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LIVING STANDARDS IN SOUTH AFRICA'S FORMER HOMELANDS

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Abstract

This paper exploits the sudden increase in employment in South Africa's former homelands to determine the quality of life in those areas during apartheid by comparing the long term outcomes of individuals subject to the employment increase to those not subject to the increase. Using a standard difference in difference approach I find that there was some malnutrition in the homelands resulting in stunting in African men, the evidence is weaker for women. I also find that men and women exposed to the increase in employment tend to have more education, be more skilled and have better general health. This study provides previously unmeasured individual level information on the quality of life in the homelands.

Key words: Apartheid; living standards; stunting; difference-in-difference

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Introduction

South Africa's former homeland regions were home to approximately 20 million African South Africans until they were reincorporated into South Africa in 1994. The physical land mass constituted slightly more than 13 percent of the total South African land mass and yet they housed approximately 50 percent of the African population. Homeland areas were situated in rural areas within South Africa with one homeland for each ethnic group. The homelands were overcrowded and unable to support the rural economic activities on which most inhabitants depended and were subsequently poverty stricken with few economic opportunities within the homelands and characterised by high levels of unemployment.

While we know that the level of poverty in the homelands was high (Hirsch 1986), details of the living standards in the homelands are not well known due to the lack of data collected during apartheid and therefore the consequences of poverty on individual outcomes remain poorly quantified. There were 10 homelands, four of which had been granted political independence by the South African government by the end of apartheid, although this was never formally recognised by the international community. The 1970 census excluded people living in Venda, one of the independent homelands.² Furthermore, the census had one questionnaire for Coloureds, Asians and Whites and another for Africans. The African questionnaire contained only a limited subset of the questions in the Coloured, Asian and White survey. There are other discrepancies, for instance almost four million Whites were enumerated but only 751, 892 Africans were enumerated despite their numerical dominance. Subsequent censuses excluded the independent homelands and also ultimately the non-independent homelands.

² The other three: Bophuthatswana, Ciskei and Transkei were not yet independent at this time.

Since 1994, censuses and household surveys represent the entire population but do not explicitly record whether an individual was born in a former homeland or not. Due to the high levels of mobility in South Africa from rural to urban areas a large number of people who would have grown up in the homelands no longer live there and their origins could not be traced until now.

Fortunately, a recent survey, the National Income Dynamics Survey, documents where a person was born as well as when. In addition, it contains a number of well being measures such as height, weight and health. We now have information on individual characteristics in the homelands which could be used to determine the standard of living in these areas (Nicholas and Steckel 1991, Komlos 1993, Steckel 2008). Yet, we cannot say how badly off a person was because of conditions in the homelands since there is no obvious comparison group. A comparison with other races or with Africans living in non-homeland areas is not conclusive as many unobservable factors may contribute to differences in outcomes.

An opportunity to evaluate outcomes in the former homelands arises from the unexpected and sudden increase in the employment of African men living in three of the 10 former homeland areas. In 1975 the mining sector experienced an unanticipated decline of its foreign labour supply and responded by increasing recruitment activities in three of the homelands. This paper exploits the exogenous shock to the labour supply of the mining industry between 1975 and 1979 to determine its impact on the living standards of people in the South African homelands who replaced the foreign workers.

In April 1974 President Hastings Banda of Malawi suspended all recruiting operations of the South African Chamber of Mines in that country. His reason was that he was awaiting the outcome of an enquiry into the causes of a plane crash that killed 77 Malawian miners. The decision affected 70, 000 gold miners that the South African Chamber of Mines had to

replace. Then in 1976, the new government in Mozambique, the Liberation Front of Mozambique (FRELIMO), discouraged the migration of workers from Southern Mozambique to apartheid South Africa. The number of foreign workers in the mining industry fell from 297, 000 in December 1973 to 189,000 at the end of 1977 as shown in table 1 (South African Institute of Race Relations 1974 1977, 1978). To fill the short fall of workers, employment of domestic recruits increased from 95,000 to 193,000 over the same period.

The Chamber of Mines recruited predominantly from some homelands and not from others with the result that only some homelands experienced the large increase in employment providing a comparison group to determine the quality of the living standards in areas affected and unaffected by the employment shock. The choice of recruitment area was determined to an extent by the level of overcrowding in that region, recruitment was higher in more densely populated regions (Wilson, 1972). The implication is that living standards may have been lower in the regions that experienced the shock than in other regions and any changes in outcomes are for the worst off individuals who may not necessarily represent the general homeland population. However, given the high levels of poverty in all homeland regions I do not believe this to be a problem. Furthermore, (Leys 1975) notes that each homeland sent the majority of its workers to one industry and the Chamber's labour recruiting arm had a larger presence in these homelands. Figure 1 highlights the regions from which workers came (in black) and the mining areas to which they went (in red).

There is a large literature on the long term impacts of childhood nutrition on adult outcomes (Komlos 1987, Costa 1993, Steckel 1995, Frijters et al. 2010 and Hatton et al. 2010) such as health and longevity. It is now well known that increased nutrition in early childhood years can lead to increased stature in adulthood, longer lives and increased health. This study contributes to the literature on the long run impacts of childhood nutrition by

examining the impact of an increase in income and hence access to food on adults who experienced an increase in their nutritional intake when they were young children.

Using a standard difference in difference analysis, I find a strong impact of a positive change in childhood welfare on adult heights. Men who were born in the affected regions between 1969 and 1974 are on average 3 centimetres taller than other African men. They are on average also 4 kilograms heavier. The height and weight results are weaker for African women with no discernible impact of the employment shock on either measure. Both men and women from the treatment areas are likely to have higher levels of educational attainment and there is weak evidence that they also have better health outcomes.

The discrepancy in birth years between men and women may be due to gender differences but is more likely due to data limitations as I have chosen the birth years for which the results are strongest within the set of reasonable birth years. The survey is small with 16, 885 adult respondents and ultimately only 98 men and 188 women in the treatment group. Furthermore, if the recommended survey weighting is used there is only one stratum and no standard errors due to the small sample size. I have therefore chosen to ignore the strata component of the weighting specification. This decision does not affect the coefficient estimates but does result in conservative standard errors. This choice may render some coefficient estimates insignificant when instead the variables do actually matter. Despite these data limitations, the study is highly informative regarding living standards in the former homelands and shows that there was malnutrition in the former homelands resulting in physical stunting for both men and women in these areas. The lack of nutrition may also be responsible for the poorer education and health outcomes in the control group. This is only a beginning toward our deeper understanding of living conditions in the former homelands, however the study does provide evidence that the levels of poverty in the homelands had negative physical consequences for the inhabitants.

The following section discusses the employment of foreign labour and well as the nature of the homelands and migrant labour. Section 3 presents the data and summary statistics. Section 4 discusses the analytical approach and results and Section 5 concludes.

Labour migration in the South African mining industry

The policy of employing foreign workers in the mining industry was a long standing one (Wilson, 1972). Some commentators maintain that the industry only prospered because it was able to utilise a source of cheap unskilled labour (Leys, 1975). Many of the early discriminatory racial practices in the labour market can be understood in the context of forcing domestic African labour into unskilled jobs in the mining industry. When the industry was unable to satisfy demand locally it expanded its catchment area to other countries/colonies in southern Africa where the British and Portuguese colonial authorities were accommodating (Prothero, 1974). The proportion of foreign workers in the South African mining industry rarely fell below 50 percent between 1886 and 1973.

The domestic African labour force increasingly rejected mining as an employment option. Labour demand in manufacturing was increasing in the post war period and paid higher wages compared to the extremely low wages paid in the mining industry. The industry defended its low wage policy by claiming that domestic labourers had families based in the homelands that were supporting themselves with subsistence farming. There would therefore be no need to pay a man a wage large enough to pay for the upkeep of his family. In truth, since the homelands were too densely populated to support large scale subsistence farming this reasoning was inaccurate but not changed.

The government originally created the homelands in the 1913 Land Act which allocated 7.6 percent of South Africa's land mass in the form of reserves to the African population which at the time accounted for 67 percent of the population of almost six million

people (Feinstein, 2005).³ The government allocated each ethnic group in South Africa to a reserve so that the 10 homelands ultimately served 10 ethnic groups. Figure 1 presents a map of South Africa during apartheid with the homelands highlighted. Under apartheid, the reserves became homelands and during the 1970s four of them were granted independence by the South African government (Transkei, Bophuthatswana, Venda and Ciskei); this was never recognised by any other nation. As part of its separate development program, the government claimed that every African person belonged to a homeland and had rights in that homeland thereby justifying the lack of racial equality within South Africa. However, since the land allocated to the homelands, although increased a little from the original 1913 specification, was often situated in low rain fall, infertile areas of the country and was too small to accommodate such a large population, it was impossible for the entire African population to earn a livelihood in the homelands. South African Africans therefore required a wage higher than what the mining companies were willing to pay to support their families. The result was rising unemployment in the homelands as the mining industry refused to pay a wage for which African men would work.

Population densities in rural areas in other southern African countries were much lower and families of migrant workers could support themselves with subsistence farming, enabling the industry to pay lower wages to foreign workers than what domestic workers would accept (Leys 1975, Massey 1983, Crush 1986). Furthermore, the industry claimed that foreign workers were easier to manage than domestic workers and less likely to demand higher pay and better working conditions. They also signed longer contracts than domestic workers. The number of African South African mine workers fell from 175,000 in 1960 to less than 85,000 by 1971. The South African component of the mining labour supply was at its lowest precisely at the time that foreign sources of labour dried up.

³ The 1936 Land Act increased the reserved area to 13 percent.

The independence of several former colonies in the region heralded a new and uncertain phase in the relationship between the mining industry and the neighbouring states. First to pull its workers from South Africa was Tanzania in 1963, followed by Zambia in 1966. However the workforces from these two countries were nowhere near as large as those from Malawi and Mozambique (Crush, 1986). Table 1 shows the origins of workers in the gold mining industry between 1969 and 1978. As the table shows, the number of workers from Malawi declined between 1974 and 1975 following the Witwatersrand Native Labour Association (WENELA) 1974 plane crash.⁴ The number of workers recruited from Malawi increased again at the end of the decade. Following the achievement of independence for Mozambique in 1975, the number of Mozambican workers decreased in 1976 and dropped off even more in 1977 following a visa dispute with South African authorities related to independence.

Table 1 shows an increase in the employment of workers from Transkei by 1977, almost double what it was in 1973. Crush (1986) notes that this increase took place immediately after the decline in the employment of foreign workers, therefore the increase in employment in the Transkei must have begun to take place in 1975. As Leys (1975) notes, increases in employment also took place in the former homelands of Bophuthatswana, now situated in the North West Province and the Northern Cape Province as well as Lebowa, now situated in the Limpopo Province (Figure 2 shows the nine provinces of South Africa post 1994). Other increases took place in Rhodesia and smaller increases took place in other homelands as well but the majority came from these three homelands (Crush, 1986). The mining industry's new policy was to spread recruitment around the country so that if any region withdrew its workers, replacement workers could be found from other regions. Furthermore, if workers were recruited from further away then the risk of worker unrest was

⁴ WENELA was in effect a monopsonist, recruiting all labour for the entire gold mining industry.

likely to decline as a man who was in a strange place might feel less comfortable protesting than a man who lives near his work place. Workers also signed short, six month contracts after which they returned to their homeland for a period of rest before signing a new contract (Wilson, 1972). While the industry complained that this led to a high labour turnover, which it no doubt did, it also suited the industry that any potential trouble makers would only be around temporarily.

Despite the mining industry's best attempts to structure employment to limit labour unrest, the 1970s were characterised by unrest amongst mine workers (SAIRR Annual Surveys). Protests were about wage rates and living conditions. As noted, the industry paid extremely low wages, paying African workers R21 per month in 1972 and R29 in 1973.⁵ Following labour disputes throughout 1973, the wage increased to R46 in 1974, R79 in 1975, R92 in 1976, R102 in 1977, R123 in 1978 and R141 in 1979 (SAIRR). Since mining could no longer rely on foreign labour as before, wage increases were also required in order to keep up with wage increases in the manufacturing sector. Wage increases were ultimately experienced throughout the country, a fact that needs to be taken into account when evaluating the impact of the mining labour demand shock.

The increase in employment of workers from the three affected homelands would have impacted living standards in the homelands through the incomes these workers earned. Wilson (1972) estimates that 18 percent of a worker's wage was sent home to his family in the form of a remittance. Presumably the workers also brought part of their incomes back home with them when they returned to the homelands while on temporary leave from the industry. Workers would not have been able to spend their leave near the mining industry as the pass laws specified that when not working a person had to be residing at his original

⁵ Until the early 1980s one Rand was equal to one US dollar.

home. Therefore, at the very least, several families experienced an increase in income even though it may have been slight.

Data and Summary Statistics

The first wave of the National Income Dynamics Study, run by the Southern Africa Labour and Development Research Unit at the University of Cape Town, is the first survey to ask respondents retrospective questions on month and year of birth, birth location as well as recording measures of health, height and weight. Wave 1 of the study became available in July of 2009. The adult sample consists of 16,885 adults over the age of 15 and includes data such as race and age, fertility information, parents' characteristics, employment data, income and expenditure data, education, health, and height and weight measurements. Height and weight measurements were taken by the enumerators of the survey. Enumerators were instructed to take two height and weight measurements and a third if the first two differed by more than two centimetres in the case of heights or one kilogram in the case of weights.

In order to create the treatment variable I need to know where an individual was born. Given the difficulty of permanent migration for African people during apartheid I assume that the area of birth and area of residence at the time of the employment shock in the mid-1970s are the same. The original adult data contains information on the province and district council where a person was born only if she has moved away from her region of birth at some stage. However 9, 543 individuals have not moved from their area of birth and there is no record of where they were living at the time of the survey. To solve this problem, I supplement the adult data with a derived household data file. The derived household data record the province and the district council where the household in the survey was situated at the time of the survey. Once I merge the two data sets I am able to determine the province and district council where a person who has not moved since birth resides. Once I take account of

missing data or cases where the respondent did not know the answer there are 10, 433 Africans, 4, 098 males and 6, 335 females. The homelands that were affected by the employment shock are Transkei, Ciskei, Bophuthatswana and Lebowa. The regions now fall within the Eastern Cape (Transkei and Ciskei), the Northern Cape and North-Western Province (Bophuthatswana), and Limpopo Province (figure 2 shows the post 1994 provinces). There is no clear continuation between former homeland boundaries and current district councils however the overlap can be matched up from maps. Figure 3 contains maps of the district councils in South Africa. I assign a person to the treatment group depending on the district council in which they were born. If the district council overlaps with parts of one of the affected former homelands the value of the variable is one, it is zero if the district council does not include parts of the affected former homelands. There are 53 district councils, 28 of which overlap with former homeland areas and 15 of those were subject to the large increase in employment.

The outcome variables I consider are height and weight, educational attainment both the level and the amount of time spent in school, basic skills which are measured by computer literacy, whether or not a person has a driver's licence and whether a person is literate in his/her home language and English, and an assortment of health conditions. The literature on heights and nutrition suggests that nutrition matters at early ages. I have therefore focused on men who were aged between one and six years (born between 1969 and 1974) when the employment shock occurred and women who were aged between two and nine years (born between 1966 and 1973) when the shock occurred. Note that not all individuals in the treatment group would have been treated, however it is not possible to determine whether an individual lived with a person employed in mining or not. As table 1 shows, the number of workers from the Transkei increased from 47, 139 in 1973 to 104, 181

in 1978 in a region of 2.3 million people as estimated in 1982.⁶ The birth cohorts in this study are therefore the cohorts within the feasible set of very young individuals when the shock occurred that yield the most robust results in section 4. This explains the difference in birth years between the two genders.

Table 2 contains summary information on the data. 19.86 percent of the men were born in the treatment area and 10.99 percent of them were born between 1969 and 1974 with 2.61 percent of them born in both the treatment area and treatment years. 18.41 percent of the women were born in the treatment area and 14.70 percent of them were born in the treatment years, with 3.08 percent of them born in both the treatment area and treatment years of 1966 – 1973.

The average height of all African men in the sample (born before 1990 to include only individuals who have completed their growth phase by the time of the survey) is 168.68 centimetres. The average height of men in the treatment group is 169.80 centimetres, taller than the sample average and also taller than the rest of the cohort born outside of the treatment area. The average weight of African men is 65.70 kilograms while that of the treatment group is 68.56 kilograms. With respect to education, on average the highest grade achieved is Grade 7, while men in the treatment group have attained Grade 8. Men in the treatment group have also spent longer in school than the average male, 12 years versus 11.39 years. Respondents were asked to evaluate their proficiency at certain skills, with proficiency ranging from 1 to 4, with 1 being proficient and 4 not at all. While men from the treatment group are not more computer literate and are not more likely to drive than the rest of the sample, they do seem to be more literate in both their home languages and in English. The four health measures are based on the respondent's answers to several health questions. For general health, answers range between 1 for excellent health and 5 for poor health. The

⁶ As mentioned earlier, data collection in the former homelands was poor and this figure is an estimate from Mauder (1982).

specific health variable is constructed from 23 questions regarding the respondents current health complaints, an answer of 1 indicates they suffered from that complaint while 2 indicates no symptoms. The measure in this paper is the sum of the responses to the 23 questions so that a higher number indicates less complaints than a lower number. Similarly, a long term health variable was constructed from 7 questions on long term illness including tuberculosis, high blood pressure, diabetes, stroke, asthma, heart problems and cancer. Higher values indicate fewer illnesses. The measure of emotional health is again a composite from 10 questions regarding the respondent's state of mind in the last week, responses range from 1 when the symptoms are rarely experienced to 4 for symptoms that were experienced the entire week. Men from the treatment group appear to be in somewhat better general health with fewer specific ailments than the rest of the sample. In addition, there is some evidence of better long run health and emotional health for these men than for the sample as a whole.

Table 2b shows that the average height for African women is 157.99 centimetres. The average height of women in the treatment group is 159.71, taller than the sample average and also taller than the rest of the cohort born outside of the treatment area. The average weight of African women is 71.19 kilograms while that of the treatment group is 74.80 kilograms. African women in the treatment group have more education than the rest of the sample, attaining slightly more than Grade 8 compared to Grade 7 for the entire sample and even for other women born in the same time period. However, for the same amount of educational attainment as men in the treatment group, African women are spending longer in school. Apart from having a driver's licence, women in the treatment group appear to be more skilled than women in the rest of the sample. The mean values for computer literacy, and literacy in home language and English are lower than for the entire sample where a low value indicates that a respondent sees themselves as being good at a particular task. With respect to physical health, women from the treatment group consider themselves healthier than women in the rest

of the sample. The mean value for general health is lower than for other women where a lower number in the survey means the person perceives themselves as healthier. The mean values for specific short term and long term illnesses are higher than for the rest of the sample where a higher value indicates less illness. However, women in the treatment group seem to have more emotional health complaints than other women where a higher value indicates more complaints.

As tables 2a and b show, the number of men and women in the treatment group is small and this affects the power of the results. Furthermore, because of the small sample I have chosen to ignore the stratification specification of the weighting. While the coefficient estimates are unchanged as a result of this specification relative to the full weighting specification, the standard errors are likely to be more conservative.

Analysis

The hypothesis is that in the regions that experienced the positive employment shock, outcomes such as height and weight should be different after the shock than before the shock and also that the outcomes in the affected region should differ from unaffected regions. People who were young children at the time of the shock are most likely to have experienced the effects of increased income in their households on heights and weights.

I will adopt a standard difference in difference approach:

$$Y_i = \alpha + \beta birthdistrict_i + \gamma yearofbirth_i + \delta birthdistrict_i * yearofbirth_i + \Gamma X_i + \varepsilon_i \quad (1)$$

where Y_i is the outcome of interest such as height, weight, education, basic skills and health. $birthdistrict_i$ is a dummy variable equal to one if a person was born in the regions affected by the employment change, and zero otherwise, $yearofbirth_i$ is a dummy variable equal to one if a person was born during the treatment years, and equal to zero otherwise.

$birthdistrict_i * yearofbirth_i$ is an interaction term equal to one if a person was born during the

treatment years in the treatment area. X_i is a vector of control variables including age, age cohorts which take account of any cohort specific changes, a person's province of birth, language group to take account of any physical differences by ethnic group, and father's occupation since any changes in height should be related to whether or not the father worked in the mining sector. ε_i is a random error term. If the shock has an impact on outcome variable Y_i then we expect δ to be significant, denoting that individuals born just before the shock in the treated regions are affected by the shock.

Ideally, the specification would include a record of siblings' heights and parents' heights as well as parental education levels. However, since the individuals in the data are adults at the time of the survey, there is no way to know who their siblings are unless they reside in the same household. To the extent that individuals live with their parents, such height information may be available, however not all parents are still living with their children and including parental heights may result in some amount of selection bias not to mention the reduction of an already small sample.

Parental income and education are known to be important determinants of height. In this data there is no record of parental income unless the respondent still lives with a parent and that parent still works, however there is no record of parental income while the respondent was a child. Respondents are asked the level of education their parents attained, Unfortunately, many respondents do not know the level of their parents' education. Furthermore, it is unclear under the apartheid system of education exactly what role a person's education should play in the height outcomes of their children especially if they grew up in a homeland. Father's occupation is available, however, the job categories in the data are at an extremely aggregated level so that it is not possible to determine the actual occupation an individual's father held and certainly not whether an individual's father worked in the mining sector. Nevertheless, I do include the broad categories in some

regressions since father's occupation is directly related to height if the father worked in the mining sector. This inclusion reduces the sample somewhat since many respondents do not know their father's occupation. No other socio-economic determinants of height are included in the regression.

The choice of where the workers who would fill the gap created by the lack of foreign workers would come from is not related to any of the potential outcome variables and in that sense there is no endogeneity problem between the treatment group and the outcome variable. I run standard ordinary least squares regressions and ordered probits of the outcome variable of interest on the treatment group as in equation 1. The outcome variables in this study are height, weight, level and year of education, measures of basic skills, measures of general health, short term and long term health complaints and emotional health. Separate regressions are run for males and females.

Table 3 presents the results of an OLS regression of the heights of men on whether or not they were in the treatment group. The treatment group in this regression consists of all men in the sample who were born in a homeland region that was subject to the increase in mining employment and were born between 1969 and 1974. There are seven specifications in the table, all specifications include as explanatory variables the treatment group dummy, the years of birth dummy, the area of birth dummy and father's occupation. The first specification consists of only these variables. The second includes age as we might expect younger men to be taller as living conditions improve with general wage increases for African workers throughout the 1970s. The third specification includes age cohorts to account for any time specific changes that may have taken place at the same time as the shock, such as the wage increases noted above. The fourth specification includes the province of birth to account for ethnic and hence genetic differences across the homelands as each ethnic group had its own homeland and neglecting ethnic differences might bias the

coefficient on the treatment group. As a similar control, the fifth specification includes language group rather than province of birth as language group is another proxy for ethnic group and heights may differ by language group if the genetic make-up of each language group is different. The sixth specification includes province and language group but excludes birth cohort as a robustness check. Finally, the seventh specification includes all previous controls.

I find that men born between 1969 and 1974 in the selected regions are between 3 and 3.4 centimetres taller than all other African men in the sample. The result is robust to the inclusion of age, birth cohorts, province of birth and language group. I find some evidence that younger men are taller than older men and that English speaking males are taller than other males. This result is understandable as an African person who speaks English as a home language would have a higher socio-economic status than one speaking an African language. Regressions including mother and/or father's education reduced the sample size significantly due to the number of respondents who did not know their parents' education, furthermore, the coefficient on the treatment group became insignificant due to the loss of observations in the treatment group. Recall that these results, while robust are fairly weak due to the low number of respondents in the treatment group, the small proportion of those actually treated in the treatment group as well as the nature of the weighting. The actual impact of the employment shock on male heights may be larger than that found here.

Adjustment of the birth cohort yields similar results if the cohort is extended to earlier birth years. Extension to later years yields insignificant coefficients, although the coefficients remain positive. The results appear to be driven by those who were youngest when the local employment rate increased.

Table 4 reports the regression results for the impact of the treatment on the weights of men. I use the same seven specifications as in Table 3 but include height as an independent

variable, height is a good predictor of weight, as taller individuals also weigh more.

Regressions that exclude height as an explanatory variable yield the same results. I find that African men in the treatment group are between 5.3 and 6.1 kilograms heavier than those not in the treatment group. The results are robust to the inclusion of age cohort, province of birth and home language.

Tables 5 and 6 report the regression results for African women. Women in the treatment group were born between 1966 and 1973. Regressions on height and weight for the same birth years as the men yield insignificant coefficients which may be due to sample size restrictions, although the coefficients are positive. Table 5 shows that African women in the treatment group are on average between 0 and 1.4 centimetres taller than other women. The results are robust to the inclusion of age, province of birth and home language. A possible explanation of why the effect is stronger on boys than on girls is that this particular choice of birth years may exclude women for whom the result is the strongest, the youngest women. However, inclusion of women born in 1974 yields insignificant coefficients which may be a result of low numbers of actual treated in the treatment group for that year. It is also possible that the local increase in income affected boys more than girls.

While there is an impact of increased income in the region on women's heights, there does not appear to be any discernible impact on women's weights in the treatment group, this finding is robust to alternative specifications of the birth year. Table 6 records the results of a regression of women's weights on a number of determinants and finds no significant effect. Women born during the treatment years throughout the entire country weigh more than women born before or after even with the inclusion of age and age cohort terms and even though I find that taller women are on average heavier. The findings are robust to the exclusion of height as an independent variable.

Tables 7 and 8 present the results of an ordered probit regression of the 12 education levels on the treatment group for African men and women.⁷ There are 10 specifications allowing for the inclusion of age cohorts, province of birth, home language and mother's education level along with the usual controls of where and when a person was born as well as age and height. For men, in all but one specification I find that the educational attainment of the treated group is higher than that of the rest of the sample. In specification 2 which includes only the treatment group, birth province, birth years, age, height and mother's education I find a positive effect on education, however the coefficient is insignificant. As with the effect on weights, the result for women is not as strong as that for men. I do find some evidence of a positive effect on women's education, the coefficient on the treatment group variable is positive for all specifications, however it is insignificant for six out of the 10 estimations.

Table 9 presents results of an OLS regression of the number of years spent in school on the treatment group conditional on the amount of education attained for both men and women. This regression tests whether individuals from the treatment group spend less time in each grade than respondents from the rest of the sample. The expectation is that conditional on education, the length of time in school is shorter than that of the control group. I find no evidence in support of this hypothesis as the coefficients are positive and insignificant. If anything at all, women from the treatment group take longer to achieve the same amount of education.

Tables 10 and 11 present results of an ordered probit regression of various basic skills on the treatment group for African men and women. The basic skills are how competent a person is with a computer, whether a person has a driver's licence and how well a person can read and write in his/her home language and in English. Responses range from 1 for very

⁷ Primary and secondary education run from Grade 1 to Grade 12, there is one category for each level of schooling.

well to 4 for poorly. For the driver's licence question the response is 1 for yes and 2 for no. The implication is that the lower the value of the variable, the more skilled a person is. I use the same specification for each dependent variable in the table. The controls are the province and years of birth, age and the level of education. I find weak evidence in favour of higher skill levels for both men and women in the treatment group. All coefficients are negative which suggests higher competence, however, for men the only significant case is for reading in English and for women the only significant case is for reading in the home language. Recall that because of the survey weighting, standard errors are conservative.

Tables 12 and 13 provide estimation results of an ordered probit regression of general well being on the treatment group. Respondents classified their general health from 1 meaning excellent to 5 meaning poor. That is, the lower the value of the dependent variable, the healthier a respondent considers himself/herself to be. The tables consist of eight specifications to allow for robustness checks. Control variables include age, province of birth, educational attainment and a person's current income. The inclusion of the income variable reduces the sample as not all individuals in the sample are working. I find evidence in favour of better long term health outcomes for men in the treatment group with and without the inclusion of the income measure. The results are stronger with the inclusion of the income variable. Note that the number of respondents in the treatment group declined from 98 to 58 with the inclusion of the income measure. The evidence for women is once again weaker. The coefficients on the treatment group are negative in all specifications however only significant with the exclusion of the income variable. Including income in the regression for women reduces the number in the treatment group from 188 to 51.

Tables 14 and 15 report the results of an ordered probit regression of specific health complaints in the last 30 days on the treatment group for African men and women. Recall that the health measure is constructed as a composite of 23 individual health complaints where

respondents answered 1 if they had the complaint and 2 if they did not. I add the responses for each individual over the 23 questions so that a healthier individual has a higher number than a less healthy individual. I then treat the values of the new variable as discrete and run an ordered probit. The results are similar if the values are treated as continuous however, since the actual number of the dependent variable has no meaning it makes more sense to use a discrete dependent variable. As with tables 12 and 13, there are eight specifications allowing for the inclusion of age, province of birth, educational attainment and income along with the standard inclusion of the treatment group and whether a person was born in the treatment area and years. I find evidence of fewer recent health complaints of the treatment group for men. The result is robust to all but two specifications, however, the coefficient is positive in all cases. There is no evidence of a positive effect of the treatment group for women. Women born in the treated areas have fewer recent health complaints than other women across all birth years. A possible explanation is that the choice of birth years in the estimation does not capture the effects of the treatment. However, the results do not change with an adjustment to the birth years.

Tables 16 and 17 repeat the analysis in tables 14 and 15 for long term health. The long term health variable is constructed from seven questions regarding a person's longer term ailments. The higher the value of the variable, the healthier the respondent is. The eight specifications are the same as those in tables 12 – 15. I find weak evidence for better long term health for men. While the coefficients are positive, none of them are significant. I find some evidence that men born in the treated areas have better long term health, however this result disappears when I control for ethnicity using province of birth. I find no evidence of better long term health for women in the treatment group.

Finally, tables 18 and 19 report the results of an ordered probit estimation of emotional health on the treatment group for men and women. The dependent variable is a

composite of 10 measures of emotional health where responses range from 1 if a person rarely had any emotional troubles in the last week to 4 if a person had emotional troubles the entire time during the last week. The 10 responses are added to give a composite figure where a low number indicates strong emotional health and a higher number indicates some emotional strain. As for tables 14 – 17, I choose to use an ordered probit rather than treat the dependent variable as continuous. The results of the two regressions are similar, the ordered probit includes a large number of cut off values because of the large number of possible scores for emotional health. The tables contain the same eight specifications as in tables 12 – 17. I find weak evidence of stronger emotional health for men, the coefficients of all eight specifications are negative however insignificant. I do find some evidence of stronger emotional health of men born in the treated areas, this result disappears with the inclusion of province of birth as a control for ethnicity. I find some evidence of stronger emotional health for African women in the treatment group, however the result is not robust to the inclusion of income.

Conclusion

This study utilises recent cross sectional data to provide valuable evidence on living conditions in the former homelands of South Africa. Although these regions were characterised by extreme poverty, the impact of poverty on individual outcomes has not been known until now. The sudden and large increase in employment in three of South Africa's 10 former homelands provides an opportunity to test the importance of early childhood nutrition for long term adult outcomes such as height, weight, education and health. A standard difference in difference analysis shows that African men and women already alive yet under the age of 10 when employment increased in their region of birth in 1975, are taller than their counterparts not affected by the shock. The result is true even though heights among Africans

were increasing over the entire population at that time as a result of increased income from higher wages affecting all sectors of the economy in the 1970s. African men born between 1969 and 1974 are also heavier than their counterparts elsewhere. The impact of increased nutrition through increased incomes on education and health is also positive, with individuals born just before the shock experiencing higher educational attainment and better health.

The increase in family income did not affect children born from 1975 onwards. While individuals are on average taller, this is most likely due to increased African incomes nationwide.

This study confirms the findings on the importance of nutrition in early childhood for long run stature, weight, education and health. It suggests that males and females in South Africa's former homeland regions suffered from undernourishment resulting in stunting, underachievement in education and long run health concerns as is seen from the strong response to the slight increase in income in the affected regions. This result is despite the small sample and the conservative standard errors that result from the weighting of the sample.

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Tables and Figures

Table 1 Foreign Africans employed on gold mines (including Transkei)

	1969	1970	1971	1972	1973	1974	1975	1976	1977 (April)	1978
Lesotho	59,407	61,993	64,214	66,805	76,114	71,930	74,927	81,383	96,704	97,599
Botswana	19,595	19,549	20,511	19,864	20,339	17,037	17,432	19,862	20,982	20,731
Swaziland	5,551	6,147	5,656	4,744	4,821	5,163	7,348	9,941	10,711	9,678
Angola	6,076	4,935	4,986	4,416	2,745	2,780	3,410	2,862	1,206	182
Rhodesia	3	3	2	3	2	3	2,437	15,939	22,133	13,687
Transkei (homeland)	55,738	47,907	39,430	42,555	47,139	*	*	*	88,733	104,181
Caprivi	222	175	274	115	-	-	-	224	325	214
Kavango								248	2,160	1,850
Malawi	52,901	77,329	92,937	106,379	108,723	94,728	22,875	494	163	21,893
Mozambique	88,352	92,651	95,900	80,242	83,387	80,737	91,359	67,436	34,817	32,237
Total	287,845	310,689	323,370	325,123	344,270	272,378	219,788	198,389	277,934	302,252
Total including SA				374,467	392,441	348,901	320,536	341,099	381,759	424,330

Notes: The South African government had granted Transkei nominal autonomy in 1963 and independence in 1976, although this was never recognised by the international community. It is included in here for comparison purposes. * No separation of workers in the Transkei from other South African workers in these years.

Source: South African Institute of Race Relations (1969-1978).

Table 2a Summary Statistics

Men

	All			Born between 1969 and 1974			Born in homeland			Treated group		
	Mean	sd	N	Mean	sd	N	Mean	sd	N	Mean	sd	N
Height	168.68	7.36	3382	169.41	7.04	369	168.77	7.02	667	169.80	6.71	87
Weight	65.70	14.23	3356	66.81	13.31	366	65.86	14.26	663	68.56	14.49	87
Education level	7.52	4.19	3757	8.10	4.00	413	7.34	4.23	746	8.21	4.13	98
Length	11.39	3.72	1398	11.62	4.25	151	11.27	3.64	277	12.03	3.77	38
Skills:												
computer	2.87	0.33	3507	2.90	0.29	375	2.89	0.31	692	2.93	0.25	87
Drive	2.00	0.00	3039	2.00	0.00	304	2.00	0.00	556	2.00	0.00	67
Literate home language	2.81	0.84	1636	2.72	0.84	156	2.81	0.83	324	2.73	0.84	33
Write home language	2.85	0.84	1620	2.78	0.84	153	2.83	0.82	324	2.73	0.84	33
Literate English	2.99	0.86	2379	2.93	0.83	244	2.97	0.87	496	2.81	0.87	64
Write English	3.01	0.86	2407	2.95	0.83	247	2.98	0.87	499	2.83	0.87	63
Health												
General health	3.03	0.99	2535	2.98	0.95	268	2.95	0.94	498	2.89	0.93	56
Specific health	43.99	3.12	3745	43.94	3.52	413	44.11	2.91	744	44.07	4.41	98
Long run health	13.74	0.69	3742	13.79	0.60	411	13.78	0.60	744	13.81	0.51	98
Emotional health	18.35	5.12	3746	18.43	4.81	412	18.36	5.25	744	18.23	5.38	98

Notes: Height is in centimetres, weight is in kilograms, education is the highest grade achieved, excluding tertiary education. Length of education is years spent in school. The responses to the skill questions range from 1 – highly competent to 4 – not at all. General health is characterised from 1 – excellent health to 5 – poor health. Specific health is constructed from 23 health questions where the respondent answered 1 if he had the disorder and 2 if not. The responses were then added up so that the higher the number on the new variable, the fewer conditions an individual had. The same is true for long run health which is constructed from 7 long term conditions. Emotional health is constructed from 10 questions where the answers are from 1 – the condition rarely bothers me to 4 – the condition affects me all of the time. The responses for each individual were added up so that the higher the total, the more a person suffers from emotional challenges.

**Table 2b Summary Statistics
Women**

	All			Born in year			Born in prov			Treated group		
	Mean	sd	N	Mean	sd	N	Mean	sd	N	Mean	sd	N
Height	157.99	6.94	5556	158.67	6.94	822	158.15	7.26	992	159.71	7.30	160
Weight	71.19	18.18	5502	75.77	19.09	818	71.29	18.26	977	74.80	19.17	162
Education level	7.13	4.43	6104	7.98	3.99	897	7.28	4.36	1124	8.45	3.78	188
Length	11.65	4.08	1867	12.35	5.00	290	12.19	4.39	389	14.12	5.63	76
Skills												
Computer	2.91	0.29	5793	2.90	0.31	848	2.90	0.30	1054	2.86	0.35	176
Drive	2.00	0.00	5833	2.00	0.00	833	2.00	0.00	1060	2.00	0.00	170
Literate home language	2.92	0.86	2954	2.71	0.82	354	2.91	0.87	523	2.59	0.84	66
Write home language	2.94	0.87	2934	2.72	0.83	352	2.92	0.89	519	2.61	0.86	66
Literate English	3.13	0.86	4096	2.98	0.83	572	3.06	0.84	779	2.85	0.79	117
Write English	3.13	0.86	4153	2.99	0.83	581	3.07	0.84	791	2.83	0.79	121
Health												
General health	3.21	1.01	4651	3.09	1.05	652	3.15	0.97	848	3.05	1.00	127
Specific health	43.20	3.40	6095	43.45	3.15	895	43.49	2.90	1123	43.72	3.00	188
Long run health	13.59	0.81	6075	13.68	0.63	890	13.63	0.82	1114	13.77	0.48	187
Emotional health	18.97	5.41	6092	19.23	5.56	895	19.24	5.56	1123	19.52	6.32	188

Notes: Height is in metres and centimetres, weight is in kilograms and grams, education is the highest grade achieved, excluding tertiary education. Length of education is years spent in school. The responses to the skill questions range from 1 – highly competent to 4 – not at all. General health is characterised from 1 – excellent health to 5 – poor health. Specific health is constructed from 23 health questions where the respondent answered 1 if she had the disorder and 2 if not. The responses were then added up so that the higher the number on the new variable, the fewer conditions an individual had. The same is true for long run health which is constructed from 7 long term conditions. Emotional health is constructed from 10 questions where the answers are from 1 – the condition rarely bothers me to 4 – the condition affects me all of the time. The responses for each individual were added up so that the higher the total, the more a person suffers from emotional challenges.

Table 3
OLS regression of heights on treatment group, African men born 1969 - 1974

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated group	3.062** (1.456)	2.950** (1.447)	3.050** (1.415)	3.033** (1.390)	3.395** (1.427)	3.055** (1.436)	3.175** (1.411)
Born 1969 - 1974	0.0861 (0.609)	0.128 (0.612)	-0.349 (0.694)	-0.235 (0.672)	-0.370 (0.705)	0.344 (0.617)	-0.237 (0.701)
Born in treated area	0.0182 (0.588)	0.0959 (0.575)	-0.0289 (0.574)	0.488 (0.698)	-0.0874 (0.618)	0.837 (0.712)	0.567 (0.708)
Age		-0.032** (0.0153)	0.0281 (0.0809)	0.0291 (0.0783)	0.0337 (0.0790)	-0.032** (0.0147)	0.0415 (0.0754)
66-75 years			0.219 (2.041)	-0.0227 (1.929)	-0.603 (2.082)		-0.630 (1.915)
56-65 years			1.462 (2.326)	1.358 (2.259)	1.407 (2.355)		1.428 (2.174)
46-55 years			3.894 (3.001)	3.627 (2.883)	3.701 (3.032)		3.807 (2.782)
36-45 years			3.796 (3.679)	3.705 (3.517)	3.950 (3.638)		4.213 (3.334)
26-35 years			4.802 (4.250)	4.485 (4.116)	4.732 (4.212)		4.913 (3.941)
16-25 years			4.030 (5.106)	3.872 (4.929)	4.053 (5.017)		4.408 (4.701)
Isixhosa					0.878 (1.415)	3.033* (1.744)	3.509** (1.769)
Isizulu					2.189 (1.469)	1.502 (1.573)	1.865 (1.610)
SePedi					2.753* (1.533)	3.134* (1.800)	3.414* (1.793)
SeSotho					2.789* (1.510)	3.646** (1.636)	3.958** (1.678)
SeTswana					2.769* (1.421)	2.731* (1.607)	3.163* (1.617)
SiSwati					3.945** (1.656)	3.165* (1.755)	3.538** (1.762)
TshiVenda					2.077 (1.902)	2.504 (2.083)	2.883 (2.124)
XiTsonga					5.12*** (1.742)	5.12*** (1.867)	5.66*** (1.907)
Afrikaans					1.494 (1.977)	3.234 (2.076)	3.605* (2.085)
English					8.40*** (2.247)	7.47*** (2.647)	8.54*** (2.266)
Eastern Cape				-0.995 (2.103)		-0.416 (2.090)	-0.850 (2.121)
Northern Cape				-0.701 (2.291)		-0.0390 (2.378)	-0.539 (2.375)
Free State				0.428 (2.135)		0.716 (2.338)	0.260 (2.352)
KwaZulu-				1.318		3.412	3.074

Natal				(2.090)		(2.346)	(2.354)
North West				1.515		2.051	1.754
				(2.223)		(2.467)	(2.481)
Gauteng				1.766		3.006	2.396
				(2.150)		(2.262)	(2.276)
Mpumalanga				2.414		3.255	2.796
				(2.127)		(2.406)	(2.396)
Limpopo				1.138		1.264	1.020
				(2.172)		(2.606)	(2.610)
Constant	168.8***	169.8***	163.9***	163.0***	161.5***	165.2***	158.7***
	(1.535)	(1.593)	(6.601)	(6.641)	(6.722)	(3.148)	(6.542)
Father's occupation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,624	1,623	1,623	1,623	1,623	1,623	1,623
R-squared	0.020	0.024	0.035	0.058	0.061	0.063	0.074

Notes: The omitted age group is those older than 75 years, the omitted province is the Western Cape and the omitted language is IsiNdebele. The sample is all African males born before 1990, as those born from 1990 may not have attained their maximum height by the time of the survey. Sample includes all those taller than 130cm.

Standard errors in parentheses

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

Table 4
OLS regression of weights on treatment group, African men born 1969 - 1974

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated group	5.301** (2.350)	5.695** (2.330)	5.921** (2.292)	5.717** (2.273)	6.087*** (2.168)	5.671** (2.280)	5.938*** (2.211)
Born 1969 - 1974	-0.662 (1.338)	-0.631 (1.296)	-1.081 (1.438)	-0.965 (1.458)	-1.204 (1.412)	-0.547 (1.296)	-0.874 (1.428)
Born in treated area	0.630 (1.364)	0.0728 (1.328)	-0.153 (1.281)	0.688 (1.706)	0.0810 (1.387)	1.264 (1.829)	0.723 (1.747)
Age		0.220*** (0.0336)	0.304** (0.139)	0.294** (0.135)	0.326** (0.141)	0.211*** (0.0337)	0.327** (0.141)
Height	0.210*** (0.0667)	0.215*** (0.0719)	0.210*** (0.0704)	0.222*** (0.0704)	0.212*** (0.0687)	0.218*** (0.0691)	0.213*** (0.0679)
66-75 years			3.584 (4.386)	3.981 (4.185)	2.286 (4.189)		2.834 (3.870)
56-65 years			7.637 (4.998)	7.998* (4.801)	7.920 (5.014)		8.483* (4.584)
46-55 years			12.55** (5.807)	12.74** (5.545)	13.12** (5.848)		13.57** (5.473)
36-45 years			10.45 (7.388)	10.15 (7.063)	11.27 (7.482)		11.56 (7.084)
26-35 years			11.87 (8.145)	11.80 (7.788)	12.70 (8.246)		13.14* (7.878)
16-25 years			10.83 (9.264)	10.87 (8.935)	11.98 (9.386)		12.67 (9.077)
Isixhosa					8.306* (4.526)	5.820 (5.452)	6.321 (5.448)
Isizulu					5.896 (4.350)	4.545 (4.706)	5.146 (4.604)
SePedi					5.848 (4.401)	6.782 (4.398)	6.882 (4.358)
SeSotho					6.940 (4.358)	7.341 (4.498)	7.884* (4.381)
SeTswana					3.313 (4.321)	3.721 (4.439)	4.313 (4.308)
SiSwati					6.639 (4.384)	5.578 (4.885)	5.968 (4.696)
TshiVenda					7.326 (4.709)	8.119* (4.786)	8.554* (4.746)
XiTsonga					8.414* (4.397)	8.445* (4.399)	9.105** (4.322)
Afrikaans					7.226 (5.370)	4.208 (5.502)	4.904 (5.456)
English					22.29*** (5.270)	20.07*** (5.824)	22.26*** (5.243)
Eastern Cape				-7.125 (6.709)		-6.401 (6.745)	-7.489 (6.801)
Northern Cape				-7.336 (6.814)		-5.030 (7.199)	-6.632 (7.302)

Free State				-10.23 (6.895)		-10.10 (7.941)	-11.69 (8.069)
KwaZulu- Natal				-9.703 (6.619)		-7.417 (7.524)	-8.790 (7.628)
North West				-12.40* (6.792)		-10.28 (7.627)	-11.41 (7.782)
Gauteng				-7.775 (6.783)		-6.223 (7.671)	-7.903 (7.793)
Mpumalanga				-8.385 (6.738)		-7.330 (7.778)	-8.739 (7.859)
Limpopo				-9.937 (6.720)		-10.45 (7.817)	-11.27 (7.921)
Constant	30.14*** (11.35)	22.30* (12.45)	9.501 (17.42)	17.11 (18.16)	2.030 (18.27)	24.88* (14.70)	10.57 (19.52)
Father's occupation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,613	1,613	1,613	1,613	1,613	1,613	1,613
R-squared	0.054	0.096	0.110	0.123	0.130	0.122	0.137

Notes: The omitted age group is those older than 75 years, the omitted province is the Western Cape and the omitted language is IsiNdebele. The sample is all African males born before 1990, as those born from 1990 may not have completed their growth by the time of the survey. Sample includes all those greater than 29 kilograms.

Standard errors in parentheses

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

Table 5
OLS regression of heights on treatment group, African women born 1966-1973

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated group	1.550 (1.423)	1.625 (1.430)	1.569 (1.373)	1.691 (1.420)	1.902 (1.456)	2.077 (1.524)	1.992 (1.477)
Born 1966 - 1973	0.703 (0.520)	0.691 (0.524)	1.414** (0.645)	1.373** (0.652)	1.175* (0.661)	0.495 (0.514)	1.175* (0.652)
Born in treated area	0.363 (0.608)	0.292 (0.619)	0.147 (0.611)	-0.159 (0.749)	0.113 (0.737)	0.0215 (0.747)	-0.135 (0.744)
Age		-0.043*** (0.0115)	0.0600 (0.0633)	0.0627 (0.0617)	0.0828 (0.0614)	-0.036*** (0.0109)	0.0822 (0.0602)
66-75 years			3.476*** (1.330)	3.439*** (1.300)	3.790*** (1.326)		3.597*** (1.312)
56-65 years			2.641 (1.671)	2.830* (1.605)	3.270* (1.666)		3.275** (1.607)
46-55 years			5.137** (2.196)	5.159** (2.149)	5.988*** (2.161)		5.838*** (2.140)
36-45 years			4.585* (2.632)	4.670* (2.561)	5.723** (2.583)		5.533** (2.548)
26-35 years			7.710** (3.250)	7.758** (3.172)	8.887*** (3.217)		8.712*** (3.157)
16-25 years			6.942* (3.862)	7.005* (3.750)	8.265** (3.759)		8.063** (3.678)
Isixhosa					-3.164 (3.198)	-1.371 (3.079)	-1.381 (3.058)
Isizulu					-3.365 (3.088)	-2.472 (3.032)	-2.666 (3.023)
SePedi					-3.786 (3.273)	-4.071 (3.591)	-4.254 (3.564)
SeSotho					-3.455 (3.110)	-2.438 (3.097)	-2.482 (3.073)
SeTswana					-3.992 (3.242)	-3.227 (3.252)	-3.475 (3.236)
SiSwati					-0.604 (3.139)	-0.320 (3.112)	-0.192 (3.093)
TshiVenda					-2.173 (3.458)	-2.185 (3.869)	-2.708 (3.819)
XiTsonga					-0.258 (3.636)	-0.439 (3.873)	-0.575 (3.864)
Afrikaans					-3.530 (3.206)	-1.281 (3.156)	-2.126 (3.112)
English					4.388 (4.373)	5.889 (4.695)	5.154 (4.474)
Eastern Cape				2.567 (2.219)		2.776 (2.178)	2.567 (2.188)
Northern Cape				0.0542 (2.325)		1.434 (2.541)	1.508 (2.535)
Free State				1.415 (2.174)		2.838 (2.238)	2.518 (2.268)
KwaZulu-				2.216		3.462	3.382

Natal				(2.119)		(2.173)	(2.190)
North West				2.110		3.947*	3.932*
				(2.184)		(2.369)	(2.375)
Gauteng				3.305		4.705**	4.456**
				(2.182)		(2.174)	(2.215)
Mpumalanga				3.116		3.882*	3.653
				(2.179)		(2.215)	(2.239)
Limpopo				3.329		5.236**	5.081**
				(2.232)		(2.587)	(2.564)
Constant	160.4***	161.7***	152.1***	149.5***	153.0***	159.8***	149.0***
	(1.050)	(1.107)	(5.219)	(5.256)	(5.599)	(3.738)	(5.516)
Father's occupation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,413	2,413	2,413	2,413	2,413	2,413	2,413
R-squared	0.013	0.020	0.036	0.045	0.057	0.049	0.065

Notes: The omitted age group is those older than 75 years, the omitted province is the Western Cape and the omitted language is IsiNdebele. The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey. Sample includes all those taller than 130cm.

Standard errors in parentheses

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

Table 6
OLS regression of weights on treatment group, African women born 1966-1973

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated group	0.222 (2.648)	-0.252 (2.699)	0.132 (2.679)	0.0393 (2.651)	0.619 (2.719)	-0.00261 (2.698)	0.407 (2.694)
Born 1966 - 1973	5.033*** (1.469)	5.060*** (1.466)	2.397 (2.107)	2.516 (2.106)	2.574 (2.118)	5.346*** (1.435)	2.542 (2.105)
Born in treated area	-0.174 (1.557)	0.315 (1.560)	-0.0504 (1.489)	1.647 (1.568)	0.687 (1.330)	2.626 (1.624)	1.766 (1.551)
Age		0.312*** (0.0368)	0.449*** (0.166)	0.433*** (0.163)	0.428*** (0.160)	0.306*** (0.0350)	0.442*** (0.161)
Height	0.176*** (0.0585)	0.200*** (0.0673)	0.177*** (0.0657)	0.186*** (0.0687)	0.183*** (0.0659)	0.212*** (0.0688)	0.189*** (0.0672)
66-75			9.981** (3.867)	9.691** (3.837)	9.549** (3.815)		9.833** (3.820)
56-65			11.72** (4.670)	11.20** (4.699)	11.39** (4.579)		11.49** (4.689)
46-55			21.09*** (5.565)	20.46*** (5.550)	20.37*** (5.411)		20.72*** (5.531)
36-45			21.22*** (7.249)	20.55*** (7.204)	20.44*** (7.031)		21.07*** (7.112)
26-35			21.42** (8.836)	20.88** (8.744)	20.68** (8.550)		21.38** (8.631)
16-25			18.03* (10.15)	17.06* (10.07)	16.79* (9.827)		17.49* (9.958)
Isixhosa					1.078 (3.414)	-0.184 (4.578)	-1.472 (4.255)
Isizulu					-1.461 (3.333)	-3.267 (3.973)	-4.512 (3.820)
SePedi					-6.434* (3.429)	-3.499 (3.722)	-4.769 (3.576)
SeSotho					-0.571 (3.479)	0.127 (4.204)	-0.946 (3.975)
SeTswana					-5.289 (3.487)	-4.203 (4.138)	-5.472 (4.003)
SiSwati					-8.618** (3.665)	-9.994** (3.937)	-10.22*** (3.799)
TshiVenda					-2.497 (3.871)	0.565 (4.260)	-0.300 (3.999)
XiTsonga					-1.495 (3.984)	0.146 (4.419)	-0.317 (4.148)
Afrikaans					-1.326 (4.875)	-1.463 (5.868)	-1.974 (5.794)
English					-11.49** (5.668)	-11.79* (6.926)	-13.30** (6.729)
Eastern Cape				-4.198 (4.799)		-4.253 (5.823)	-4.073 (4.823)
Northern Cape				-7.491 (5.756)		-4.939 (7.001)	-5.008 (6.116)
Free State				-5.733		-4.858	-5.691

				(5.037)		(6.698)	(5.706)
KwaZulu-				-4.920		-1.842	-1.936
Natal				(4.847)		(6.337)	(5.315)
North West				-9.621*		-6.614	-6.486
				(5.154)		(6.723)	(5.715)
Gauteng				-8.429*		-5.663	-6.483
				(5.013)		(6.438)	(5.339)
Mpumalanga				-7.445		-2.964	-3.800
				(4.987)		(6.573)	(5.468)
Limpopo				-11.23**		-9.365	-9.301*
				(4.959)		(6.669)	(5.588)
Constant	45.40***	32.19***	12.86	19.16	16.66	38.19***	20.67
	(10.01)	(11.47)	(16.74)	(17.09)	(16.36)	(14.00)	(17.15)
Father's occupation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,402	2,402	2,402	2,402	2,402	2,402	2,402
R-squared	0.027	0.083	0.112	0.129	0.133	0.110	0.139

Notes: The omitted age group is those older than 75 years, the omitted province is the Western Cape and the omitted language is IsiNdebele. The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey. Sample includes all those greater than 29 kilograms.

Standard errors in parentheses

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

Table 7
Ordered probit regression of educational attainment on treatment group, African men born 1969 - 1974

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Treated group	0.440*** (0.167)	0.347 (0.223)	0.364** (0.183)	0.389* (0.218)	0.417** (0.186)	0.422* (0.222)	0.401** (0.189)	0.403* (0.214)	0.357* (0.187)	0.373* (0.212)
Born 1969 - 1974	-0.00670 (0.0834)	0.331*** (0.116)	0.00465 (0.0881)	0.154 (0.111)	-0.0196 (0.0902)	0.144 (0.112)	-0.0778 (0.101)	0.0763 (0.123)	-0.0565 (0.101)	0.110 (0.123)
Born in treated area	-0.0290 (0.0809)	0.143 (0.0964)	0.0810 (0.0833)	0.122 (0.0978)	0.262*** (0.0950)	0.322*** (0.114)	0.230** (0.0972)	0.269** (0.116)	0.225** (0.0991)	0.255** (0.116)
Age			-0.040*** (0.00192)	-0.032*** (0.00238)	-0.041*** (0.00183)	-0.032*** (0.00229)	-0.0230** (0.00997)	-0.0113 (0.0119)	-0.0221** (0.0102)	-0.0111 (0.0121)
Height	0.00108** (0.00054)	0.00153** (0.00066)	0.000719 (0.000549)	0.00109 (0.000742)	0.000808 (0.000520)	0.00128* (0.000721)	0.000839 (0.000532)	0.00130* (0.000773)	0.000856* (0.000516)	0.00130* (0.000738)
Age cohorts	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Province	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Language	No	No	No	No	No	No	No	No	Yes	Yes
Mother's education		0.153*** (0.00825)		0.109*** (0.00900)		0.109*** (0.00901)		0.112*** (0.00890)		0.110*** (0.00899)
Constant	-1.078*** (0.0921)	-0.467*** (0.108)	-2.801*** (0.131)	-2.097*** (0.180)	-2.976*** (0.159)	-2.787*** (0.478)	-1.731** (0.832)	-1.065 (1.071)	-1.311 (0.907)	-0.815 (1.153)
Constant	-1.047*** (0.0924)	-0.436*** (0.108)	-2.762*** (0.132)	-2.062*** (0.179)	-2.936*** (0.159)	-2.751*** (0.479)	-1.692** (0.832)	-1.029 (1.070)	-1.271 (0.906)	-0.778 (1.152)
Constant	-0.958*** (0.0935)	-0.345*** (0.111)	-2.653*** (0.131)	-1.960*** (0.180)	-2.824*** (0.157)	-2.646*** (0.479)	-1.580* (0.830)	-0.922 (1.072)	-1.158 (0.903)	-0.670 (1.151)
Constant	-0.854*** (0.0939)	-0.214* (0.111)	-2.526*** (0.131)	-1.813*** (0.182)	-2.695*** (0.157)	-2.496*** (0.480)	-1.450* (0.832)	-0.771 (1.071)	-1.027 (0.905)	-0.518 (1.152)
Constant	-0.734*** (0.0960)	-0.0620 (0.114)	-2.378*** (0.130)	-1.642*** (0.182)	-2.543*** (0.159)	-2.320*** (0.481)	-1.299 (0.831)	-0.594 (1.069)	-0.875 (0.905)	-0.339 (1.151)
Constant	-0.604*** (0.0968)	0.0784 (0.114)	-2.215*** (0.127)	-1.482*** (0.179)	-2.377*** (0.159)	-2.156*** (0.479)	-1.133 (0.830)	-0.430 (1.065)	-0.706 (0.904)	-0.173 (1.147)
Constant	-0.451*** (0.0965)	0.247** (0.115)	-2.022*** (0.126)	-1.291*** (0.179)	-2.177*** (0.158)	-1.958*** (0.479)	-0.933 (0.832)	-0.232 (1.064)	-0.504 (0.907)	0.0280 (1.147)

Constant	-0.250*** (0.0961)	0.485*** (0.115)	-1.769*** (0.123)	-1.020*** (0.176)	-1.917*** (0.156)	-1.677*** (0.479)	-0.673 (0.831)	0.0518 (1.070)	-0.240 (0.906)	0.316 (1.154)
Constant	-0.0583 (0.0974)	0.721*** (0.116)	-1.526*** (0.123)	-0.751*** (0.176)	-1.667*** (0.157)	-1.397*** (0.479)	-0.421 (0.832)	0.336 (1.069)	0.0159 (0.906)	0.605 (1.151)
Constant	0.147 (0.0949)	0.911*** (0.117)	-1.275*** (0.119)	-0.539*** (0.175)	-1.408*** (0.154)	-1.175** (0.480)	-0.160 (0.833)	0.562 (1.069)	0.282 (0.908)	0.835 (1.153)
Constant	0.430*** (0.0953)	1.227*** (0.121)	-0.950*** (0.116)	-0.198 (0.175)	-1.072*** (0.153)	-0.821* (0.480)	0.180 (0.833)	0.926 (1.072)	0.626 (0.908)	1.205 (1.158)
Constant	0.779*** (0.0959)	1.563*** (0.125)	-0.567*** (0.113)	0.156 (0.177)	-0.679*** (0.152)	-0.455 (0.482)	0.578 (0.837)	1.301 (1.077)	1.028 (0.912)	1.584 (1.166)
Observations	3,755	2,223	3,755	2,223	3,755	2,223	3,755	2,223	3,755	2,223

Notes: The sample is all African males born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

Standard errors in parentheses

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

Table 8
Ordered probit regression of educational attainment on treatment group, African women born 1966 - 1973

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Treated group	0.185 (0.141)	0.169 (0.174)	0.219 (0.155)	0.283 (0.175)	0.238 (0.159)	0.299* (0.176)	0.256 (0.159)	0.335* (0.178)	0.273* (0.158)	0.345* (0.177)
Born 1966 1973	0.164*** (0.0622)	0.316*** (0.0711)	0.142** (0.0688)	0.116 (0.0741)	0.119* (0.0712)	0.100 (0.0738)	0.0654 (0.0769)	-0.0349 (0.0877)	0.0571 (0.0782)	-0.0433 (0.0876)
Born in treated area	0.0418 (0.0715)	0.178** (0.0729)	0.0322 (0.0767)	0.0785 (0.0808)	0.0716 (0.0942)	0.0744 (0.0985)	0.0565 (0.0939)	0.0479 (0.0981)	0.0491 (0.0934)	0.0431 (0.0966)
Age			-0.051*** (0.00154)	-0.043*** (0.00208)	-0.051*** (0.00160)	-0.044*** (0.00215)	-0.029*** (0.00650)	-0.026*** (0.00842)	-0.028*** (0.00639)	-0.026*** (0.00825)
Height	-0.0004 (0.00048)	-0.00037 (0.0006)	-0.0012** (0.000552)	-0.0013** (0.000596)	-0.00088* (0.000513)	-0.00119* (0.000616)	-0.000823 (0.000521)	-0.00112* (0.000635)	-0.000757 (0.000519)	-0.00107* (0.000631)
Age cohorts	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Province	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Language	No	No	No	No	No	No	No	No	Yes	Yes
Mother's education		0.153*** (0.0080)		0.101*** (0.00893)		0.0997*** (0.00910)		0.107*** (0.00861)		0.107*** (0.00857)
Constant	-1.14*** (0.0806)	-0.62*** (0.104)	-3.518*** (0.104)	-2.945*** (0.139)	-3.741*** (0.232)	-3.043*** (0.224)	-2.003*** (0.568)	-1.561** (0.705)	-1.866*** (0.587)	-1.622** (0.719)
Constant	-1.11*** (0.0803)	-0.59*** (0.104)	-3.487*** (0.104)	-2.916*** (0.140)	-3.709*** (0.233)	-3.015*** (0.225)	-1.971*** (0.568)	-1.532** (0.704)	-1.834*** (0.587)	-1.593** (0.719)
Constant	-1.04*** (0.0796)	-0.52*** (0.104)	-3.386*** (0.101)	-2.823*** (0.137)	-3.605*** (0.232)	-2.919*** (0.223)	-1.867*** (0.567)	-1.435** (0.702)	-1.730*** (0.587)	-1.496** (0.717)
Constant	-0.95*** (0.0796)	-0.40*** (0.105)	-3.260*** (0.0994)	-2.683*** (0.135)	-3.475*** (0.231)	-2.776*** (0.220)	-1.736*** (0.565)	-1.290* (0.700)	-1.598*** (0.585)	-1.350* (0.714)
Constant	-0.84*** (0.0795)	-0.249** (0.105)	-3.101*** (0.0992)	-2.498*** (0.135)	-3.313*** (0.231)	-2.586*** (0.220)	-1.572*** (0.566)	-1.098 (0.700)	-1.433** (0.585)	-1.158 (0.714)
Constant	-0.720*** (0.0799)	-0.108 (0.105)	-2.939*** (0.101)	-2.325*** (0.135)	-3.146*** (0.232)	-2.407*** (0.221)	-1.404** (0.566)	-0.917 (0.698)	-1.265** (0.585)	-0.976 (0.713)
Constant	-0.596*** (0.0795)	0.0257 (0.106)	-2.764*** (0.101)	-2.162*** (0.135)	-2.966*** (0.232)	-2.239*** (0.221)	-1.223** (0.563)	-0.747 (0.695)	-1.082* (0.582)	-0.805 (0.710)

Constant	-0.409*** (0.0788)	0.244** (0.106)	-2.504*** (0.0999)	-1.897*** (0.132)	-2.700*** (0.233)	-1.966*** (0.219)	-0.956* (0.564)	-0.471 (0.698)	-0.813 (0.582)	-0.527 (0.714)
Constant	-0.229*** (0.0765)	0.445*** (0.105)	-2.254*** (0.0987)	-1.649*** (0.135)	-2.446*** (0.231)	-1.713*** (0.221)	-0.700 (0.561)	-0.215 (0.694)	-0.556 (0.579)	-0.269 (0.709)
Constant	-0.0530 (0.0765)	0.637*** (0.105)	-2.015*** (0.0982)	-1.415*** (0.135)	-2.203*** (0.229)	-1.472*** (0.218)	-0.456 (0.558)	0.0282 (0.692)	-0.312 (0.577)	-0.0249 (0.706)
Constant	0.243*** (0.0764)	0.969*** (0.108)	-1.641*** (0.0979)	-1.026*** (0.136)	-1.823*** (0.227)	-1.074*** (0.219)	-0.0744 (0.560)	0.430 (0.695)	0.0715 (0.579)	0.379 (0.708)
Constant	0.646*** (0.0785)	1.370*** (0.110)	-1.172*** (0.0981)	-0.584*** (0.135)	-1.350*** (0.227)	-0.625*** (0.216)	0.403 (0.562)	0.885 (0.692)	0.551 (0.582)	0.837 (0.706)
Observations	6,100	3,988	6,100	3,988	6,100	3,988	6,100	3,988	6,100	3,988

Notes: The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

Standard errors in parentheses

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

Table 9
OLS regression of time in school on treatment group – African men and women

	Men	Women
Treated group	0.0199 (0.696)	0.994 (0.607)
Born in treatment years	0.107 (0.410)	0.387 (0.380)
Born in treated area	-0.444 (0.288)	0.102 (0.271)
Age	0.0187 (0.0150)	0.0685*** (0.0151)
Education level 2	0.0277 (0.990)	0.967 (1.232)
Education level 3	-0.0267 (0.846)	2.142* (1.185)
Education level 4	1.083 (0.673)	2.038*** (0.609)
Education level 5	2.946*** (0.734)	4.652*** (0.704)
Education level 6	4.180*** (0.867)	5.987*** (0.625)
Education level 7	5.599*** (0.644)	7.826*** (0.880)
Education level 8	8.136*** (0.993)	8.783*** (0.525)
Education level 9	8.066*** (0.736)	10.36*** (0.511)
Education level 10	8.906*** (0.616)	11.50*** (0.456)
Education level 11	9.361*** (0.618)	12.60*** (0.374)
Education level 12	9.863*** (0.581)	12.56*** (0.353)
Constant	2.614*** (0.750)	-1.589*** (0.564)
Observations	1,409	1,879
R-squared	0.380	0.309

Notes: The sample is all African males and females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

Standard errors in parentheses

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

Table 10
Ordered probit regression of basic skills on the treatment group, African men born 1969 - 1974

	Computer literacy	Driver's licence	Read in home language	Write in home language	Read in English	Write in English
Treated group	-0.457 (0.281)	-0.188 (0.238)	-0.189 (0.252)	-0.227 (0.238)	0.362* (0.217)	0.278 (0.197)
Born between 1969 - 1974	0.241* (0.129)	-0.419*** (0.125)	-0.0850 (0.107)	-0.129 (0.107)	-0.210** (0.0960)	-0.239** (0.103)
Born in treated area	0.0909 (0.110)	-0.206** (0.0893)	-0.132* (0.0798)	-0.135* (0.0807)	-0.0666 (0.0861)	-0.0887 (0.0893)
Age	0.00282 (0.00307)	-0.0398*** (0.00282)	0.00151 (0.00229)	0.00149 (0.00221)	0.00102 (0.00195)	0.00140 (0.00206)
Education level 1	-1.027* (0.550)	-0.260 (0.409)	-0.779*** (0.231)	-0.791*** (0.234)	-0.662** (0.309)	-0.342 (0.308)
Education level 2	-0.172 (0.474)	-0.701* (0.364)	-0.904*** (0.221)	-0.909*** (0.218)	-0.837*** (0.241)	-0.835*** (0.244)
Education level 3	-0.653 (0.515)	-0.554** (0.240)	-1.424*** (0.170)	-1.338*** (0.164)	-0.954*** (0.195)	-0.761*** (0.176)
Education level 4	-0.600 (0.429)	-0.439* (0.234)	-1.656*** (0.179)	-1.667*** (0.186)	-1.117*** (0.203)	-0.992*** (0.180)
Education level 5	-0.393 (0.488)	-0.565** (0.221)	-1.739*** (0.140)	-1.753*** (0.141)	-1.465*** (0.166)	-1.442*** (0.161)
Education level 6	-1.127*** (0.365)	-0.872*** (0.192)	-2.022*** (0.124)	-1.971*** (0.131)	-1.710*** (0.153)	-1.562*** (0.146)
Education level 7	-1.403*** (0.354)	-0.834*** (0.186)	-2.049*** (0.134)	-2.214*** (0.148)	-2.113*** (0.145)	-2.085*** (0.143)
Education level 8	-1.501*** (0.347)	-1.037*** (0.166)	-2.486*** (0.126)	-2.539*** (0.130)	-2.559*** (0.164)	-2.476*** (0.159)
Education level 9	-1.498*** (0.362)	-0.822*** (0.235)	-2.754*** (0.173)	-2.849*** (0.173)	-2.729*** (0.180)	-2.664*** (0.171)
Education level 10	-1.849***	-1.269***	-2.741***	-2.723***	-3.108***	-3.141***

	(0.344)	(0.199)	(0.134)	(0.141)	(0.150)	(0.136)
Education level 11	-2.144***	-1.387***	-3.157***	-3.238***	-3.459***	-3.480***
	(0.351)	(0.195)	(0.148)	(0.141)	(0.159)	(0.149)
Education level 12	-2.864***	-1.780***	-3.543***	-3.615***	-3.963***	-3.955***
	(0.344)	(0.199)	(0.136)	(0.142)	(0.163)	(0.149)
Constant	-3.453***	-3.570***	-2.135***	-2.164***	-3.102***	-3.120***
	(0.371)	(0.230)	(0.172)	(0.162)	(0.179)	(0.168)
Constant	-2.616***		-1.113***	-1.183***	-1.950***	-1.966***
	(0.370)		(0.162)	(0.154)	(0.175)	(0.170)
Constant			-0.231	-0.294*	-1.007***	-1.008***
			(0.163)	(0.162)	(0.171)	(0.169)
Observations	3,754	3,743	3,751	3,748	3,753	3,753

Notes: The sample is all African males born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

The lower the value of the dependent variable, the better a person is at that task.

Standard errors in parentheses

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

Table 11
Ordered probit regression of basic skills on the treatment group, African women born 1966 - 1973

	Computer literacy	Driver's licence	Read in home language	Write in home language	Read in English	Write in English
Treated group	-0.100 (0.223)	-0.264 (0.241)	-0.243* (0.143)	-0.161 (0.151)	-0.0390 (0.165)	-0.0569 (0.169)
Born 1966 - 1973	0.0482 (0.105)	-0.0608 (0.139)	0.00886 (0.0608)	-0.0167 (0.0706)	0.0783 (0.0716)	0.0795 (0.0721)
Born in treated area	0.0893 (0.0989)	-0.0195 (0.126)	-0.0882 (0.0745)	-0.147** (0.0745)	0.0448 (0.0655)	0.0652 (0.0669)
Age	0.00543* (0.00296)	-0.0202*** (0.00362)	0.00859*** (0.00230)	0.00996*** (0.00229)	0.0101*** (0.00212)	0.00984*** (0.00210)
Education level 1	-0.919* (0.530)	4.117*** (0.257)	-1.294*** (0.201)	-1.220*** (0.187)	-0.884*** (0.259)	-0.799*** (0.268)
Education level 2	0.177 (0.291)	4.192*** (0.260)	-1.063*** (0.161)	-1.202*** (0.125)	-0.437** (0.215)	-0.356 (0.229)
Education level 3	-0.488* (0.261)	-0.814** (0.379)	-1.472*** (0.131)	-1.453*** (0.132)	-0.879*** (0.197)	-0.859*** (0.197)
Education level 4	-0.417 (0.389)	-0.442 (0.322)	-1.725*** (0.105)	-1.666*** (0.115)	-1.098*** (0.140)	-1.094*** (0.141)
Education level 5	-0.110 (0.366)	-0.540 (0.397)	-2.029*** (0.122)	-1.997*** (0.117)	-1.508*** (0.157)	-1.448*** (0.157)
Education level 6	0.0155 (0.281)	-0.343 (0.398)	-2.137*** (0.120)	-2.097*** (0.137)	-1.635*** (0.149)	-1.600*** (0.148)
Education level 7	-0.138 (0.249)	-0.669** (0.339)	-2.173*** (0.120)	-2.215*** (0.113)	-1.928*** (0.145)	-1.851*** (0.144)
Education level 8	-0.823*** (0.196)	-1.043*** (0.313)	-2.438*** (0.137)	-2.420*** (0.131)	-2.416*** (0.174)	-2.330*** (0.173)
Education level 9	-0.968*** (0.181)	-0.979*** (0.340)	-2.603*** (0.137)	-2.627*** (0.131)	-2.685*** (0.168)	-2.605*** (0.168)
Education level 10	-1.264***	-1.088***	-3.051***	-3.047***	-3.134***	-3.076***

	(0.197)	(0.327)	(0.134)	(0.128)	(0.180)	(0.176)
Education level 11	-1.429***	-1.156***	-2.963***	-2.965***	-3.463***	-3.421***
	(0.184)	(0.306)	(0.151)	(0.165)	(0.186)	(0.186)
Education level 12	-2.432***	-2.249***	-3.497***	-3.521***	-4.174***	-4.142***
	(0.172)	(0.310)	(0.126)	(0.131)	(0.171)	(0.172)
Constant	-2.977***	-3.822***	-1.999***	-1.942***	-2.893***	-2.888***
	(0.208)	(0.367)	(0.165)	(0.160)	(0.210)	(0.210)
Constant	-2.198***		-0.940***	-0.913***	-1.707***	-1.719***
	(0.209)		(0.167)	(0.167)	(0.204)	(0.204)
Constant			-0.00340	-0.0145	-0.643***	-0.633***
			(0.151)	(0.152)	(0.180)	(0.180)
Observations	6,091	6,081	6,089	6,091	6,085	6,091

Notes: The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

The lower the value of the dependent variable, the better a person is at that task.

Standard errors in parentheses

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

Table 12
Ordered probit Regression of general health on treatment group, African men born 1969 - 1974

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	-0.418** (0.211)	-0.672** (0.334)	-0.355 (0.216)	-0.622* (0.334)	-0.350 (0.213)	-0.632** (0.317)	-0.251 (0.213)	-0.564* (0.304)
Born 1969 - 1974	0.0622 (0.0994)	0.305 (0.202)	0.0682 (0.104)	0.356* (0.207)	0.0746 (0.105)	0.386* (0.207)	0.0589 (0.103)	0.351* (0.199)
Born in treated area	-0.104 (0.0683)	-0.0881 (0.116)	-0.185*** (0.0689)	-0.128 (0.114)	-0.0779 (0.0825)	0.119 (0.122)	-0.0491 (0.0835)	0.0985 (0.131)
Age			0.0289*** (0.00154)	0.0306*** (0.00327)	0.0294*** (0.00165)	0.0339*** (0.00345)	0.0234*** (0.00184)	0.0305*** (0.00417)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	Yes	Yes
Income		-0.127** (0.0549)		-0.173*** (0.0538)		-0.179*** (0.0526)		-0.128** (0.0632)
Constant	-0.415*** (0.0478)	- (0.415)	0.556*** (0.0659)	-0.570 (0.436)	0.711*** (0.223)	-0.974** (0.485)	0.104 (0.228)	-0.872 (0.554)
Constant	0.290*** (0.0437)	-0.575 (0.414)	1.323*** (0.0652)	0.198 (0.434)	1.485*** (0.223)	-0.182 (0.488)	0.890*** (0.228)	-0.0685 (0.556)
Constant	0.952*** (0.0406)	0.190 (0.412)	2.066*** (0.0699)	1.014** (0.440)	2.236*** (0.226)	0.665 (0.487)	1.659*** (0.228)	0.793 (0.553)
Constant	1.531*** (0.0517)	1.056** (0.450)	2.712*** (0.0888)	1.928*** (0.486)	2.892*** (0.238)	1.607*** (0.528)	2.333*** (0.236)	1.746*** (0.601)
Observations	3,728	980	3,728	980	3,728	980	3,728	980

Notes: The sample is all African males born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

A lower number for the dependent variable denotes better health.

Standard errors in parentheses

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

Table 13
Ordered probit Regression of general health on treatment group, African women born 1966 - 1973

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	-0.259* (0.136)	-0.345 (0.294)	-0.274* (0.143)	-0.325 (0.298)	-0.286* (0.147)	-0.321 (0.318)	-0.256* (0.146)	-0.346 (0.317)
Born 1966 - 1973	-0.0276 (0.0565)	-0.0618 (0.107)	0.00753 (0.0591)	-0.0561 (0.112)	0.0143 (0.0589)	-0.0313 (0.118)	0.0316 (0.0582)	0.00385 (0.120)
Born in treated area	-0.0566 (0.0608)	0.145 (0.156)	-0.0552 (0.0661)	0.125 (0.159)	0.137* (0.0802)	0.163 (0.182)	0.156* (0.0797)	0.188 (0.188)
Age			0.0296*** (0.00130)	0.0206*** (0.00577)	0.0304*** (0.00121)	0.0233*** (0.00611)	0.0233*** (0.00153)	0.0150** (0.00692)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	Yes	Yes
income		-0.245*** (0.0581)		-0.243*** (0.0598)		-0.226*** (0.0573)		-0.0950 (0.0754)
Constant	-0.658*** (0.0409)	-2.311*** (0.462)	0.396*** (0.0591)	-1.541*** (0.448)	0.792*** (0.104)	-0.237 (0.402)	0.212* (0.125)	0.250 (0.538)
Constant	-0.0287 (0.0418)	-1.705*** (0.443)	1.081*** (0.0612)	-0.924** (0.434)	1.486*** (0.105)	0.403 (0.396)	0.918*** (0.126)	0.903* (0.525)
Constant	0.694*** (0.0403)	-0.786* (0.446)	1.898*** (0.0636)	0.0234 (0.436)	2.319*** (0.107)	1.385*** (0.403)	1.769*** (0.128)	1.901*** (0.532)
Constant	1.328*** (0.0445)	-0.119 (0.460)	2.614*** (0.0795)	0.708 (0.458)	3.052*** (0.117)	2.094*** (0.424)	2.521*** (0.137)	2.632*** (0.547)
Observations	6,068	846	6,068	846	6,068	846	6,068	846

Notes: The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

A lower number for the dependent variable denotes better health.

Standard errors in parentheses

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

Table 14
Ordered probit regression of Specific illness in the last 30 days on treatment group, African men born 1969 - 1974

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	0.514** (0.219)	0.585* (0.340)	0.479** (0.219)	0.558 (0.342)	0.474** (0.214)	0.544* (0.325)	0.430** (0.209)	0.488 (0.302)
Born 1969 - 1974	-0.180 (0.117)	-0.478** (0.212)	-0.186 (0.118)	-0.492** (0.212)	-0.195 (0.119)	-0.492** (0.210)	-0.189* (0.111)	-0.473** (0.190)
Born in treated area	-0.00889 (0.0705)	0.0490 (0.119)	0.0303 (0.0705)	0.0666 (0.125)	-0.266*** (0.0944)	-0.141 (0.175)	-0.286*** (0.0961)	-0.116 (0.173)
Age			-0.0155*** (0.00136)	-0.0117*** (0.00374)	-0.0166*** (0.00145)	-0.0134*** (0.00374)	-0.0134*** (0.00171)	-0.00756 (0.00494)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	No	No
Income		0.229*** (0.0536)		0.244*** (0.0558)		0.257*** (0.0517)		0.204*** (0.0616)
Constant	-3.622*** (0.276)	-0.791 (0.482)	-4.237*** (0.280)	-1.130** (0.501)	-3.940*** (0.460)	-1.463** (0.595)	-3.786*** (0.467)	-1.708*** (0.532)
Constant	-2.823*** (0.277)	-0.716 (0.458)	-3.451*** (0.281)	-1.054** (0.470)	-3.154*** (0.429)	-1.387** (0.565)	-2.975*** (0.406)	-1.623*** (0.514)
Constant	-2.717*** (0.211)	-0.678 (0.448)	-3.345*** (0.215)	-1.014** (0.458)	-3.048*** (0.391)	-1.348** (0.553)	-2.865*** (0.370)	-1.579*** (0.510)
Constant	-2.698*** (0.201)	-0.645 (0.441)	-3.327*** (0.205)	-0.981** (0.450)	-3.029*** (0.387)	-1.315** (0.545)	-2.845*** (0.366)	-1.543*** (0.508)
Constant	-2.659*** (0.182)	-0.493 (0.424)	-3.287*** (0.186)	-0.824* (0.436)	-2.990*** (0.379)	-1.160** (0.529)	-2.805*** (0.359)	-1.374*** (0.516)
Constant	-2.644*** (0.176)	-0.420 (0.417)	-3.273*** (0.180)	-0.749* (0.428)	-2.975*** (0.377)	-1.085** (0.520)	-2.789*** (0.358)	-1.293** (0.515)
Constant	-2.639*** (0.173)	-0.343 (0.420)	-3.267*** (0.177)	-0.670 (0.428)	-2.969*** (0.376)	-1.006* (0.515)	-2.783*** (0.357)	-1.208** (0.518)
Constant	-2.625*** (0.167)	-0.265 (0.420)	-3.253*** (0.171)	-0.589 (0.430)	-2.955*** (0.374)	-0.925* (0.513)	-2.768*** (0.355)	-1.122** (0.521)
Constant	-2.553***	-0.102	-3.180***	-0.423	-2.882***	-0.757	-2.692***	-0.947*

Constant	(0.144)	(0.430)	(0.149)	(0.438)	(0.363)	(0.515)	(0.345)	(0.530)
	-2.484***	0.00394	-3.110***	-0.314	-2.812***	-0.647	-2.619***	-0.833
Constant	(0.123)	(0.435)	(0.128)	(0.442)	(0.386)	(0.517)	(0.370)	(0.537)
	-2.429***	0.178	-3.054***	-0.137	-2.754***	-0.468	-2.558***	-0.648
Constant	(0.109)	(0.428)	(0.117)	(0.441)	(0.381)	(0.516)	(0.365)	(0.538)
	-2.368***	0.305	-2.991***	-0.00922	-2.690***	-0.338	-2.492***	-0.515
Constant	(0.0969)	(0.428)	(0.104)	(0.440)	(0.378)	(0.511)	(0.363)	(0.536)
	-2.198***	0.480	-2.816***	0.167	-2.511***	-0.160	-2.307***	-0.332
Constant	(0.0800)	(0.423)	(0.0888)	(0.435)	(0.391)	(0.507)	(0.378)	(0.534)
	-2.072***	0.702*	-2.686***	0.390	-2.378***	0.0663	-2.172***	-0.103
Constant	(0.0889)	(0.416)	(0.0957)	(0.426)	(0.401)	(0.499)	(0.386)	(0.526)
	-1.994***	0.969**	-2.605***	0.660	-2.295***	0.339	-2.087***	0.172
Constant	(0.0774)	(0.418)	(0.0877)	(0.429)	(0.396)	(0.502)	(0.382)	(0.529)
	-1.887***	1.283***	-2.494***	0.977**	-2.181***	0.659	-1.971***	0.496
Constant	(0.0711)	(0.408)	(0.0824)	(0.418)	(0.391)	(0.487)	(0.380)	(0.518)
	-1.715***	1.838***	-2.315***	1.534***	-1.998***	1.224**	-1.786***	1.066**
Constant	(0.0693)	(0.411)	(0.0824)	(0.421)	(0.390)	(0.494)	(0.377)	(0.525)
	-1.586***		-2.182***		-1.860***		-1.647***	
Constant	(0.0662)		(0.0799)		(0.391)		(0.379)	
	-1.454***		-2.044***		-1.720***		-1.506***	
Constant	(0.0583)		(0.0759)		(0.387)		(0.376)	
	-1.344***		-1.931***		-1.605***		-1.389***	
Constant	(0.0551)		(0.0740)		(0.385)		(0.373)	
	-1.169***		-1.750***		-1.419***		-1.201***	
Constant	(0.0520)		(0.0713)		(0.380)		(0.368)	
	-0.948***		-1.521***		-1.184***		-0.964***	
Constant	(0.0468)		(0.0677)		(0.378)		(0.366)	
	-0.683***		-1.246***		-0.904**		-0.681*	
Constant	(0.0439)		(0.0693)		(0.379)		(0.367)	
	-0.376***		-0.930***		-0.582		-0.356	
Constant	(0.0426)		(0.0699)		(0.377)		(0.365)	
	0.0732		-0.469***		-0.111		0.118	

	(0.0472)		(0.0726)		(0.380)		(0.368)	
Observations	3,743	985	3,743	985	3,743	985	3,743	985

Notes: The sample is all African males born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

A higher number for the dependent variable denotes fewer health complaints in last 30 days.

Standard errors in parentheses

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

Table 15
Ordered probit regression of specific health issues on treatment group, African women born 1966 - 1973

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	0.0561 (0.188)	-0.0865 (0.371)	0.0594 (0.192)	-0.112 (0.372)	0.0709 (0.191)	-0.136 (0.358)	0.0536 (0.191)	-0.134 (0.361)
Born 1966 - 1973	0.0436 (0.0586)	-0.0473 (0.119)	0.0191 (0.0606)	-0.0549 (0.121)	0.0158 (0.0607)	-0.113 (0.128)	0.0185 (0.0622)	-0.128 (0.123)
Born in treated area	0.0791 (0.0780)	-0.0497 (0.146)	0.0765 (0.0819)	-0.0276 (0.148)	-0.426*** (0.108)	-0.422** (0.186)	-0.438*** (0.107)	-0.435** (0.188)
Age			-0.016*** (0.00121)	-0.016*** (0.00486)	-0.018*** (0.00106)	-0.0193*** (0.00489)	-0.0162*** (0.00139)	-0.0155*** (0.00586)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	No	No
Income		0.201*** (0.0476)		0.197*** (0.0479)		0.174*** (0.0481)		0.124** (0.0613)
Constant	-3.582*** (0.188)	-1.893*** (0.455)	-4.303*** (0.181)	-2.561*** (0.491)	-4.132*** (0.259)	-3.386*** (0.502)	-4.073*** (0.274)	-3.843*** (0.615)
Constant	-3.260*** (0.206)	-1.242*** (0.433)	-3.973*** (0.229)	-1.897*** (0.514)	-3.791*** (0.306)	-2.687*** (0.520)	-3.738*** (0.315)	-3.109*** (0.609)
Constant	-3.177*** (0.167)	-0.757* (0.425)	-3.891*** (0.191)	-1.413*** (0.503)	-3.709*** (0.277)	-2.173*** (0.490)	-3.657*** (0.288)	-2.561*** (0.607)
Constant	-3.168*** (0.163)	-0.672 (0.408)	-3.883*** (0.186)	-1.328*** (0.487)	-3.700*** (0.274)	-2.081*** (0.474)	-3.648*** (0.285)	-2.464*** (0.590)
Constant	-3.130*** (0.149)	-0.638 (0.405)	-3.845*** (0.172)	-1.294*** (0.484)	-3.662*** (0.262)	-2.045*** (0.472)	-3.610*** (0.273)	-2.426*** (0.588)
Constant	-3.052*** (0.139)	-0.548 (0.399)	-3.767*** (0.161)	-1.204** (0.475)	-3.583*** (0.255)	-1.950*** (0.467)	-3.533*** (0.267)	-2.327*** (0.582)
Constant	-2.870*** (0.119)	-0.385 (0.391)	-3.582*** (0.139)	-1.039** (0.463)	-3.393*** (0.229)	-1.777*** (0.461)	-3.345*** (0.240)	-2.148*** (0.573)
Constant	-2.763*** (0.0978)	-0.200 (0.392)	-3.472*** (0.117)	-0.852* (0.464)	-3.279*** (0.215)	-1.580*** (0.452)	-3.230*** (0.228)	-1.946*** (0.568)
Constant	-2.639***	-0.0419	-3.344***	-0.693	-3.144***	-1.411***	-3.095***	-1.774***

	(0.0881)	(0.386)	(0.109)	(0.456)	(0.210)	(0.445)	(0.216)	(0.562)
Constant	-2.385***	0.0828	-3.084***	-0.567	-2.873***	-1.278***	-2.822***	-1.641***
	(0.152)	(0.379)	(0.171)	(0.449)	(0.243)	(0.441)	(0.232)	(0.559)
Constant	-2.284***	0.302	-2.983***	-0.344	-2.768***	-1.044**	-2.716***	-1.405**
	(0.139)	(0.362)	(0.158)	(0.433)	(0.232)	(0.425)	(0.226)	(0.544)
Constant	-2.101***	0.587	-2.797***	-0.0546	-2.574***	-0.744*	-2.519***	-1.102**
	(0.105)	(0.360)	(0.125)	(0.429)	(0.216)	(0.432)	(0.217)	(0.538)
Constant	-1.995***	0.796**	-2.690***	0.158	-2.461***	-0.524	-2.403***	-0.880
	(0.0916)	(0.360)	(0.112)	(0.428)	(0.205)	(0.432)	(0.210)	(0.537)
Constant	-1.900***	1.032***	-2.594***	0.398	-2.360***	-0.276	-2.301***	-0.629
	(0.0791)	(0.363)	(0.0990)	(0.434)	(0.206)	(0.436)	(0.213)	(0.534)
Constant	-1.762***	1.368***	-2.453***	0.738*	-2.213***	0.0764	-2.151***	-0.270
	(0.0739)	(0.369)	(0.0946)	(0.437)	(0.207)	(0.439)	(0.213)	(0.543)
Constant	-1.589***	1.847***	-2.276***	1.223***	-2.029***	0.577	-1.963***	0.237
	(0.0624)	(0.367)	(0.0855)	(0.436)	(0.203)	(0.437)	(0.215)	(0.538)
Constant	-1.470***		-2.154***		-1.901***		-1.834***	
	(0.0660)		(0.0880)		(0.210)		(0.219)	
Constant	-1.329***		-2.008***		-1.748***		-1.679***	
	(0.0600)		(0.0804)		(0.212)		(0.220)	
Constant	-1.183***		-1.858***		-1.589***		-1.520***	
	(0.0549)		(0.0749)		(0.209)		(0.218)	
Constant	-1.001***		-1.669***		-1.391***		-1.320***	
	(0.0497)		(0.0702)		(0.207)		(0.216)	
Constant	-0.799***		-1.458***		-1.170***		-1.097***	
	(0.0492)		(0.0680)		(0.203)		(0.210)	
Constant	-0.579***		-1.228***		-0.929***		-0.854***	
	(0.0475)		(0.0674)		(0.204)		(0.213)	
Constant	-0.339***		-0.976***		-0.666***		-0.589***	
	(0.0474)		(0.0668)		(0.200)		(0.211)	
Constant	-0.0337		-0.658***		-0.334*		-0.254	
	(0.0486)		(0.0648)		(0.200)		(0.214)	
Constant	0.413***		-0.198***		0.146		0.228	

	(0.0549)		(0.0670)		(0.197)		(0.211)	
Observations	6,093	850	6,093	850	6,093	850	6,093	850

Notes: The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

A higher number for the dependent variable denotes fewer health complaints in last 30 days.

Standard errors in parentheses

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

Table 16
Ordered probit regression of long term health on treatment group, African men born 1969 - 1974

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	0.233 (0.254)	0.345 (0.368)	0.114 (0.244)	0.234 (0.353)	0.125 (0.248)	0.289 (0.362)	0.0746 (0.234)	0.210 (0.322)
Born 1969 - 1974	0.0738 (0.127)	-0.0236 (0.226)	-0.0342 (0.129)	-0.0711 (0.228)	-0.0273 (0.134)	-0.0518 (0.235)	-0.00226 (0.121)	-0.0216 (0.199)
Born in treated area	0.187* (0.0987)	0.317** (0.151)	0.305*** (0.0858)	0.412*** (0.140)	0.0443 (0.0968)	-0.0729 (0.163)	0.0620 (0.0968)	-0.102 (0.164)
Age			-0.0312*** (0.00205)	-0.0258*** (0.00639)	-0.0318*** (0.00207)	-0.0271*** (0.00638)	-0.0319*** (0.00230)	-0.0329*** (0.00701)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	Yes	Yes
Income		0.0221 (0.0679)		0.0532 (0.0645)		0.0580 (0.0655)		0.113 (0.0785)
Constant	-3.235*** (0.215)	-2.718*** (0.574)	-4.597*** (0.303)	-3.486*** (0.634)	-5.001*** (0.414)	-4.020*** (0.778)	-5.239*** (0.433)	-4.346*** (0.897)
Constant	-3.123*** (0.175)	-2.447*** (0.561)	-4.493*** (0.255)	-3.235*** (0.619)	-4.896*** (0.375)	-3.785*** (0.769)	-5.134*** (0.411)	-4.114*** (0.891)
Constant	-2.925*** (0.201)	-2.367*** (0.561)	-4.306*** (0.279)	-3.158*** (0.609)	-4.712*** (0.392)	-3.712*** (0.760)	-4.951*** (0.423)	-4.042*** (0.886)
Constant	-2.748*** (0.138)	-2.120*** (0.596)	-4.137*** (0.219)	-2.908*** (0.593)	-4.546*** (0.349)	-3.466*** (0.736)	-4.787*** (0.385)	-3.800*** (0.861)
Constant	-2.688*** (0.127)	-1.718*** (0.516)	-4.077*** (0.201)	-2.481*** (0.517)	-4.487*** (0.336)	-3.033*** (0.676)	-4.729*** (0.369)	-3.366*** (0.799)
Constant	-2.389*** (0.0941)	-0.764 (0.522)	-3.767*** (0.165)	-1.485*** (0.522)	-4.176*** (0.309)	-2.011*** (0.681)	-4.422*** (0.341)	-2.324*** (0.799)
Constant	-1.837*** (0.0596)		-3.166*** (0.125)		-3.562*** (0.296)		-3.804*** (0.325)	
Constant	-0.928*** (0.0457)		-2.141*** (0.104)		-2.511*** (0.288)		-2.741*** (0.317)	

Observations	3,740	983	3,740	983	3,740	983	3,740	983
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Notes: The sample is all African males born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

A higher number for the dependent variable denotes better long term health.

Standard errors in parentheses

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

Table 17
Ordered probit regression of long term health on treatment group, African women born 1966 - 1973

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	0.0202 (0.152)	0.374 (0.355)	0.0165 (0.154)	0.341 (0.365)	-0.00137 (0.147)	0.327 (0.341)	-0.0179 (0.146)	0.435 (0.329)
Born 1966 - 1973	0.0883 (0.0627)	0.0477 (0.186)	-0.0407 (0.0662)	-0.0285 (0.195)	-0.0426 (0.0645)	-0.0508 (0.199)	-0.0379 (0.0659)	-0.0915 (0.203)
Born in treated area	0.214*** (0.0783)	-0.0877 (0.193)	0.222*** (0.0812)	-0.0576 (0.206)	-0.224** (0.0866)	-0.403* (0.244)	-0.231*** (0.0872)	-0.442* (0.255)
Age			-0.0300*** (0.00136)	-0.0346*** (0.00670)	-0.032*** (0.00130)	-0.0361*** (0.00694)	-0.0284*** (0.00180)	-0.0283*** (0.00736)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	Yes	Yes
Income		0.171*** (0.0559)		0.166*** (0.0545)		0.156*** (0.0512)		0.0193 (0.0691)
Constant	-3.457*** (0.261)	-1.891*** (0.511)	-4.883*** (0.281)	-3.345*** (0.596)	-4.966*** (0.301)	-4.118*** (0.738)	-4.871*** (0.323)	-4.879*** (0.836)
Constant	-3.183*** (0.150)	-1.762*** (0.471)	-4.615*** (0.175)	-3.224*** (0.558)	-4.689*** (0.204)	-3.994*** (0.706)	-4.578*** (0.240)	-4.764*** (0.802)
Constant	-3.124*** (0.130)	-1.685*** (0.454)	-4.558*** (0.157)	-3.153*** (0.546)	-4.629*** (0.188)	-3.921*** (0.699)	-4.517*** (0.226)	-4.695*** (0.795)
Constant	-2.942*** (0.0934)	-1.381*** (0.476)	-4.370*** (0.119)	-2.864*** (0.559)	-4.436*** (0.160)	-3.619*** (0.701)	-4.325*** (0.210)	-4.398*** (0.775)
Constant	-2.736*** (0.0883)	-1.292*** (0.460)	-4.153*** (0.116)	-2.776*** (0.547)	-4.215*** (0.155)	-3.525*** (0.693)	-4.105*** (0.195)	-4.302*** (0.765)
Constant	-2.625*** (0.0809)	-1.200*** (0.449)	-4.040*** (0.126)	-2.686*** (0.539)	-4.099*** (0.158)	-3.430*** (0.684)	-3.987*** (0.197)	-4.204*** (0.759)
Constant	-2.533*** (0.0684)	-0.387 (0.390)	-3.946*** (0.112)	-1.842*** (0.487)	-4.004*** (0.148)	-2.554*** (0.647)	-3.890*** (0.189)	-3.308*** (0.714)
Constant	-2.114*** (0.0531)	0.587 (0.407)	-3.501*** (0.101)	-0.805 (0.490)	-3.550*** (0.140)	-1.478** (0.646)	-3.429*** (0.181)	-2.186*** (0.721)
Constant	-1.429***		-2.753***		-2.778***		-2.647***	

	(0.0421)	(0.0884)	(0.126)	(0.173)
Constant	-0.571*** (0.0386)	-1.794*** (0.0762)	-1.783*** (0.121)	-1.638*** (0.169)
Observations	6,073	847	6,073	847

Notes: The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

A higher number for the dependent variable denotes better long term health.

Standard errors in parentheses

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

Table 18
Ordered probit regression of emotional health on treatment group, African men born 1969 - 1974

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	-0.217 (0.209)	-0.344 (0.284)	-0.211 (0.208)	-0.344 (0.282)	-0.174 (0.201)	-0.313 (0.268)	-0.152 (0.198)	-0.281 (0.255)
Born 1969 - 1974	0.141 (0.0879)	0.217 (0.170)	0.140 (0.0879)	0.217 (0.170)	0.127 (0.0841)	0.207 (0.162)	0.123 (0.0813)	0.209 (0.144)
Born in treated area	-0.104 (0.0816)	-0.312*** (0.116)	-0.109 (0.0812)	-0.312*** (0.115)	-0.125 (0.0884)	-0.100 (0.161)	-0.129 (0.0905)	-0.0680 (0.159)
Age			0.00223 (0.00176)	-0.000139 (0.00435)	0.00302* (0.00160)	0.00172 (0.00455)	0.00266 (0.00209)	0.000971 (0.00501)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	Yes	Yes
Income		0.0287 (0.0634)		0.0289 (0.0644)		-4.70e-05 (0.0643)		-0.0178 (0.0675)
Constant	-3.733*** (0.190)	-2.624*** (0.662)	-3.651*** (0.203)	-2.628*** (0.648)	-3.609*** (0.296)	-2.539*** (0.665)	-3.639*** (0.303)	-2.360*** (0.709)
Constant	-2.974*** (0.216)	-1.264*** (0.481)	-2.897*** (0.219)	-1.268*** (0.480)	-2.870*** (0.307)	-1.162** (0.494)	-2.897*** (0.363)	-0.944* (0.540)
Constant	-2.883*** (0.176)	-1.190** (0.476)	-2.807*** (0.182)	-1.193** (0.475)	-2.780*** (0.281)	-1.087** (0.489)	-2.807*** (0.333)	-0.868 (0.536)
Constant	-2.829*** (0.153)	-1.019** (0.475)	-2.752*** (0.160)	-1.023** (0.476)	-2.726*** (0.268)	-0.915* (0.491)	-2.753*** (0.317)	-0.694 (0.540)
Constant	-1.425*** (0.0623)	-0.719 (0.476)	-1.348*** (0.0942)	-0.723 (0.474)	-1.320*** (0.231)	-0.610 (0.492)	-1.346*** (0.251)	-0.386 (0.543)
Constant	-1.286*** (0.0618)	-0.518 (0.480)	-1.209*** (0.0947)	-0.521 (0.478)	-1.180*** (0.228)	-0.405 (0.497)	-1.206*** (0.249)	-0.180 (0.549)
Constant	-1.111*** (0.0566)	-0.271 (0.482)	-1.033*** (0.0907)	-0.275 (0.482)	-1.004*** (0.227)	-0.156 (0.503)	-1.030*** (0.248)	0.0714 (0.552)
Constant	-0.857*** (0.0502)	-0.0302 (0.483)	-0.779*** (0.0899)	-0.0337 (0.484)	-0.748*** (0.227)	0.0899 (0.505)	-0.773*** (0.251)	0.319 (0.552)
Constant	-0.657***	0.151	-0.579***	0.148	-0.546**	0.275	-0.570**	0.506

	(0.0492)	(0.481)	(0.0887)	(0.483)	(0.226)	(0.502)	(0.252)	(0.548)
Constant	-0.458***	0.348	-0.380***	0.345	-0.346	0.475	-0.370	0.709
	(0.0496)	(0.484)	(0.0918)	(0.487)	(0.227)	(0.506)	(0.250)	(0.552)
Constant	-0.246***	0.620	-0.167*	0.616	-0.130	0.750	-0.153	0.989*
	(0.0492)	(0.481)	(0.0921)	(0.484)	(0.227)	(0.503)	(0.251)	(0.549)
Constant	-0.0939*	0.830*	-0.0155	0.826*	0.0241	0.963*	0.00108	1.206**
	(0.0504)	(0.481)	(0.0938)	(0.485)	(0.227)	(0.504)	(0.251)	(0.551)
Constant	0.0733	1.024**	0.152	1.020**	0.194	1.160**	0.171	1.405**
	(0.0525)	(0.491)	(0.0965)	(0.493)	(0.229)	(0.512)	(0.253)	(0.561)
Constant	0.303***	1.173**	0.382***	1.169**	0.427*	1.312**	0.405	1.559***
	(0.0503)	(0.491)	(0.0932)	(0.493)	(0.225)	(0.513)	(0.250)	(0.562)
Constant	0.512***	1.333***	0.590***	1.330***	0.638***	1.475***	0.617**	1.725***
	(0.0505)	(0.486)	(0.0946)	(0.486)	(0.226)	(0.507)	(0.250)	(0.555)
Constant	0.700***	1.460***	0.779***	1.457***	0.828***	1.604***	0.808***	1.857***
	(0.0464)	(0.486)	(0.0907)	(0.486)	(0.228)	(0.506)	(0.251)	(0.554)
Constant	0.891***	1.650***	0.970***	1.646***	1.021***	1.795***	1.002***	2.054***
	(0.0445)	(0.494)	(0.0890)	(0.491)	(0.229)	(0.510)	(0.251)	(0.557)
Constant	1.044***	1.802***	1.122***	1.798***	1.175***	1.948***	1.156***	2.212***
	(0.0488)	(0.495)	(0.0923)	(0.493)	(0.230)	(0.516)	(0.251)	(0.561)
Constant	1.174***	1.863***	1.253***	1.859***	1.307***	2.010***	1.289***	2.277***
	(0.0536)	(0.496)	(0.0967)	(0.493)	(0.231)	(0.516)	(0.252)	(0.561)
Constant	1.378***	1.975***	1.457***	1.971***	1.512***	2.124***	1.495***	2.396***
	(0.0568)	(0.497)	(0.0979)	(0.493)	(0.229)	(0.516)	(0.250)	(0.557)
Constant	1.513***	2.090***	1.592***	2.087***	1.649***	2.242***	1.633***	2.522***
	(0.0625)	(0.505)	(0.104)	(0.502)	(0.232)	(0.525)	(0.252)	(0.563)
Constant	1.623***	2.220***	1.703***	2.216***	1.761***	2.378***	1.746***	2.666***
	(0.0714)	(0.531)	(0.114)	(0.533)	(0.235)	(0.558)	(0.255)	(0.593)
Constant	1.761***	2.518***	1.840***	2.515***	1.901***	2.688***	1.888***	2.982***
	(0.0795)	(0.532)	(0.122)	(0.538)	(0.239)	(0.553)	(0.258)	(0.623)
Constant	1.853***	2.638***	1.933***	2.634***	1.996***	2.813***	1.985***	3.103***
	(0.0903)	(0.548)	(0.132)	(0.555)	(0.242)	(0.568)	(0.260)	(0.635)
Constant	2.037***	2.868***	2.117***	2.864***	2.185***	3.054***	2.177***	3.337***

	(0.117)	(0.543)	(0.157)	(0.541)	(0.254)	(0.554)	(0.268)	(0.636)
Constant	2.184***	3.222***	2.264***	3.218***	2.337***	3.425***	2.331***	3.705***
	(0.147)	(0.546)	(0.188)	(0.541)	(0.262)	(0.556)	(0.286)	(0.615)
Constant	2.211***	3.493***	2.290***	3.490***	2.364***	3.712***	2.359***	4.009***
	(0.156)	(0.546)	(0.197)	(0.543)	(0.266)	(0.559)	(0.290)	(0.614)
Constant	2.267***		2.347***		2.423***		2.418***	
	(0.170)		(0.211)		(0.275)		(0.299)	
Constant	2.353***		2.432***		2.511***		2.508***	
	(0.201)		(0.242)		(0.296)		(0.318)	
Constant	2.500***		2.580***		2.664***		2.662***	
	(0.175)		(0.216)		(0.277)		(0.299)	
Constant	2.522***		2.601***		2.687***		2.685***	
	(0.184)		(0.225)		(0.283)		(0.304)	
Constant	2.587***		2.666***		2.754***		2.752***	
	(0.214)		(0.257)		(0.303)		(0.322)	
Constant	2.595***		2.674***		2.763***		2.761***	
	(0.218)		(0.261)		(0.306)		(0.325)	
Constant	2.639***		2.718***		2.809***		2.807***	
	(0.242)		(0.284)		(0.324)		(0.343)	
Observations	3,744	983	3,744	983	3,744	983	3,744	983

Notes: The sample is all African males born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

A lower number for the dependent variable denotes better emotional health.

Standard errors in parentheses

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

Table 19
Ordered probit regression of emotional health on treatment group, African women born 1966 - 1973

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated group	-0.287 (0.187)	-0.696** (0.314)	-0.289 (0.187)	-0.688** (0.315)	-0.299 (0.191)	-0.740** (0.345)	-0.283 (0.185)	-0.741** (0.335)
Born 1966 - 1973	0.105* (0.0583)	0.0311 (0.108)	0.110* (0.0588)	0.0325 (0.107)	0.0972* (0.0573)	0.0708 (0.110)	0.0989* (0.0584)	0.0911 (0.112)
Born in treated area	0.107* (0.0595)	0.144 (0.123)	0.109* (0.0589)	0.135 (0.124)	0.159** (0.0703)	0.256* (0.150)	0.156** (0.0699)	0.281* (0.146)
Age			0.00522*** (0.00129)	0.00740 (0.00458)	0.00591*** (0.00132)	0.00747 (0.00459)	0.00311* (0.00168)	0.000473 (0.00511)
Province	No	No	No	No	Yes	Yes	Yes	Yes
Education	No	No	No	No	No	No	Yes	Yes
Income		-0.0415 (0.0455)		-0.0394 (0.0449)		-0.0458 (0.0402)		0.0174 (0.0636)
Constant	-2.912*** (0.227)	-2.843*** (0.516)	-2.721*** (0.222)	-2.556*** (0.499)	-2.424*** (0.232)	-2.048*** (0.460)	-2.581*** (0.248)	-2.003*** (0.545)
Constant	-2.766*** (0.160)	-2.808*** (0.496)	-2.575*** (0.161)	-2.521*** (0.479)	-2.276*** (0.177)	-2.009*** (0.440)	-2.430*** (0.198)	-1.963*** (0.526)
Constant	-1.462*** (0.0558)	-1.681*** (0.373)	-1.267*** (0.0767)	-1.392*** (0.364)	-0.957*** (0.116)	-0.835** (0.352)	-1.103*** (0.155)	-0.754* (0.407)
Constant	-1.373*** (0.0544)	-1.608*** (0.369)	-1.177*** (0.0782)	-1.319*** (0.358)	-0.867*** (0.118)	-0.761** (0.345)	-1.012*** (0.157)	-0.677* (0.401)
Constant	-1.220*** (0.0481)	-1.482*** (0.371)	-1.025*** (0.0751)	-1.192*** (0.359)	-0.713*** (0.117)	-0.632* (0.346)	-0.858*** (0.159)	-0.545 (0.403)
Constant	-0.953*** (0.0412)	-1.225*** (0.349)	-0.756*** (0.0714)	-0.935*** (0.342)	-0.442*** (0.115)	-0.371 (0.335)	-0.587*** (0.159)	-0.279 (0.392)
Constant	-0.763*** (0.0428)	-1.068*** (0.349)	-0.566*** (0.0734)	-0.778** (0.340)	-0.251** (0.116)	-0.211 (0.333)	-0.395** (0.159)	-0.115 (0.392)
Constant	-0.569*** (0.0377)	-0.911*** (0.342)	-0.371*** (0.0701)	-0.621* (0.337)	-0.0551 (0.115)	-0.0500 (0.332)	-0.199 (0.159)	0.0504 (0.388)
Constant	-0.347***	-0.697**	-0.149**	-0.407	0.169	0.171	0.0266	0.277

Constant	(0.0335) -0.146***	(0.340) -0.436	(0.0666) 0.0529	(0.334) -0.145	(0.113) 0.373***	(0.325) 0.440	(0.157) 0.231	(0.381) 0.552
Constant	(0.0338) 0.0350	(0.339) -0.224	(0.0652) 0.234***	(0.332) 0.0669	(0.111) 0.556***	(0.326) 0.659**	(0.155) 0.415***	(0.387) 0.774**
Constant	(0.0337) 0.212***	(0.342) -0.0333	(0.0652) 0.412***	(0.333) 0.259	(0.112) 0.735***	(0.327) 0.860***	(0.156) 0.595***	(0.387) 0.978**
Constant	(0.0341) 0.440***	(0.346) 0.168	(0.0640) 0.641***	(0.333) 0.461	(0.109) 0.967***	(0.324) 1.072***	(0.155) 0.828***	(0.385) 1.196***
Constant	(0.0317) 0.615***	(0.342) 0.347	(0.0623) 0.816***	(0.332) 0.641*	(0.111) 1.144***	(0.324) 1.261***	(0.154) 1.006***	(0.386) 1.388***
Constant	(0.0340) 0.783***	(0.345) 0.556	(0.0620) 0.985***	(0.333) 0.851***	(0.111) 1.313***	(0.326) 1.481***	(0.155) 1.177***	(0.386) 1.609***
Constant	(0.0336) 0.940***	(0.338) 0.744**	(0.0615) 1.142***	(0.328) 1.039***	(0.111) 1.473***	(0.321) 1.678***	(0.154) 1.337***	(0.387) 1.808***
Constant	(0.0335) 1.080***	(0.341) 0.866**	(0.0609) 1.282***	(0.330) 1.161***	(0.112) 1.614***	(0.324) 1.806***	(0.154) 1.479***	(0.388) 1.937***
Constant	(0.0371) 1.219***	(0.347) 0.983***	(0.0628) 1.422***	(0.335) 1.279***	(0.113) 1.755***	(0.329) 1.929***	(0.156) 1.621***	(0.395) 2.060***
Constant	(0.0384) 1.359***	(0.349) 1.157***	(0.0656) 1.563***	(0.335) 1.452***	(0.114) 1.898***	(0.327) 2.112***	(0.157) 1.765***	(0.395) 2.242***
Constant	(0.0426) 1.497***	(0.357) 1.299***	(0.0672) 1.701***	(0.332) 1.595***	(0.115) 2.039***	(0.319) 2.261***	(0.159) 1.906***	(0.383) 2.390***
Constant	(0.0476) 1.665***	(0.371) 1.402***	(0.0694) 1.871***	(0.342) 1.698***	(0.115) 2.211***	(0.328) 2.369***	(0.161) 2.079***	(0.388) 2.496***
Constant	(0.0549) 1.795***	(0.381) 1.539***	(0.0721) 2.001***	(0.353) 1.836***	(0.116) 2.343***	(0.339) 2.512***	(0.164) 2.212***	(0.397) 2.638***
Constant	(0.0622) 1.918***	(0.381) 1.646***	(0.0739) 2.124***	(0.351) 1.945***	(0.116) 2.468***	(0.333) 2.626***	(0.167) 2.338***	(0.393) 2.751***
Constant	(0.0710) 2.023***	(0.395) 2.034***	(0.0807) 2.229***	(0.357) 2.337***	(0.121) 2.575***	(0.335) 3.037***	(0.170) 2.445***	(0.394) 3.153***
Constant	(0.0683) 2.111***	(0.373) 2.223***	(0.0782) 2.318***	(0.357) 2.529***	(0.120) 2.665***	(0.361) 3.238***	(0.170) 2.536***	(0.410) 3.353***

Constant	(0.0793) 2.219***	(0.388) 2.260***	(0.0831) 2.426***	(0.378) 2.567***	(0.121) 2.776***	(0.371) 3.279***	(0.169) 2.647***	(0.411) 3.394***
Constant	(0.0972) 2.318***	(0.394) 2.320***	(0.0993) 2.526***	(0.385) 2.627***	(0.130) 2.878***	(0.376) 3.345***	(0.178) 2.750***	(0.415) 3.461***
Constant	(0.0881) 2.404***	(0.404) 2.421***	(0.0951) 2.612***	(0.395) 2.729***	(0.129) 2.966***	(0.384) 3.460***	(0.175) 2.839***	(0.424) 3.577***
Constant	(0.102) 2.465***	(0.443)	(0.105) 2.673***	(0.435)	(0.134) 3.029***	(0.422)	(0.180) 2.903***	(0.452)
Constant	(0.115) 2.505***		(0.116) 2.713***		(0.141) 3.071***		(0.187) 2.946***	
Constant	(0.124) 2.645***		(0.123) 2.854***		(0.146) 3.216***		(0.192) 3.093***	
Constant	(0.164) 2.666***		(0.156) 2.875***		(0.174) 3.238***		(0.217) 3.115***	
Constant	(0.173)		(0.164)		(0.181)		(0.223)	
Observations	6,090	850	6,090	850	6,090	850	6,090	850

Notes: The sample is all African females born before 1990, as those born from 1990 may not have completed their growth by the time of the survey.

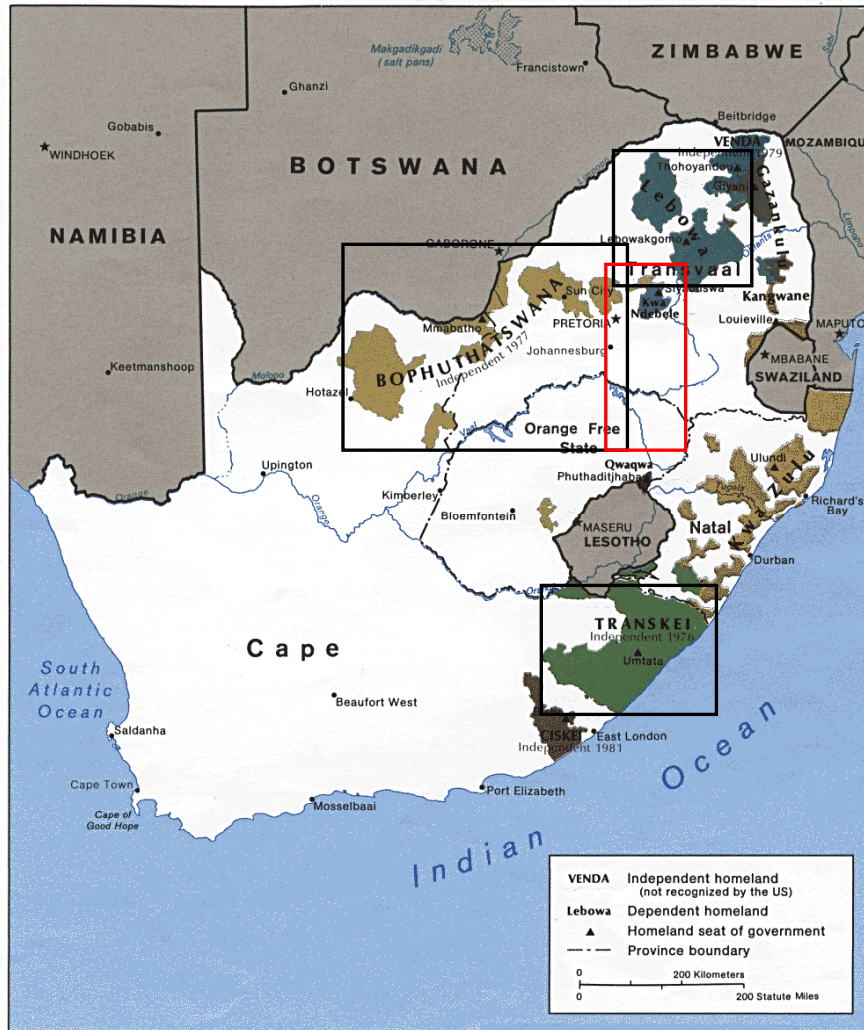
A lower number for the dependent variable denotes better emotional health.

Standard errors in parentheses

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

Figure 1-Provinces and homelands during apartheid

South Africa: Black Homelands



800481 (543001) 1-86

Bordered areas in black are the affected former homelands, bordered areas in red are the gold mining areas.

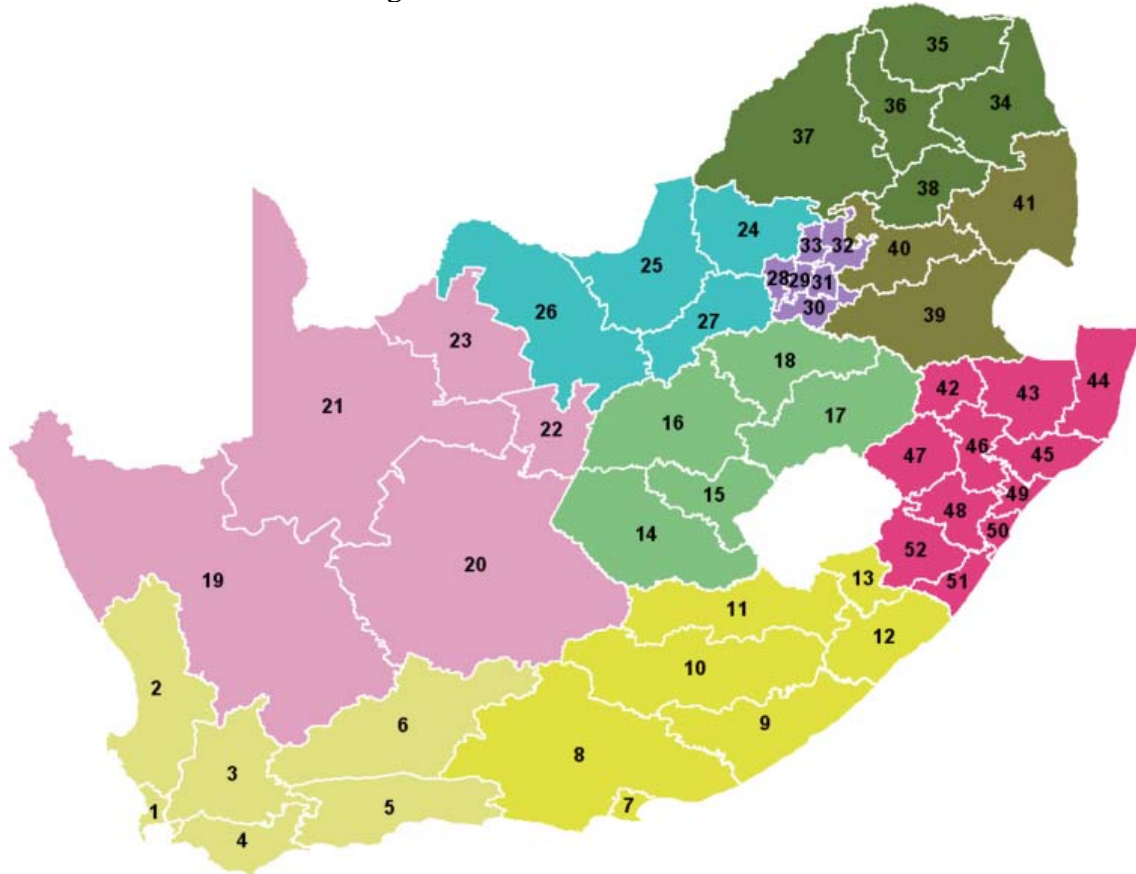
Source: University of Texas - Perry-Castañeda map collection.

Figure 2 – Provinces from 1994



Source: worldmapz.org

Figure 3 – District Councils 2011



Source: Wayne Dam using data from the Municipal Demarcation Board after the 12th amendment to the Constitution