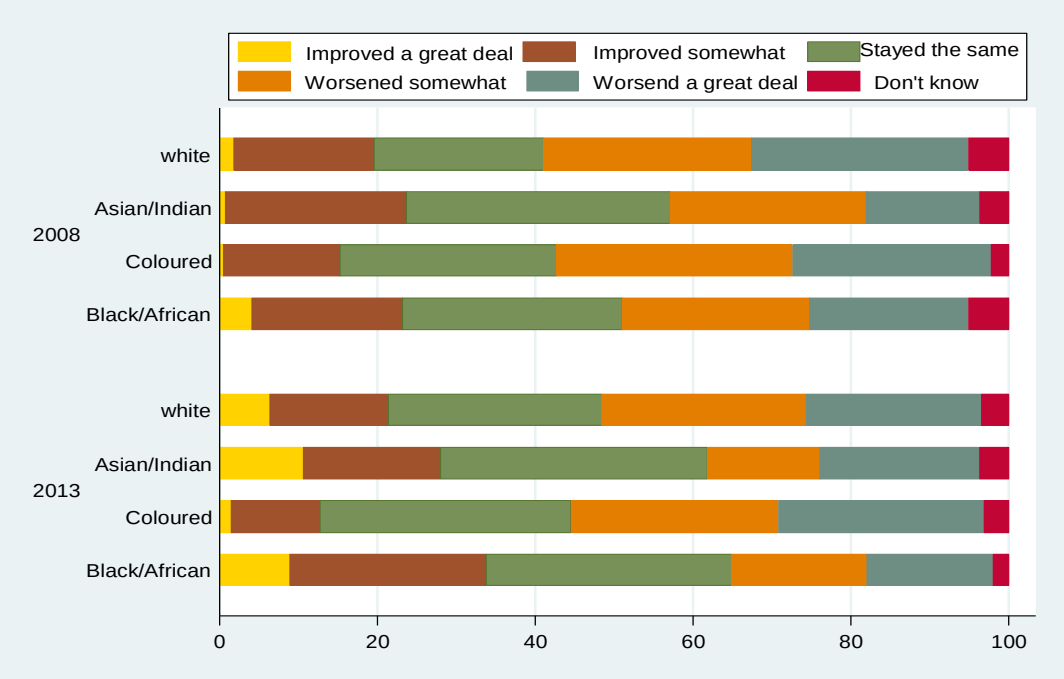
Source: Own calculations from weighted SARBS, 2007- 2013.

Figure 11 presents the distribution of perceived inequality by race for 2008 and 2013. In both periods, the overall sentiment was negative. In 2008, across all race groups, only around 20

[§§§] Data on this variable is available only since 2007.

percent of respondents felt that inequality improved somewhat or a great deal. The proportion of those who perceived that inequality worsened somewhat or a great deal was substantially higher for the white and Coloured groups (about 50 percent) than for the black group (about 40 percent). From 2008 to 2013, perceived inequality improved for the white group, and even more so, for the black group.

Figure 11: Perceived inequality by race group, 2008 and 2013



Source: Own calculations from weighted SARBS, 2008 and 2013.

In sum, based on our objective inequality analysis we show that horizontal inequality has declined sharply between 2003 and 2012, while vertical inequality declined between 2008 and 2012, after having shown an increase between 2003 and 2008. The decline in living standard inequality is consistent with the fact that there is a significant improvement in access to basic services (i.e water, electricity) and ownership of household assets in South Africa in recent years (as seen in Figure 7). Given that dummy variables were used to measure asset ownership, an improvement in asset ownership at the bottom of the distribution (category LSM1_5, in Figure 7) is expected to lead to a reduction in the asset inequality measure since there will be very little change at the upper end of the distribution. However, asset indices calculated based on binary data do not allow us to take into account the value or quality of different assets or the real returns (Wittenberg & Leibbrandt, 2017: p.24). Thus, asset indices do not give us a true measure of wealth or asset ownership, although these inequality measures capture improvements in living standards, which may not be reflected by income inequality measures.[****]

[****] For example, if everyone's income increased by the same proportion, income inequality measured using Gini coefficients will not change. However, "dummy variables cannot be rescaled in this way. The way in which we measure asset inequality will make asset ownership more common at the bottom, leave it unchanged at the top, and thus reduce inequality" (Wittenberg & Leibbrandt, 2017: p.24).

Analysis of individuals' perception data suggests that large proportions of South Africans perceived that the extent of inequality has not changed much or worsened over time. Thus these perception measures reflect the findings of other studies showing that income inequality has not improved in South Africa since 1993 (Leibbrandt et al., 2011). These findings indicate that the different inequality measures capture different dimensions of inequality.

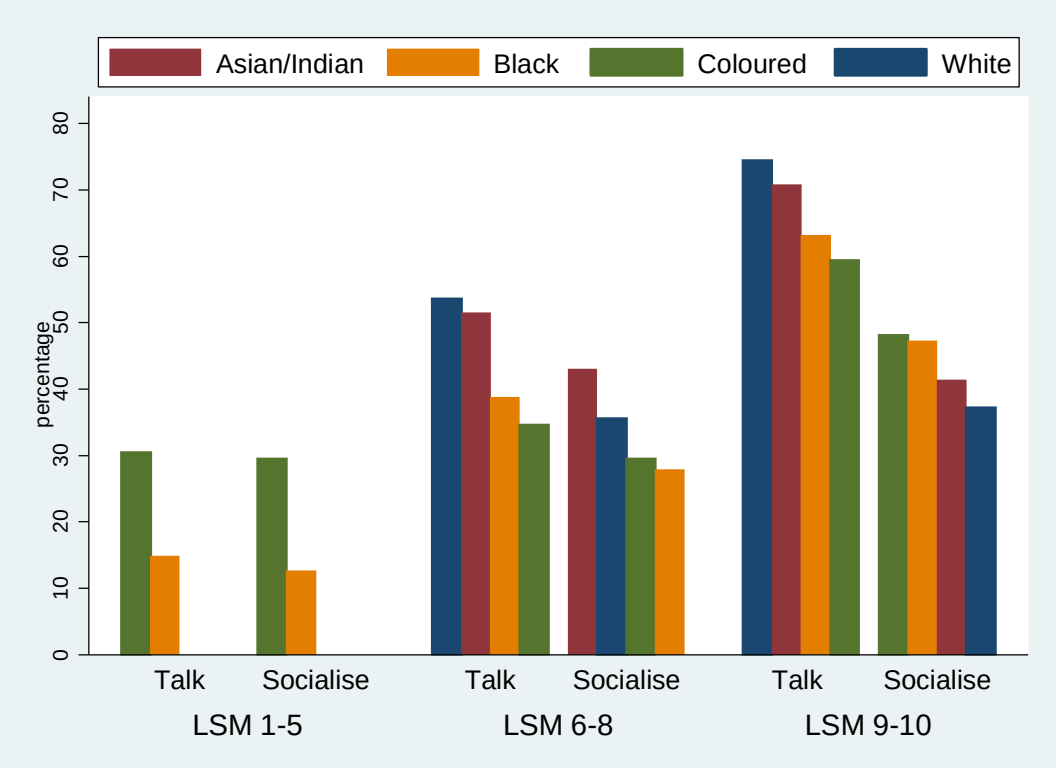
2.3. Inequality and IRIS

In the conceptual framework, we hypothesize that inequality is one factor that may affect the extent of IRIS. Having profiled IRIS and inequalities separately above, here we provide descriptive analysis of these potential relationships. This leads into the regression analysis of the next section.

Figure 12 presents the frequency of IRIS by race, controlling for LSM scores. In the lower LSM group, LSM1-5, the Coloured group is two to three times more likely to engage in IRIS (talk or socialise) than the Black group (There was no person in the White group and Asian/Indian group in LSM 1-5). For those in the LSM 6-8 category, the White group engages in inter-racial talk most, followed by the Asian/Indian group, the Black group and the Coloured group, in that order. For socializing, the Asian/Indian group engages in inter-racial contacts most, followed by the White group, Coloured group , and the Black group, in that order. At the highest categories, LSM 9-10, the White group engages in inter-racial talk most, but least in socializing, compared to the other races. The Black group in these highest categories engages in inter-racial socializing more than or equal to any other races, and involve in inter-racial talk more often than the Coloured group.

The figure suggests that the frequency of IRIS is substantially different among racial groups at each LSM category. Thus, the differences by race are marked. Moreover, the patterns of differences in IRIS among race groups are different, depending on the level of LSM and also the nature of such contacts (talk or socialising).

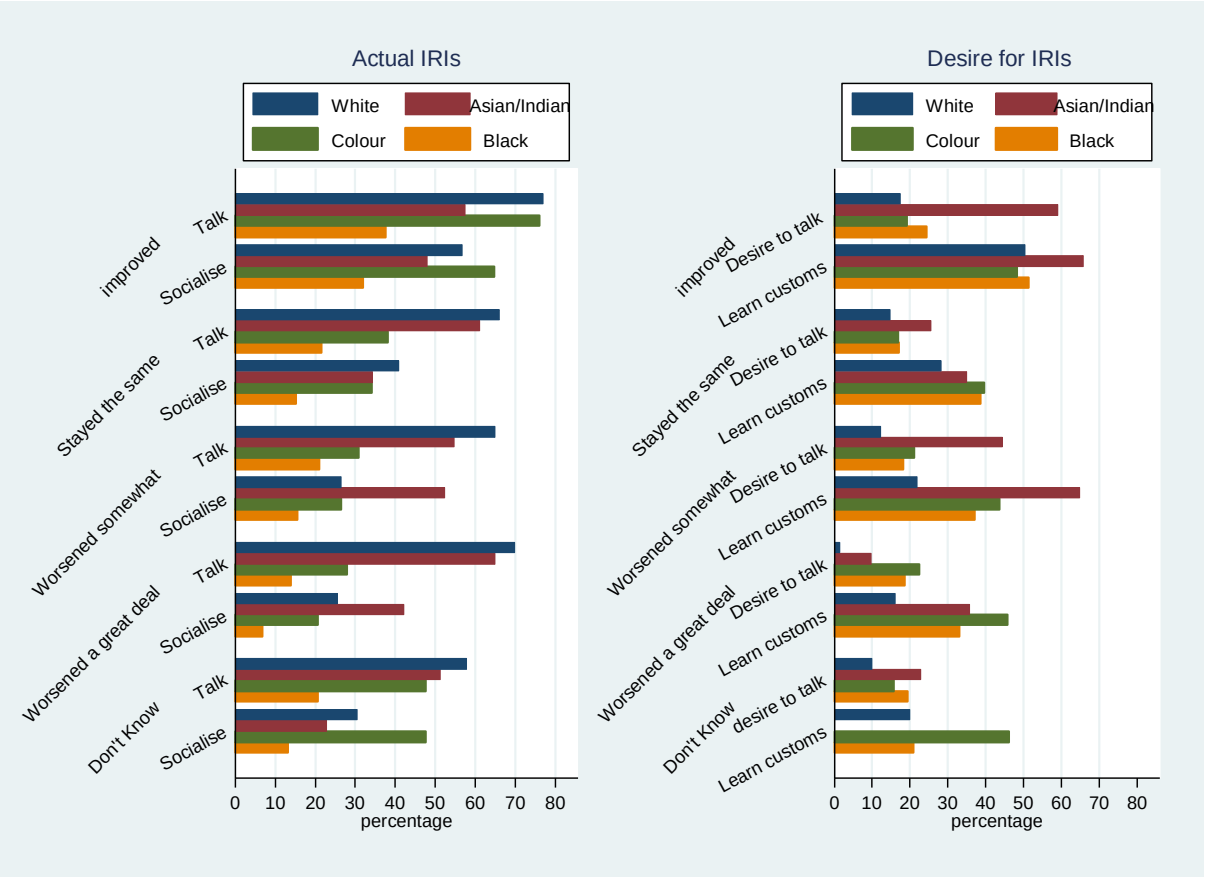
Figure 12: Inter-racial talk and socialization by LSM and race groups, 2013 (often + always)



Source: Own calculations from weighted SARBS, 2013.

Figure 13 presents the frequency of IRIS by race, controlling for the perception of inequality measures The left panel of Figure 13 shows that the Black group is least likely to interact (both talk and socialise) irrespective of perceived inequality. On the other hand, among the Coloured group, those who feel that inequality improved engage in inter-racial interactions as much as or more than the White group, but those who feel that inequality worsened a great deal are involved in inter-racial interactions much less than the White group or the Asian/Indian group.

Figure 13: Actual inter-racial interactions and desire to talk by perception of inequality and race, 2013



Source: Own calculations from weighted SARBS, 2013.

Finally, the left panel of Figure 13 shows that inter-racial socialisation increases as perceived inequality improves (from "worsened a great deal" to "improved a great deal"), across race groups. Similarly, for all race groups, the desire to interact is significantly lower among those who perceive that inequality has worsened a great deal (the right panel, Figure 13). - These findings are important in suggesting a positive link between perceived change in inequality and social cohesion via inter-racial socialization. While the seeming correlations between the frequencies of IRIS on the one hand, and race, LSM, and perceived inequality on the other are interesting, the apparent correlations may be created by other factors. We try to disentangle some of these inter-relationships by estimating a multivariate model of inter-racial social interactions in the next section.

3. Relationship between social cohesion and inequality

In this section, we use regression analysis to examine the relationship between social cohesion and inequality in South Africa. We start by following on from the analysis of the previous section; namely, the individual level analysis using inter-racial interactions as our proxy measure of social cohesion. Then, we analyse the relationship between social cohesion and inequality using our multidimensional measure of social cohesion, SCI, at the provincial level.

3.1. Inter-racial interactions and perception of inequality

In this part, we use regression analysis to examine the correlates of individuals IRIS. The regression approach is useful in providing conditional correlations; looking at, for example, the correlation between inequality and social interactions holding race and a number of other potentially important factors constant that are expected to affect the extent of IRIS. As a measure of wellbeing, we use both LSM status and an individuals' perception of change in inequality In order to estimate these relationships, we specify the following equation:

$$IRIS = \alpha + \beta_1 Inequality + \beta_2 LSM + \beta_3 Race + \beta_4 Trust + X\theta + \varepsilon_i \text{ ---------- [1]}$$

Where IRIS is a categorical variable indicating the frequency of inter-racial social interactions (We use both actual interactions and the desire to interact) [††††], inequality indicates individuals' perception of inequality change coded from 1 to 5 (1 –improved; 2 – stayed the same; 3-worsened somehow; 4- worsened a great deal; 5-don't know). The LSM is the living standard measure (in deciles, 1 indicating lower LSM and 10 highest LSM). Trust indicates an individuals' degree of agreement with the statement that people from other race groups are untrustworthy. Race is a categorical variable indicating the four race groups. These variables were discussed in some detail in the descriptive analysis above. The additional control variables, X, were too. These include: age, gender, education level of the respondent, an urban/rural dummy, a time dummy, individuals' perception of the economic situation in South Africa within the next two years of each survey year (coded as: 1-get better; 2 - stay the same; 3 -get worse; 4 –Don't know).

We estimate Equation 1 using an ordered probit model. We also created an index using a weighted average of five IRIS? data points (never - 0; rarely – 2.5; sometimes – 5.0; often – 7.5; and, always – 10.0) and use OLS to estimate this model. In both models, standard errors are clustered at the metro level. Although information on IRIS is collected between 2003 and 2013, we could only use data from four rounds of SARBS (2007, 2010, 2012, and 2013) to estimate this model. This is because the variable measuring individuals' perception of inequality is only available after 2007, and information on our other variables is missing in some of the survey rounds between 2007 and 2013.[‡‡‡‡] We pooled all the observations across the four survey rounds. The pooled observations include 14,184 observations of which 13,866 individuals have information on all indicators included in the regression model. Table 3 presents estimation results from the OLS and ordered probit models. Overall, the direction and significance level of

[††††] The inter-racial talk and inter-racial socialisation variables are coded from 1 to 5 (1-never; 2-rarely; 3-sometimes; 4-often; and 5-always), while responses to the desire to talk question are coded from 1 to 4 (1-never; 2-less often; 3-about the same as now; 4-more often).

[‡‡‡‡] For example, information on the desire to talk is missing during the 2008 and 2011 survey rounds, while we have missing data for education in 2008, and for LSM in 2009.

coefficient estimates in the OLS and Ordered probit models are similar. Given this, we use coefficient estimates from the OLS model to interpret results.

As a robustness check, we also estimate equation 1 using a larger sample size (Table 2A in the Appendix), in which we exclude the perceived inequality variable and use data from eight rounds: all the years between 2003-2007, 2010, 2012, and 2013. In this case, the pooled data includes 27,426 individuals with information on all indicators included in the regression model (excluding the inequality variable). Using the larger sample size only slightly changes the size and significance of the remaining coefficient estimates. The R-square estimates are also similar for all equations, except in the case of the desire to talk mode, increasing the sample size increases the R-square from 0.087 to 0.177.

Coefficient estimates on the perceived inequality measure indicate a significant relationship between individuals' perception of inequality and the extent of their IRIS. In particular, the coefficient estimates on this variable are highly significant when we look at the inter-racial socialization variable (at 1% level of significance), which is the better measure for capturing the quality of inter-racial interactions. Compared to the base category of those perceiving that the gap between the rich and the poor remains the same, those individuals who perceived that the gap between the rich and the poor is getting worse are less likely to participate in inter-racial socializations, while those who perceived that the gap is getting better are more likely to participate in inter-racial socializations.

When we measure IRIS as the desire to talk, the perception of inequality is significant only for those who perceived that inequality has worsened somewhat and those who reported that they do not know about the gap. Individuals who perceived that inequality has worsened somewhat and those who reported that they do not know about the gap reported lower frequency of actual interactions and lower desire to interact. These results are the same whether we use the OLS or Probit model estimation approaches.

It is hard to understate the importance of this result. We have interrogated this relationship between IRIS and perceived inequality in depth in both our descriptive analysis and in our multivariate estimations and have found a strong positive relationship. Earlier in the paper we showed that trends in perceptions of inequality do not closely follow the trends in objective measures of inequality. At the end of the day, it is each individual's perceptions of inequality rather than the Gini coefficient or the coefficient of variation that they carry into their daily interactions and decision making. It is therefore important to find that, controlling for important differences by race, education, age and trust of individuals and whether they are at the lower or upper ends of the LSM distribution, the substantial percentage of South Africans who perceive that inequality has not improved have lower IRIS relative to those who have more positive perceptions.

The coefficient estimates on the living standard decile variable (LSM) are positive and significant in all model estimates. These results suggest that the higher the relative position of the individuals in the LSM distribution, the more likely they involve in inter-racial talks, socialisation and desire to interact. Likewise, individuals' perception of future economic conditions in South Africa is significantly related with the extent of their IRIS. Relative to those who perceived that the economic conditions of the country will remain the same, those who perceived that the situation will get better are more likely to interact and reported more desire to interact. These results

suggest that individuals who have a better relative economic position and those who are optimistic about future economic conditions in the country are more likely to be involved in IRIS. However, as this is a correlation rather than a causal relationship it could also be read to imply that those who interact more with other race groups are more likely to be optimistic about the future.

We find a positive relationship between education and the extent of IRIS. Relative to individuals with primary or less education, individuals who completed a higher level of education (Matric and above) are more likely to engage in actual IRIS and report more desire to interact. The higher is the level of education, the higher is the level of significance and the size of the coefficient estimate. Individuals with some high school education are also more likely to report higher desire to talk than those with primary education level. However, having some high school education is not significantly related to actual talk and socialization. The one exception here is that the coefficient on this variable is marginally significant in the actual talk model in Table 2A in the appendix (at 10% level of significance). Thus the opportunity to engage in IRIS (both talk and socialization) seems to be higher the higher the level of education. This suggests an impact for educational achievement. However, it is hard to be definitive about this because, in the context of South Africa, there is still relatively less racial mixing in high schools and primary schools compared to those who complete matric and go on to tertiary education. Thus, less opportunity to interact with individuals from other racial groups.

The estimation results in Table 3 show that individuals' demographic characteristics, such as age, gender, and race are each significantly related to the level of IRIS. The earlier descriptive analysis highlighted important racial differences. This remains true in the estimation results, but there are some important differences. Looking at the race variable, relative to the Black group, individuals from Asian and Coloured race groups are more likely to interact (talk and socialize) and report more desire to talk, all other factors held constant. Although whites participate more in actual interracial talk than Blacks, the coefficient estimate is not significant when it comes to interracial socialization and the desire to interact. Thus, it looks as though Asian and Coloured groups are more likely to interact than either the Black or white groups but that these latter groups do not differ much. However, the results in Table 2A in the appendix indicate that the coefficient estimate for Whites is positive and significant for interracial socialization, and is negative and marginally significant (at 10% level of significance) when it comes to the desire to talk. This is more in line with the earlier descriptive analysis.

Table 3: Estimating the Likelihood of inter-racial interactions

	OLS			Ordered Probit		
	Talk	Socialise	Desire to talk	Talk	Socialise	Desire to talk
Age (Base=<35)						
>=35 & <60	0.35***	0.03	-0.17**	0.12***	0.01	-0.08***
>=60	-0.71***	-0.47***	-0.65***	-0.27***	-0.19***	-0.24***
Female	-0.44***	-0.11***	-0.14***	-0.16***	-0.05***	-0.04***
Education (base=primary or less)						
Some high school	0.28	0.16	0.59***	0.12**	0.10**	0.21***
Matric	0.79***	0.58***	0.61***	0.28***	0.24***	0.20***
Collage/university	1.32***	0.99***	0.88***	0.47***	0.36***	0.31***
Living standards(LSM)	0.36***	0.31***	0.10**	0.12***	0.11***	0.03**
Perception of Inequality (base=Stayed the same)						
Improved a great deal	0.31	0.65***	0.13	0.11*	0.21***	0.07
Improved somewhat	0.27***	0.34***	0.18	0.09***	0.11***	0.07
Worsened somewhat	-0.11**	-0.41***	-0.12**	-0.03**	-0.15***	-0.05***
Worsened a great deal	-0.15	-0.70***	-0.05	-0.05	-0.28***	-0.01
Don't know	-0.42***	-0.52***	-0.78***	-0.18***	-0.24***	-0.24***
Race (base=Black)						
White	1.01***	0.29	-0.13	0.33***	0.09	-0.09**
Indian/Asian	1.28***	1.50***	0.70***	0.43***	0.50***	0.24***
Coloured	1.00***	1.52***	0.64***	0.34***	0.52***	0.22***

People from another group are untrustworthy(base=uncertain)						
Agree	0.12**	0.21**	-0.12	0.03*	0.06**	-0.04
Disagree	0.23*	0.12	0.50***	0.07	0.04	0.20***
Don't know	-0.90***	-0.65***	-0.82***	-0.37***	-0.32***	-0.26***
Economic situation in SA in the next 2 years (base=stay the same)						
Get better	0.49***	0.28***	0.52***	0.17***	0.09***	0.20***
Get worse	-0.17	-0.32	-0.17	-0.06	-0.11	-0.06
Don't know	-0.03	-0.32*	0.12	-0.02	-0.15**	0.07
Urban	0.27***	-0.07	0.37**	0.10***	-0.01	0.13**
Observations	13,866	13,866	13,866	13,866	13,866	13,866
R2_a	0.222	0.161	0.0871			

Source: Own estimates using data from IJR and stats SA. Note: *** p<0.01, ** p<0.05, * p<0.1

In all cases, females are less likely to participate in IRIS and report less desire to talk with people from other race groups, compared to their male counterparts. Likewise, compared to younger individuals (aged <35), those who are in the older age group (>=60) are less likely to engage in inter-racial talk or to socialize with individuals from other race groups, and report less desire to do so. Those who are in the age group between 35 and 60 reported more actual inter-racial talk but less desire to talk compared to the younger individuals. These results suggest that females and individuals who are older than 60 years may have less opportunity to interact with individuals from other racial groups, and this may lead to reporting less desire to interact.

However, it is also possible that individuals may have the opportunity to participate in actual interracial talks and still report less desire to interact more. For instance, the estimated coefficient for those who are in the age group between 35 and 60 is positive and significant in the actual talk model, it is positive and insignificant in the socialization model, and negative and significant in the desire to talk model. Thus, although these groups of individuals may have the opportunity to engage in actual interracial talks, they reported less desire to interact more. Perhaps the quality of interactions is important to induce more desire to talk in addition to the frequency of actual talks. For example, using data from South Africa, Bornman (2016) finds that Black respondents who reported that their contact experience was pleasant also reported positive outgroup attitude (i.e. liked Whites), while respondents who reported that outgroup contact as not pleasant/uncertain also reported uncertain about their attitudes towards whites.

The relationship between trust and IRIS is ambiguous. In the case of actual interactions, the coefficient estimates on the trust variable are positive and significant for individuals who both agree and disagree with a statement that individuals from other racial groups are untrustworthy (at 5% and 10% level of significance respectively). Although the coefficient estimates in the

socialization equation are positive for those who reported both agree and disagree with the statement that people from other racial groups are untrustworthy, it is significant only for those who agree. Compared to those who are uncertain, individuals who perceived people from other racial groups as trustworthy reported more desire to interact, while the coefficient estimates for those who reported agreeing is not significant (Although this is negative and significant in table 2A in the appendix). In all equations, individuals who reported that they do not know to what extent people from other racial groups are trustworthy reported less IRIs of all forms.

Lastly, the coefficient estimate on the urban dummy variable suggests that individuals who live in urban areas are more likely to engage in inter-racial talk and more likely to report more desire to interact, compared to those in rural areas. However, the coefficient estimate is not significant when it comes to inter-racial socializations (although it is marginally significant in Table 2A in the appendix). It is interesting to note that although inter-racial interactions are more likely in the urban context, it is not significantly associated with more inter-racial socialisation.

In summary, after controlling for various factors, we find a robust positive relationship between individuals' perception of inequality and the extent of their IRIS. While individuals who perceive that the gap between the rich and the poor is getting better are more likely to socialize with individuals from other race groups, those who perceived that this gap is increasing are less likely to socialize. We also find that a strong and positive relationship between higher living standard measures such as LSM scores and education on the one hand and inter-racial interactions on the other.

3.2. Social cohesions, vertical and horizontal inequality

In the sub-section above, we analysed individual inter-racial social interactions as a unit of analysis for social cohesion. However, social cohesion is a complex and multi-dimensional concept with inter-racial social interactions being just one element of social cohesion; one that belongs to the social relations dimension in our composite social cohesion index. In addition, the concept of social cohesion requires a more aggregated point of view as it implies cohesion among individuals in a given society. Furthermore, if we are interested in analyzing the relationship between objective measures of inequality such as horizontal inequality among different race groups, we need to go beyond the individual level analysis, at which only the perception of inequality can be measured.

For this purpose, we now go on to use the SCI to analyze the relationship between social cohesion and inequality measured within provinces. We are aware that provinces might not be the most natural geographic units in the context of South Africa and that one might prefer to analyse social cohesion either at the national level, or at the community level. Unfortunately, we do not have enough points in time that would allow us an analysis of the determinants of the evolution of social cohesion at the national level, nor we have representative data at the community level in order to capture the factors affecting the variation of social cohesion among communities or in time.

We try to pin down the linkages not only between social cohesion and vertical inequality (of living standard measures) but also try to capture how it is linked to horizontal inequalities. In addition to inequality measures, we expect that other factors such as the level of economic development, crime rates, and racial heterogeneity within a province may affect social cohesion.

In order to control for these factors, we have included in our regression model measures at the province level of gross domestic product (GDP), crime rates, and fractionalization index.[§§§§] Thus, in order to estimate the relationship between inequality and social cohesion, we specified the following regression model:

$$SCI_{p,t} = a_0 + a_1 Gini\_VI_{p,t} + a_2 GCV\_HI_{p,t} + a_3 GDP_{p,t-1} + a_4 Crime_{p,t-1} + \gamma_t + a_p + \varepsilon_{p,t} \text{--[2]}$$

Where, Gini_VI is the within province vertical inequality measure, GCV_HI is the Group coefficient of variation (GCV), which is the standard deviation of the group means divided by the grand mean or mean of means and captures horizontal inequality at the province level. We also use an alternative indicator, the Theil's T index to measure vertical inequality within provinces.[*****] Province level inequality measures are based on the living standard measure. However, unlike in the previous sections where we used the LSM deciles provided from IJR, we have calculated our own LSM index (which is a continuous variable) for each individual in order to calculate the inequality indices at province level.

The dependent variable, SCI is the social cohesion index, calculated at the province level as the geometric mean of five dimensions (the feeling of belonging, cooperation, institutional trust, relationships and identity). An increase in the index's value indicates an increase in the society's cohesivenes. The variable GDP_p measures Gross domestic product at province level (lagged by one year), $Crime_p$ is a measure of crime rates, a_p is province fixed effects, γ_t indicates time dummy, which ranges between 2009 and 2013.

The model is estimated using both Least Squares Dummy Variables and panel fixed effects approaches. Table 4 presents estimation results of equation 2 in columns (1) and (3). We also add a fractionalization index (computed as a Herfindahl index[†††††]) in order to take into account racial diversity of each province (Table 4A in the appendix).

[§§§§] Population and GDP data are obtained from Stats SA, while data on crime are from South African Police Service.

[*****] We use the Theil T index, which belongs to the generalized entropy inequality measures, GE measures. The formula is given by:

$$T_T = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{y_i}{\mu}\right) ln\left(\frac{y_i}{\mu}\right)$$

The formula for the gini coefficient is given by:

$$G=\sum_{i=1}^{N}\sum_{j=1}^{N}\frac{|y_i - y_j|}{2N^2\mu}$$

[†††††] The Hefindahl index used here is a adapatation of the index used to compute the partition of a market among firms.

Table 4: Social cohesion and inequality

Variables	Least Squares Dummy Variables		Panel Fixed effects	
	(1)	(2)	(3)	(4)
Gini coefficient	-0.19		-0.19*	
	(0.13)		(0.10)	
Theil's T		-0.10**		-0.10***
		(0.04)		(0.03)
Coefficient of variation	0.01	0.01	0.01	0.01
	(0.03)	(0.02)	(0.03)	(0.02)
Log GDPpc(t-1)	0.09	0.14	0.09	0.14
	(0.81)	(0.77)	(0.74)	(0.73)
Crime (t-1)	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Time dummy	Yes	Yes	Yes	Yes
Province dummy	Yes	Yes	No	No
Observations	45	45	45	45
R-squared	0.57	0.58	0.39	0.41
r2_a	0.325	0.345	0.257	0.280

Source: Own estimates using data from IJR and stats SA. Note: *** p<0.01, ** p<0.05, * p<0.1

The estimated results from the panel fixed effects specification indicate that the coefficient estimates of the Gini and the Theil's T index are negative and significant. These results suggest that after controlling for both time and province fixed effects, vertical inequality in living standards is correlated with the level of social cohesion. Higher inequality may adversely affect social cohesion as it reduces inclusiveness (by adversely affecting the relative position of individuals) in the society and hence weakening individuals' sense of belongingness and cooperation. Thus, policies that reduce inequality may improve the extent of social cohesion of the society.

On the other hand, the coefficient estimate on horizontal inequality is not significant in all the specifications. While this result might seem contrary to the findings of Stewart (2016), where

horizontal inequality has a significant impact on the probability of violent conflict, we would like to highlight that our outcome is broader than conflict. Likewise, while the coefficient estimates on the GDP variable are positive they are not statistically significant. The extent of crime is also not an import factor in explain province level social cohesion. However, these results are to be interpreted with some caution given the small size of our sample.

4. Conclusions

In this paper, we examine recent trends in social cohesion and inequality, and the relationship between the two in South Africa. We consider different dimensions of inequality, including objective measures of vertical and horizontal inequality and individuals perceptions of inequality. We use two approximations to measure social cohesion in our analysis. A full social cohesion index (SCI) is constructed for South Africa by Burns et al. (2017a) at province level using five dimensions. For most of our analysis, though, we use one component of this SCI, the extent of individuals' inter-racial interactions (IRIs) as our approximation of social cohesion in South Africa. While it is only one component of the SCI, it is an important one in the South African context.

With regard to social cohesion, our analysis of trends in the extent of individuals' IRIs suggests that there was some improvement in the extent of IRIs between 2003 and 2010, which decline slightly thereafter. The increase in IRIs since 2003 may reflect the increased possibility of inter-racial mixing in post-Apartheid South Africa. However, although the percentage of South Africans who never interacted or socialized inter-racially has decreased over the whole period from 2003 through 2013, during the same periods, less than a third of South Africans often or always talk or socialize with someone from a different racial group. The trends of actual inter-racial social interactions, the desire to do so, and the desire to know the customs of people of other races all seem to point to consistent patterns. There was a moderately positive trend to 2010, which has reversed since then. The trends in actual inter-racial interactions or the desire to do so suggest no improvement in recent years among all race groups. Using data from 2009 on words, we also find a declining trend in social cohesion from 2010 when we use our aggregate social cohesion index (SCI).

Our analysis of trends in inequality suggests that vertical inequality, as measured by the Gini coefficient of the living standard measure (LSM), slightly increased from 2003 to 2008, and then significantly declined in 2012, while horizontal inequality of LSM between race groups steadily declined between 2003 and 2012. The decrease in LSM inequality in recent years is consistent with the fact that there has been significant progress in the provision of basic services (i.e. water, electricity) and ownership of household assets in South Africa.

In contrast to the observed improvements in reducing inequality in LSM indicators, analysis of perception data suggests that large proportion of South Africans (about 70 percent) perceived that the extent of inequality (the gap between the poor and the rich) has not changed much or worsened over time. Such negative subjective assessments of inequality are more in line with the findings of other studies which show that income inequality in South Africa has not changed much since 1993 (Leibbrandt et al., 2011). Although LSM indices (asset indices) better capture improvements in living standard measures, asset ownership measures, which are measured using

dummy variables do not give us a true measure of wealth or asset ownership inequality in South Africa. The results of our inequality analyses suggest that the different inequality measures capture different dimensions of inequality. This implies that it is important to consider all dimensions of inequality measures in assessing progress in reducing well-being inequality.

We use regression analysis to examine the factors that influence social cohesions in the country. Estimation results indicate that various factors affect the extent of individuals' IRIs and their desire to interact. We find a significant relationship between individuals' perception of inequality and their level of IRIs. Individuals who perceived that the gap between the rich and the poor is getting worse are less likely to participate in inter-racial socializations, while those who perceived that the gap is getting better are more likely to participate in inter-racial socializations. These findings are important in suggesting a positive link between perceived inequality and social cohesion via inter-racial socialization. Likewise, higher relative position in the LSM distribution is associated with higher extent of IRIs, and more desire to interact.

Education is also a significant factor in explaining IRIs. Relative to individuals with primary or less education level, individuals who completed a higher level of education (Matric and above) are more likely to engage in actual IRIs and report more desire to interact. These results may suggest that being in better economic conditions measured in terms of education and LSM may improve the opportunity for individuals from different racial groups to interact. Thus, availability of public spaces for e.g., recreational places, and better-integrated education systems are expected to improve inter-racial interactions. However, such measures do not necessarily guarantee improved contact as a number of previous case studies in South Africa show that individuals tend to informally self-segregate in schools or other public spaces (see Dixon, & Durrheim, 2003; Foster, 2005; Finchilescu & Tredoux, 2010).

Considering these findings, it might be said that addressing inequalities, education and addressing spatial separations alone will not necessarily guarantee a more cohesive society – although these are important as part of the process. Overcoming remaining prejudices, interracial mistrust, and negative attitudes towards integration remain vital too in the process of building social cohesion in South Africa. Further studies may want to explore causes of informal segregation in greater depth -especially in order to improve interracial contacts in South Africa (Finchilescu & Tredoux, 2010). In particular, it would be of interest to explore the impact of strategies to address inequality in comparison with those aimed at building inter-racial trust and addressing racial prejudice, and its respective impacts on social cohesion.

Lastly, our analysis of the relationship between social cohesion, measured using the aggregate SCI, and inequality at province level indicates that provinces with higher vertical inequality (inequality between individuals) have lower social cohesion compared to those with less inequality. In contrast, we find no significant relationship between the extent of social cohesion and horizontal inequality measures (inequality between race groups). However, results from the SCI regression analysis should be interpreted with some caution given that our sample size is very small.

References

Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. European economic review, 40(6), 1203-1228.

Allport, G. W. (1954,). *The nature of prejudice.* Cambridge, MA: Addison-Wesley.

Bhorat, H. (2015). Fact Check: Is South Africa the Most Unequal Society in the World? *The Conversation*, 30 September. https://theconversation.com/factcheck-issouth-africa-the-most-unequal-society-in-the-world-48334.

Brown, G., & Langer, A. (2012). The Concept of Ethnicity: Strengths and Limitations for Quantitative Analysis. In. H. Hino, J. Lonsdale, G.Ranis, & F.Stewart *(Eds), Ethnic Diversity and Economic Instability in Africa: Interdisciplinary Perspectives.* Cambridge, *Cambridge University Press.*

Burns, J., Hull, G., Lefko-Everett, K. And L. Njozela (2017a), "Defining Social Cohesion", Papiers de Recherche AFD, forthcoming.

Burns, J., Lefko-Everett, K. And L. Njozela (2017b), "From definition to measurement: constructing a social cohesion index for South Africa", Papiers de Recherche AFD, forthcoming.

Christopher, AJ. (2005). Further progress in the desegregation of South African towns and cities 1996-2011. *Development Southern Africa*, 22(2):267-276.

Dieckhoff, M., & Gash, V. (2015). Unemployed and alone? Unemployment and social participation in Europe. *International Journal of Sociology and Social Policy*, 35(1/2), 67-90.

Dixon, J., & Durrheim, K. (2003). Contact and the ecology of racial division: Some varieties of informal segregation. *British Journal of Social Psychology*, 42(1), 1-23.

Dixon, J., Durrheim, K., & Tredoux, C. (2007). Intergroup contact and attitudes toward the principle and practice of racial equality. *Psychological Science*, 18(10), 867-872.

Durrheim, K., & Dixon, J. (2010). Racial contact and change in South Africa. *Journal of Social Issues*, 66(2), 273-288.

Dixon, J., Durrheim, K., Tredoux, C. G., Tropp, L. R., Clack, B., Eaton, L., & Quayle, M. (2010). Challenging the stubborn core of opposition to equality: Racial contact and policy attitudes. *Political Psychology*, 31(6), 831-855.

Easterly, W. (2001). The middle class consensus and economic development. *Journal of Economic Growth*, *6*(4), 317-335.

Easterly, W., Ritzen, J., & Woolcock, M. (2006). Social cohesion, institutions, and growth. *Economics & Politics*, *18*(2), 103-120.

Ferroni, M., Mateo, M., & Payne, M. (2007), "Development under conditions of inequality and distrust: Social cohesion in Latin America" *IFPRI discussion paper*, 777.

Finchilescu, G., & Tredoux, C. (2010). The changing landscape of intergroup relations in South Africa. *Journal of Social Issues*, *66*(2), 223-236.

Foster, D. (2005). Racialisation and the micro-ecology of contact. *South African Journal of Psychology*, *35*(3), 494-504.

Hofmeyr, J. & Govender, R. (2015) .*SA Reconciliation Barometer*. Cape Town: IJR

Institute of Justice and Reconciliation, South Africa Reconciliation Barometer Survey, various years.

Horowitz, D. L., (1985), *Ethnic Groups in Conflict,* University of California Press.

Klasen, S., Scholl, N., Lahoti, R., Ochmann, S., & Vollmer, S. (2016). Inequality-worldwide trends and current debates. *Courant Research Centre: Poverty, Equity and Growth-Discussion Papers*. (No. 209).

Knack, S. (2003). Groups, growth and trust: cross-country evidence on the Olson and Putnam hypotheses. *Public Choice*, *117*(3), 341-355.

Lamb, G. (2015).Social Cohesion and Violence in South Africa: Constructing a puzzle with missing Pieces. *Mimeo*.

Langer, A., Stewart, F., Smedts, K., & Demarest, L. (2016). Conceptualising and Measuring Social Cohesion in Africa: Towards a perceptions-based index. *Social Indicators Research*, 1-23.

Lefko-Everett, K, Govender, R, Foster, D. 2017. Measuring Social Change in South Africa. *Rethinking Reconciliation: Evidence from South Africa*, 3-22. HSRC Press.

Leibbrandt, M., Wegner, E. and Finn, A. (2011) The policies for reducing income inequality and poverty in South Africa. *SALDRU Working Paper Number 64*. Cape Town: SALDRU; University of Cape Town.

Leibbrandt, M, Finn, A & Woolard, I. (2012). Describing and decomposing post-apartheid income inequality in South Africa. *Development Southern Africa* 29(1):19-34.

Lonsdale, J. (2012). Ethnic patriotism and markets in African history. In H. Hino, J. Lonsdale, G.Ranis, & F.Stewart (Eds), *Ethnic Diversity and Economic Instability in Africa: Interdisciplinary Perspectives*. Cambridge, Cambridge University Press.

Mattes, R. (2015). South Africa: Vertical Integration and Horizontal Separation. *Mimeo*.

Miodownik, D., & Nir, L. (2015). Receptivity to Violence in Ethnically Divided Societies: A Micro-Level Mechanism of Perceived Horizontal Inequalities. Studies in Conflict & Terrorism.

National Planning Commission . 2012. *National Development Plan 2030. Our future - make it work*. Retrieved from: http://www.gov.za/issues/national-development-plan-2030.

Njozela, L., Shaw, I., & Burns, J. (2016). Towards measuring social cohesion in South Africa. *Saldru Working Paper 187 NIDS Discussion Paper 2016/14* University of Cape Town, August 2016.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 90(5), 751.

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology*, 38(6), 922-934.

Reitz, J. G., & Banerjee, R. (2007). Racial inequality, social cohesion and policy issues in Canada. Canada: Institute for Research on Public Policy.

Ritzen, J., Easterly, W., & Woolcock, M. J. (2000). On" good" politicians and" bad" policies: Social cohesion, institutions, and growth. Washington DC: World Bank.

Rothstein, B., & Uslaner, E. M. (2005). All for all: Equality, corruption, and social trust. *World Politics*, 58(01), 41-72.

Seekings, J. 2017. The Social Consequences of Class Formation Among Black South Africans in the 2000s: Evidence from SARB. *Rethinking Reconciliation: Evidence from South Africa*, 111-137. HSRC Press.

Shinew, K. J., Glover, T. D., & Parry, D. C. (2004). Leisure spaces as potential sites for interracial interaction: Community gardens in urban areas. *Journal of Leisure Research*, 36(3), 336.

Soudien, C. (2015). Construction of Race, Tribe and Nation as Principal Identity of a Nation. *Mimeo*.

Stewart, F. (Ed.). (2016). Horizontal inequalities and conflict: Understanding group violence in multiethnic societies. Springer.

Statistics South Africa. (2017). Poverty Trends in South Africa An examination of absolute poverty between 2006 and 2015. http://www.statssa.gov.za/publications/Report-03-10-06/Report-03-10-062015.pdf

Tredoux, C., & Finchilescu, G. (2010). Mediators of the contact–Prejudice relation among South African students on four University Campuses. *Journal of Social Issues*, 66(2), 289-308.

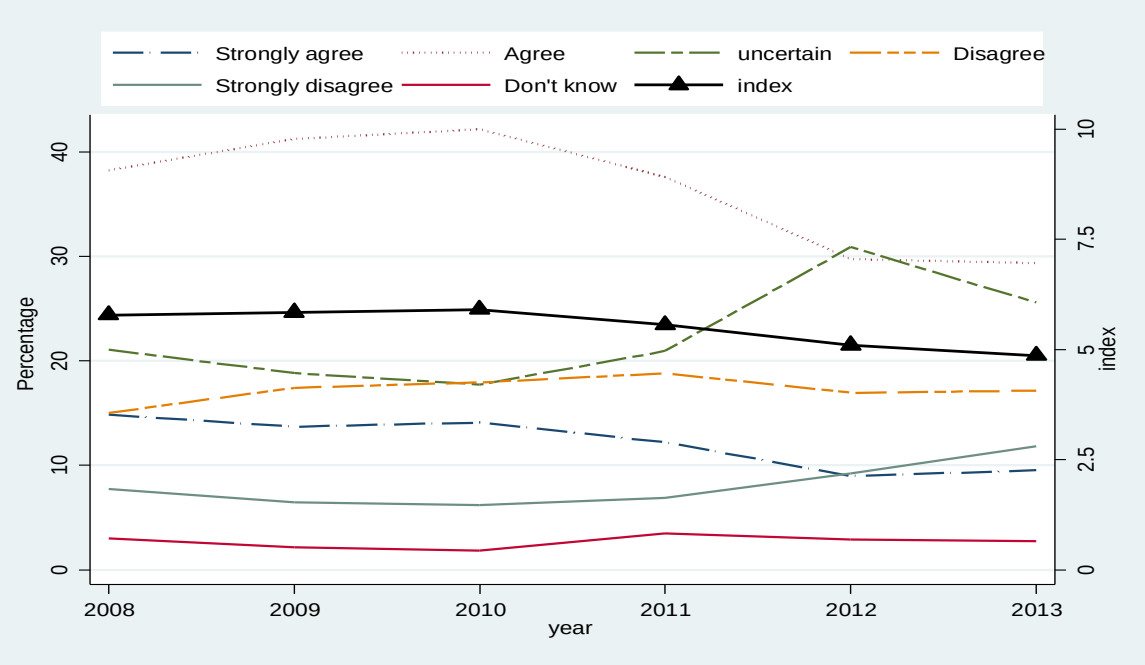
Vergolini, L. (2011). Social cohesion in Europe: How do the different dimensions of inequality affect social cohesion? *International Journal of Comparative Sociology,* 52(3), 197-214.

Wale, K. & Foster, D. (2017). Contact and Reconciliation. *Rethinking Reconciliation: Evidence from South Africa,* 69-85. HSRC Press.

Wittenberg, M., & Leibbrandt, M. (2017). Measuring inequality by asset indices: A general approach with application to South Africa. *Review of Income and Wealth*, 63(4), 703-30.

Appendix A: Tables and figures

Figure 1A: Desire to learn more about the customs of people from other race groups, 2008-2013



Source: Own calculations from weighted SARBS, 2008-2013.

Table 1A: Relative LSM scores between racial groups, 2003, 2008 and 2012

	2003	2008	2012
Black/White	0.444	0.444	0.500
Black/Coloured	0.667	0.667	0.833
Black/Indian	0.571	0.500	0.625
Coloured/White	0.667	0.667	0.600
Coloured/Indian	0.857	0.750	0.750
Indian/White	0.778	0.889	0.800

Source: Own calculations from weighted SARBS, 2003, 2008, and 2012.

Table 2A: Estimating the Likelihood of inter-racial interactions

	OLS			Orderd probit		
	Talk	Socialise	Desire to talk	Talk	Socialise	Desire to talk
Age (Base=<35)						
>=35 & <60	0.33***	0.05	-0.14***	0.12***	0.02	-0.06***
>=60	-0.89***	-0.47***	-0.53***	-0.34***	-0.19***	-0.19***
Female	-0.54***	-0.13***	-0.09***	-0.19***	-0.05***	-0.03***
Education (base=primary or less)						
Some high school	0.26*	0.14	0.49***	0.11***	0.10**	0.17***
Matric	0.80***	0.50***	0.54***	0.29***	0.23***	0.18***
Collage/university	1.16***	0.87***	0.67***	0.41***	0.33***	0.23***
Living standards LSM	0.36***	0.29***	0.06**	0.13***	0.11***	0.02**
Race (base=Black)						
White	1.19***	0.41**	-0.22*	0.39***	0.14**	-0.12***
Indian/Asian	1.45***	1.29***	0.52***	0.48***	0.44***	0.17***
Coloured	1.23***	1.40***	0.89***	0.41***	0.50***	0.35***
People from other group are untrustworthy(base=uncertain)						
Agree	-0.03	0.03	-0.16**	-0.01	-0.00	-0.06**
Disagree	0.45***	0.32**	0.42***	0.15***	0.10***	0.17***
Don't know	-0.82***	-0.61***	-0.90***	-0.33***	-0.31***	-0.30***

Economic situation in SA in the next 2 years (base=stay the same)						
Get better	0.38***	0.30***	0.43***	0.13***	0.10***	0.16***
Get worse	-0.16*	-0.39**	-0.11**	-0.05*	-0.14***	-0.04***
Don't know	-0.05	-0.29**	-0.11	-0.04	-0.16***	-0.03
Urban	0.20**	-0.09*	0.33*	0.08**	-0.01	0.12*
Observations	27,426	27,426	27,426	27,426	27,426	27,426
R-squared	0.256	0.162	0.177			

Source: own estimates using SARB (2003-2013). Note: *** p<0.01, ** p<0.05, * p<0.1

Table 3A: Question used to create the SCI

Belonging

In South Africa, all religious groups enjoy equal rights.

My mother tongue language gets the recognition it deserves in a democratic South Africa

Cooperation

Please think back on the last year. How often, if ever, have you participated in demonstrations (added 2011)?

Institutions

Please indicate how much confidence you have in local government

Please indicate how much confidence you have in Parliament

Please indicate how much confidence you have in the police

Please indicate how much confidence you have in the legal system in general

Relations

On a typical day during the week, whether at work or otherwise, how often do you talk to people of racial groups other than yours?

If you had a choice, would you want to talk to people of racial groups other than yours?

Are people of racial groups other than yours are untrustworthy?

Identity

When you think of yourself and your daily interaction with others, which group do you primarily belong to?

When you think of yourself and your daily interaction with others, which group do you secondarily belong to?

How important is this primary identity to you?

It is desirable to create one united South African nation out of all the different groups who live in this country?

It is possible to create one united South African nation out of all the different groups who live in this country?

Table A4: Social cohesion and inequality index diversity index

	Least Squares Dummy Variables		Panel Fixed effects	
VARIABLES	(1)	(2)	(3)	(4)
Gini coefficient	-0.20		-0.20*	
	(0.13)		(0.09)	
Theil's T		-0.09*		-0.09**
		(0.05)		(0.03)
Coefficient of variation	0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)
Log GDPpc(t-1)	0.17	0.19	0.17	0.19
	(0.76)	(0.73)	(0.69)	(0.70)
Crime(t-1)	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
hefindahl_index	0.06	0.06	0.06	0.06
	(0.04)	(0.04)	(0.03)	(0.03)
	(0.56)	(0.54)		
Time dummy	Yes	Yes	Yes	Yes
Province dummy	yes	Yes	No	No
Constant	-1.55	-1.91	-1.47	-1.82
	(9.71)	(9.40)	(8.54)	(8.69)
Observations	45	45	45	45
R-squared	0.60	0.61	0.43	0.45
r2_a	0.348	0.364	0.289	0.307

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