Health and Wellbeing In South Africa: Evidence from the Langeberg Survey

Anne Case
Princeton University

Francis Wilson
University of Cape Town

First version: August 2000
This version: November 2000

1. Introduction

The causal links between health and income are poorly understood, in both rich and poor countries. Indeed, understanding the mechanisms has been one of the great intellectual challenges of the last century. Across countries, inhabitants of richer countries live longer than inhabitants of poorer countries and, within both rich and poor countries, richer people live longer than poorer people. Often these links are explained by better nutrition, better access to better health care, and by the long-run effects of psychosocial stress that accompanies lower socioeconomic status and economic deprivation.[1]

In this paper, we look at some of the links between health status and economic status in South Africa, a country that is in transition, economically, politically, and socially. Blacks[2] and Coloureds in the Western Cape are also right in the middle of the epidemiological transition, not just as a community but even as individuals. There is a high incidence of tuberculosis among Blacks and Coloureds, and at the same time their rates of heart disease and diabetes are essentially the same as those for Whites. In this case at least, it seems as if straddling the transition puts people at risk for a double burden of disease. In this paper, we analyze data collected in an integrated health and economic survey in one health district of the Western Cape, with the aim of adding to the body of information available on the links between economic wellbeing, physical and

---

[1]See Adler and Ostrove (1999) for an overview of the literature on socioeconomic status and health.

[2] For the purposes of this paper 'Black' is used in the narrower sense to refer specifically to those who would normally refer to themselves as 'African' and whose family background is (or was) Bantu-speaking. 'Coloured' is an apartheid category whose relevance lies primarily in the historical background of those so labeled whose ancestors range from the Khoi and San who have been in the Western Cape for perhaps 30 000 years, to the descendants of those who came, some as slaves in the 17th and 18th centuries, from South East Asia.

1

mental health, and social connectedness.

In 1999, a racially stratified random sample of 300 households (1300 individuals) was surveyed in the Langeberg Health District, which is comprised of three magisterial districts (county-sized administrative units) in the Western Cape in South Africa.[3] The questionnaire that evolved through a series of small pilot studies is innovative and modifies traditional household surveys, not only to gather data on health and economics simultaneously, but also to incorporate some of what has been learned from the much less formal traditions of participatory poverty assessment.[4] A key component of the survey design is that every adult identified as a household

---

member is interviewed separately. In South Africa, as elsewhere, household members often have private information to which other members do not have access. A household member's earnings, for example, or whether she has a bank account, is often information that she would protect from others in the household. In addition, we found many cases where conflict between household members led to very different accounts of life in the household. In one pilot household, the head of household reported that no one in the household drank "too much." His adult children, interviewed separately, spoke of the fear they lived with, because their father was regularly drunk and abusive. In another pilot household, the female household head refused to recognize the presence of her son's child as a member of her household, although this grandchild was living in her house, with her son. If we had relied only on the account of one "knowledgeable household member," as do most household surveys, the child's presence (or the head's drinking problem) would have been entirely overlooked. Finally, it makes little sense to ask one person to answer questions about the mental and physical health status of another person in the household, or to describe what that person worries about, or whether that person believes the community respects her opinion, or whether she has someone with whom she can confide when she is worried or anxious.

The survey has four modules. The first is a household module, which collects information on household composition, income and expenditures from the person in the household identified as "most knowledgeable about how income is spent by this household." We added experimental questions on whether and how often adults and, separately, children in the household have had to skip meals because there was not enough money for food. We also added experimental questions

on how the household would classify its financial situation (on a five point scale from "very comfortable" to "extremely poor") and, when the household respondent gave an answer that was not at least "comfortable," the question was asked how much money in total the household would need per month to be comfortable.

The survey has a younger adult module, administered to each adult in the household aged 18 to 54. Each is asked a series of questions about each of the following: individual income and expenditures; health conditions and health status; anxiety and depression; and social integration and life satisfaction. There are four innovations in this module. First, we collect information on economic, physical, mental and social wellbeing for the same individual, whom we can place in the context of a household, using the information on other household members, and a community, using data from the 1996 census at the level of enumerator area. Because we weigh and measure all adults, we can calculate the respondent's body mass index (BMI), a measure of weight for height that has been found to be highly correlated with body fat and with higher mortality from all causes. In addition, we can test whether, at the level of the individual, we can account for all of the person's income. We should be able to reconcile all of the money that comes into their hands, and all of the money they spend personally. We can also check the person's own report of earned and unearned income against the report provided by the "knowledgeable household member," which provides something of a check on the quality of information reported in household modules generally.

The survey also has a module for older adults (aged 55 or greater). In addition to the information collected on younger adults, and information on activities of daily living, we use this module to collect more information about the recipients of South Africa's unique old age pension,

to discern how the elderly spend their pension income, the extent to which pensioners share their pensions with other household members, and whether the pension affects their reported mental or physical health. We collect extra data on all older adults, starting five to ten years before the pension is obtainable (pension eligibility occurs at age 60 for women and age 65 for men). Virtually all age eligible Black men and women receive the pension if they do not have a private pension on which they can draw. We can test whether there are breaks in the trends of self reported mental and physical health status of pensioners (and other household members) at the time the pensioner reaches pension age. Because the elderly do not generally earn income in South Africa, we may be able to use the pension income, and health responses to it, to break the knot between health status and income.

The fourth module is a children' health module, completed for children through age 12. Almost all children in South Africa now have health cards, which list their birth weights, and their immunizations. All children in the Langeberg survey were weighed and their heights were measured. As a rule, children in South Africa do not work, and do not earn income. For this reason, the direction of causality between household or parental resources and children's health is clearer than is often the case for adults. We envision using the relationship between children's health status and household (or parental) income or resources as another way to cut the knot between income and health. Children's BMI can also be compared with that of their parents, to look for intergenerational transmission of obesity.

Returning to a household multiple times to interview all adult members is time consuming and costly but, with diligence, it is feasible, and was so in Langeberg. A total of 582 out of 624 younger adults (93%) and 130 of 136 older adults (96%) were successfully interviewed.

Children's health modules were completed for 297 of 320 children (93%) less than age 13.

2. Results from the Langeberg Survey

2.1 The Langeberg Health District

The Langeberg health district lies on the southern coast of South Africa, in Western Cape Province, and comprises three magisterial districts (Heidelberg, Mossel Bay and Riversdale).[5] According to the 1996 census the total population of the Langeberg was just under 97 000 persons, of whom more than three-quarters (78%) lived in urban areas, mainly the town of Mossel Bay famous as the place where Bartholemew Diaz the Portuguese explorer first landed on the African coast after rounding the Cape in 1488. The remaining 22% of the population lived in 'non-urban' areas, mainly commercial farms.[6] In terms of South Africa's apartheid racial categories the population of the district, as of 1996, was 59 percent Coloured, 26 percent White and 14 percent Black. This is in contrast to the country as a whole which is a little more than 52% urbanised and, in racial terms, slightly more than 1 percent Asian, 10 percent Coloured, 12 percent White and 76 percent Black. One other interesting aspect of racial differences in the Langeberg relates to the mobility of the population. Virtually all (96%) those who are Coloured were born in the Western Cape, while more than half (55%) of Blacks were born in the Eastern Cape and have moved mainly from remote rural areas to Mossel Bay. Three-fifths (61%) of

---

[5] This area was chosen by SALDRU for the survey as a result of discussions with the provincial Department of Health and the Health Systems Trust. For a number of reasons it was felt that this would be the best area in the Western Cape to pilot in the process of attempting to improve information needed by health policy makers.

[6] There are no former 'homelands' or 'labour reserves' such as the Ciskei or Transkei nor any of the old Coloured mission settlements such as Genadendal in this area.

Whites were born in the Western Cape, with the rest coming originally from all other provinces in the country including Gauteng (12%), the Eastern Cape (11%) and the Free State (3%).[7]

In terms of income and most other indicators of well-being, Whites in South Africa are generally better off than Coloureds or Blacks. This is certainly true in the Langeberg where the results of the 1999 survey show that they have higher incomes, on average (Figure 1); brighter self-reported financial situations (Figure 2); and better self-reported health status (Figure 3). Table 1 presents household information from the Langeberg survey, where differences between Black and White households are striking. On average, there are 4.4 persons in a Black household; 4.9 in a Coloured household; and 2.8 in a White household. There are more children and more prime aged adults in Black and Coloured households than in White households, and fewer elderly members. In the sections that follow, we will return to ways in which these differences in household size and composition may affect the relationship between health status and economic status.

3.0 Measurement of Health Status in the Langeberg District

3.1 Self-reported Health Status

One of the health concepts we are interested in exploring is self-reported health status (SRHS) in which the respondent answers the question "How would you rate your health at present? Would you say it is: excellent=1, good=2, average=3, poor=4, very poor=5." Because this measure had not been collected in any survey run to date in South Africa, it was not known whether it

---

[7] Further details, including education and household assets (such as housing and access to telephones), about the population of the Langeberg in 1999 are provided in Wilson & Welch (forthcoming) from which the above information is drawn.

provided useful information on the health of poor respondents. An early question we wanted to answer, then, was whether SRHS provided useful information on a person's well being in South Africa. Table 2 presents means of SRHS status by age and race. For both younger and older adults, Whites report better health on average than Coloureds, and Coloureds better health than Blacks. Adults of all races report poorer health status at older ages. On average, older Whites report a health status of 2.5 (halfway between health of "average" and "good"), older Coloureds report a mean of 2.8, and older Blacks report a mean of 3.5 (halfway between "poor" and "average.") As they age, it appears that Blacks lose the most ground; their self reported health status worsens from an average of 2.7 to 3.5, measured for adults aged 18 to 54 relative to adults aged 55 and above. Coloureds appear to lose less ground (.61 points) and Whites, the least ground (.36 points).

Table 3 presents information of chronic health problems, by race, for younger adults (Panel A) and older adults (Panel B), who answered whether "a doctor or nurse or staff member at a clinic or hospital ever told the respondent that he or she had" certain chronic conditions. Among younger Blacks and Coloureds in the survey, high cholesterol, asthma and TB are the most common conditions named. Reports of chronic conditions are dramatically higher among older adults, with more than ten percent of elderly Blacks reporting that they have had heart trouble, high cholesterol, diabetes, asthma or TB. Almost half report having high cholesterol, and a quarter tuberculosis. Infectious and chronic diseases coexist among Blacks: while they are much more susceptible to asthma and to tuberculosis than elderly whites, they report much the same prevalence of heart disease and of diabetes.

We find large and significant correlations between self reported health status and a

8

respondent's report that a health professional ever told the respondent that he or she had particular chronic health problems. Table 4 reports results of regressions of SRHS on the list of chronic conditions, controlling for race and sex. The presence of heart trouble, high cholesterol, diabetes, asthma, cancer and TB each increases (that is, makes worse) the self-reported health status measure significantly, when entered separately or all together. The extent to which self-reported health status is influenced by chronic disease varies by disease, for example heart trouble increases the measure by 0.3; asthma by 0.6; and cancer by 0.9.

The results presented in Table 4 are largely unchanged when we control for years of completed education (as in columns 3 and 4 of Table 4). Education has a beneficial effect on self reported health status, and its inclusion reduces the intercept terms for Black and Coloured respondents, suggesting that part of the health status effect may work through education. Women report worse health status than men, at least until retirement age, controlling for age, race, education and chronic conditions. Blacks continue to report significant worse health status than Whites or Coloureds, even when we control for chronic diseases, the respondent's education and age. We take these results as evidence that the self-reported health status measure provides useful information on individual health status; it is even promising as a possible metric for rating the severity of disease, at least in terms of self-perceived effects on health.

3.2 Activities of daily living

Older adults in the survey were asked about their level of difficulty in carrying out activities of daily living by themselves. Table 5 presents the fraction of older adults, by race, who report having any difficulty bathing or dressing without help, taking a bus, taxi or train alone, doing light work around the house, managing money, walking 200 to 300 meters, or lifting or carrying a

heavy (5 kg) object. The difference in the health of older Whites relative to older Blacks measured in this way is quite large: older Whites were only a third as likely as older Blacks to have difficulty dressing or bathing themselves, and only half as likely to have difficulty taking a bus, walking 200 to 300 meters, or climbing a flight of stairs. Although Whites on average are healthier measured along these dimensions, the effect of having difficulty in any of the activities of daily living has a much larger effect on White SRHS than on that for Blacks or Coloureds. As shown in Table 6, on average, if an older White has difficulty taking a bus, walking 200 to 300 meters, doing light work around the house, managing money (if he or she had to), climbing a flight of stairs or lifting or carrying heavy objects (e.g. a bag weighing 5 kg), this difficulty worsened the respondent's SRHS by nearly a full point. In contrast, for older Coloured and Black respondents, difficulty with any of these tasks worsened SRHS by roughly half of one point.

The differential impact on SRHS might be the result of differences in living arrangements. In South Africa, elderly Whites tend to live in smaller households, living either alone or with a spouse (the median household size for Whites above the age of 55 is 2, in our sample). Elderly Coloureds and Blacks tend to live in larger multi-generational households (the median household size for Coloureds and Blacks above the age of 55 is 5 in our sample). Part of the reason limitations in activities of daily living may have a weaker effect on Coloured and Black self-reported health status may be because Coloured and Black elderly can rely on household members for help. Figure 4 presents some evidence that, within the Coloured community, there may be an interaction between household size and the effect that difficulty dressing has on SRHS. For the small number of Coloured elderly who expressed difficulty dressing, we graph SRHS against household size. We find that it is the Coloured elderly in small households who report the poorest

10

health, among those who express difficulty dressing. (The same is true for bathing and walking.) We do not find a similar effect for Black elderly. The sample of elderly here isn't large enough to place much weight on these finding by themselves, but it is worthy of future study.

3.3 Obesity and Chronic Diseases

The Langeberg survey weighed and measured all adults and children, allowing the calculation of body mass index (BMI), a measure of weight for height that is highly correlated with excess mortality from all causes, but especially with cardiovascular disease and diabetes (NIH, 1998). BMI is calculated as weight (in kilograms) divided by height (in meters) squared, and obesity is often defined as a BMI above 25 or, less inclusively, as a BMI above 30. Figure 5 presents the BMI of women and men by race in the Langeberg survey. For Blacks and Coloureds, on average women have higher BMIs than men at every age. Above the age of 30, on average, Black women have a BMI in excess of 30. The data are consistent with a model, for Black women, of BMI rising to something above 30, and then changing very little for the rest of their lives. In contrast, for Black men, BMI rises appears to rise throughout their lives.

We examine the relationship between BMI and chronic disease in Table 7. A body mass index above 30 puts respondents at risk for stroke, high cholesterol, and diabetes. Specifically, obesity, as measured by a BMI above 30, increases the probability of reporting a stroke by 5 percent, high cholesterol by 13 percent, and diabetes by 7 percent. These numbers change little when we run these regressions separately by race (results not reported in Table 7). In future work, we plan to explore the interactions between BMI and economic outcomes. For consideration of the impact of malnutrition amongst children see section 4.3 below.

3.4 Mental Health

11

The Langeberg survey asked a battery of questions about anxiety and depression. The interviewer first read to the respondent the following statement: "From time to time, everyone feels sad or down. I am going to read a list of statements that may express these feelings. I would like to know how often you have felt this way in the past week." The respondent was then asked to indicate whether in the past week he or she felt that way "hardly ever, some of the time, or most of the time." The statements were:

> *I felt that I could not stop feeling miserable*
> *I felt depressed*
> *I felt sad*
> *I cried a lot*
> *I did not feel like eating*
> *I felt that everything I did was an effort*
> *My sleep was restless*
> *I could not get going.*

The results for these questions are tabulated by race in Table 8, for older adults (first 3 columns) and younger adults (last 3 columns). There are many results worth noting here. First, respondents appear to be able to distinguish between these manifestations of depression. There are individuals who report that everything is an effort, but who do not report crying or report restless sleep, for example. In addition, there are striking differences between older adults and younger adults. Among Blacks, older adults were three times as likely to report feeling miserable, and twice as likely to report feeling depressed or that everything they did was an effort, than were younger adults. Among both older and younger adults, Whites report many fewer manifestations of depression than do Blacks or Coloureds.

Mental health correlates strongly with physical health among respondents in the Langeberg survey. Table 9 presents results of regressions in which an index of depression (the

simple sum of the eight measures listed above) are regressed against age, gender and race (column 1), and an index of the number of chronic diseases the respondent has reported (column 2), and the individual's self reported health status (column 3). We find that even with controls for chronic conditions, Blacks suffer on average from 0.4 extra depression behaviors, relative to Whites, and Coloureds suffer on average 0.25 extra depression behaviors relative to Whites (column 2). Self reported health status and the respondent's depression index are highly correlated. A one-point increase (worsening) in SRHS is associated with an increase in the depression index of 0.5 points.

Overall, the results presented in Section 3 demonstrate large and significant differences in health and mental health between races, and between people of different ages, in the Langeberg health district. In addition, these results highlight important interactions between chronic diseases, obesity, and mental health. In the next section, we look at ways in which these conditions can explain or be explained by economic wellbeing.

4.0 Interactions between health and economic wellbeing

That there is a strong income gradient in self-reported health status can be seen in Figure 6, which presents results of Fan regressions of SRHS on the log of total household income, by race. SRHS improves more slowly for Blacks and Coloureds with total household income than does SRHS for Whites. Among the few Black households with high household incomes, respondents' SRHS is as low as that in White households. The question raised by these patterns is whether one can untangle the extent to which health depends on income, or income on health. We begin in Section 4 by looking at the relationship between income and chronic diseases.

4.1 Chronic Disease and Income

13

When a strong correlation is found between chronic health conditions and income, the direction of causality is always an issue: does lower income lead to a higher incidence of chronic disease, or does chronic disease lead to lower income? In the South African data collected in Langeberg, a strong case can be made that the direction runs from health to income. Table 10 presents regression results in which the report of chronic disease is regressed on the respondent's earned and unearned income, and all other household income, controlling for the respondent's age, race, education, the number of household members, an indicator that the respondent is female, and the female indicator interacted with age. We find a strong negative and significant correlation between earned income and the report that the respondent has heart trouble, stroke, diabetes, asthma, and cancer. However, neither unearned income, nor other household members' incomes are correlated with the presence of chronic conditions.

Chronic diseases appear to reduce earned income both by reducing the probability that a person reports working for money and, among job holders, by reducing the amount earned. Table 11 presents regression results for the probability that the respondent reports having a job (column 1), and the amount earned among those who report working (column 2). Stroke and cancer reduce the probability of employment by roughly 20 percent, controlling for age, race and sex. Some chronic conditions appear to reduce earnings among those who work. Conditional upon employment, heart trouble, diabetes and asthma each reduce earnings on average by roughly 1000 Rands a month, controlling for age, race and sex. (In the Langeberg data, the mean monthly earnings of working men was 2000 Rands per month and of working women, 685 Rands per month.) That chronic conditions lead to reductions in earned income has important implications for welfare and economic growth in South Africa. In addition to the costs and hardship associated

14

with the disease, there are fewer resources to support dependents.

4.2 Pension income and SRHS

In contrast to the relationship between chronic conditions and income discussed above, we find a significant (and plausibly causal) relationship between self-reported health status and the delivery of the old age pension. Figure 7 presents the results of Fan (locally weighted) regressions, in which self-reported health status is regressed against age for Black and Coloured individuals interviewed in the Langeberg survey. For men, who reach pension eligibility at age 65, we find at age 65 a leveling off of their self-reported health status. For women, we find a *reduction* (an improvement) in their self-reported health status at age 60, when they become pension eligible. It is the timing of the changes in these trends that is most striking: women and men reach pension eligibility at different ages, and it is at those ages that a significant change occurs in the age-trend of their self-reported health status.

4.3 Hunger and Depression

In the Langeberg survey, we also used questions on hunger as indicators of economic wellbeing. We asked, in turn, whether in the past 12 months any adults in the household has skipped a meal because there wasn't enough money for food; whether an adult had ever gone a whole day without eating because of lack of funds; and whether a child's meal had ever been reduced or eliminated because there wasn't enough money. Results presented in Table 12 show that almost half of all Black households report an adult or child eating less, because of lack of funds (which contrasts with 1-in-10 White households. As is true of other measures of wellbeing, the Coloured community is less deprived on this dimension than is the Black community, but more deprived than the White community.

15

We examine the effect food deprivation has on measures of depression, in Table 13. Here we regress the depression index used earlier (the simple sum of the eight depression behaviors outlined above) on indicators that a child in the household went without food, in those households where children were present. In Black households, we find a strong and significant relationship between children missing meals due to lack of funds, and adult's self-reported depression. This is true for both men and women. This result echos one found by the Second Carnegie Inquiry into Poverty and Development in Southern Africa (1980) which reports a mother's description of her plight and that of her children, after both she and her husband lost their jobs. About her children, she laments:

> *Sometimes they lie awake at night crying. I know they are crying because they are hungry. I feel like feeding them Rattex. When your children are crying hunger-crying, your heart wants to break. It will be better if they were dead. When I think things like that I feel worse. It's terrible when a mother wants to kill her own children. But what can you do; I'm not a mother worth having.*[8]

Behind the fact of missing meals and the impact of children's hunger on parents and other significant adults lies, of course, the deeper question of the impact of malnutrition on children themselves, which we plan to examine in greater detail in work to follow.

Interestingly we found in the data no significant relationship between unemployment and depression, in contrast to the Carnegie findings (Wilson and Ramphele, p. 84). Neither do we find a significant relationship between unemployment and self reported health status, in contrast to the findings of Bartley et al. (1999). With unemployment rates as high as 33 percent among Blacks in our sample (people who describe themselves as looking for work but not currently working), we

---

[8]Wilson and Ramphele, p. 97.

may need to construct finer measures of unemployment before looking for its correlates.

4.4 Social integration and economic well being

The Langeberg survey asked a battery of experimental questions on social integration, using as a frame the set of questions asked by Cohen (1998), who found that having contact with people in different social spheres was protective of health. The survey found sharp differences in social standing across different reference groups. We found people who are respected not at all at home, but who have standing in the community. There are also clear links between money and respect. One man reported on the change in his life he anticipated upon the receipt of the old age pension: "When I receive the pension, I shall regain my voice among men."[9] There are also clear links between money and social connections (belonging to a church or mosque, a choir, a senior center, a trade union, and so on). For both younger and older adults, the number of contacts reported is highly correlated with household financial wellbeing. Younger adults in households in which the household respondent reported the household as "very comfortable" have, on average, one more social contact than younger adults in households reported to be "poor" or "extremely poor." The number of social connections is lower for older adults, but follows the same pattern: wealthier respondents report a greater number of social contacts. (See Figure 8.)

5. Conclusions

Our paper shows that, in at least one part of South Africa, measures of health status and measures of economic status are deeply interconnected. As shown in Figure 6, for all races, there

---

[9]This resonates with the discussion of material needs found in Marmot (1999), who suggests "material deprivation in a modern context may mean inability to participate fully in society and to control one's life." (p. 23)

are large and significant income gradient in respondents' self-reported health status. Improvements in economic wellbeing lead to improved self reported health status, for example among women receiving the old age pension. Poor physical health leads to reduced income, when adults suffer from chronic diseases and either cannot work or earn less at work. Stroke and cancer all reduce the probability of employment by 20 percent, controlling for age, race and sex. Some chronic conditions appear to reduce earnings among those who work. Conditional upon employment, heart trouble, diabetes and asthma each are correlated with reduced earnings of employed respondents. Chronic disease and lower economic status are both correlated with poorer mental health. A strong and significant relationship exists between children missing meals due to lack of funds, and adult's self-reported depression.

Our field experience provided graphic evidence of the interrelations between health and income poverty for wellbeing. The people of the Langeberg district surveyed last year are not only economically deprived, but their economic deprivation is associated with and at least partly causative of their deprivation in other spaces, particularly in health—including chronic disease, infectious disease, accidents, and depression.

References

Adler, Nancy E. and Joan M. Ostrove, 1999. "Socioeconomic Status and Health: What We Know and What We Don't," in Nancy E. Adler, Michael Marmot, Bruce S. McEwen and Judith Stewart (eds.), *Socioeconomic Status and Health in Industrial Nations*, New York: The New York Academy of Sciences.

Bartley, Mel, Jane Ferrie, and Scott M. Montgomery, 1999. "Living in a High-Unemployment Economy: Understanding the Health Consequences," in Michael Marmot and Richard G. Wilkinson (eds.), *Social Determinants of Health*, Oxford: Oxford University Press, 81-104.

Cohen, Sheldon, et al. 1998. "Types of Stressors that Increase Susceptibility to the Common Cold in Healthy Adults." *Health Psychology* 17(3), 214-223.

Marmot, Michael, 1999. "Epidemiology of Socioeconomic Status and Health: Are Determinants Within Countries the Same as Between Countries?" in Nancy E. Adler, Michael Marmot, Bruce S. McEwen and Judith Stewart (eds.), *Socioeconomic Status and Health in Industrial Nations*, New York: The New York Academy of Sciences.

National Institute of Health, 1998. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report, http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf.

Wilson, F. and M.Ramphele, 1989. *Uprooting Poverty: The South African Challenge*, Cape Town and New York.

Table 1. The Langeberg Survey

	All persons	Blacks	Coloureds	Whites
Household size	4.04	4.43	4.85	2.80
Number of members 0-17	1.46	1.70	1.91	0.76
Number of members 18-54	1.98	2.20	2.50	1.20
Number of members 55 +	0.56	0.39	0.40	0.84
Number of Obs	294	103	126	65

Notes on Table 1. Sample means have been weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 2. Self Reported Health Status

1=Excellent, 2=Good, 3=Average, 4=Poor, 5=Very Poor

	Younger Adults 18-54		Older Adults aged 55+	
	Mean (std error)	Number of Observations	Mean (std error)	Number of Observations
Black	2.67 (0.10)	176	3.51 (0.28)	30
Coloured	2.22 (0.07)	277	2.83 (0.13)	41
White	2.07 (0.15)	79	2.46 (0.14)	46

Notes on Table 2. Sample means have been weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 3. Prevalence of Illnesses

Fractions, by race, of respondents who report that a doctor or nurse or staff member at a clinic or hospital ever told the respondent that he or she had the following conditions.

Panel A Younger Adults

	Heart Trouble	Stroke	High Cholesterol	Diabetes	Emphysema	Asthma	Cancer	TB
Black	.030	.010	.117	.021	.047	.069	.005	.068
Coloured	.044	.025	.125	.070	.044	.060	.006	.095
White	.040	.045	.118	.059	.057	.041	.007	.050

Panel B Older Adults

	Heart Trouble	Stroke	High Cholesterol	Diabetes	Emphysema	Asthma	Cancer	TB
Black	.292	.078	.404	.104	0	.172	.026	.260
Coloured	.177	.058	.418	.086	.164	.251	0	.123
White	.299	.080	.369	.094	.064	.041	.113	.010

Notes on Table 3. Sample means have been weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 4. Regressions of Self-Reported Health Status on Physical Health Conditions
All Adults Ages 18 and above

Heart Trouble or Angina	.335	.190	.213	.185
	(.129)	(.124)	(.126)	(.127)
Stroke	.229	.093	.032	.009
	(.200)	(.216)	(.194)	(.190)
High Cholesterol	.471	.331	.292	.246
	(.088)	(.113)	(.094)	(.090)
Diabetes	.320	.283	.285	.349
	(.127)	(.127)	(.119)	(.133)
Emphysema	.211	.142	.125	.108
	(.206)	(.173)	(.162)	(.154)
Asthma	.616	.577	.639	.632
	(.140)	(.131)	(.120)	(.123)
Cancer	.928	.817	.856	.862
	(.254)	(.222)	(.225)	(.223)
TB	.542	.547	.454	.390
	(.190)	(.184)	(.148)	(.140)
Age	–	.013	.012	.014
		(.003)	(.002)	(.002)
Education	–	–	−.041	−.034
			(.012)	(.012)
Household Financial Well-being (1=very comfortable, 5=very poor)	–	–	–	.138
				(.037)
Indicator: Female	.082	.095	.098	.103
	(.059)	(.053)	(.043)	(.044)
Indicator: Black	.629	.762	.560	.410
	(.137)	(.141)	(.172)	(.162)
Indicator: Coloured	.122	.233	.025	−.020
	(.119)	(.121)	(.159)	(.149)
Number of Obs	631	627	575	565

Source: Younger Adult Module Section I Physical Health and Older Adult Module Section E

Notes to Table 4. A constant term is estimated, but not reported. In all regressions, 'white' is the omitted racial category. The dependent variable is the respondent's answer to the question "How would you rate your health at present? Would you say it is: excellent=1, good=2, average=3, poor=4, very poor=5." All regressions are weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 5. Older Adult Responses on Activities of Daily Living

Dependent Variable = 1 if Respondent reports any difficulty with this activity
= 0 if Respondent reports no difficulty

	Dressing	Bathing	Taking a bus or train alone	Walking 200-300 meters	Climbing a flight of stairs	Lifting or carrying heavy objects (5kg)	Light work around the house
Black	.187	.195	.229	.475	.565	.497	.225
Coloured	.136	.136	.205	.283	.396	.542	.159
White	.075	.077	.094	.231	.293	.376	.247

Source: Older Adult Module, Section E, Physical Health.

Notes on Table 5. Sample means have been weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area). Number of observations = 123.

24

Table 6. Regressions of Self-Reported Health Status on Activities of Daily Living
Older Adult Module (ages 55 and above)

Explanatory Variable Individual has difficulty:	All Races	Black	Coloured	White
Dressing	.295	.885	.407	−.040
(obs=121)	(.311)	(.399)	(.574)	(.389)
Bathing	.581	.830	.295	.723
(obs=120)	(.333)	(.414)	(.475)	(.563)
Taking a Bus or Train alone	.581	.651	.216	.912
(obs=118)	(.247)	(.281)	(.320)	(.480)
Walking 200-300 meters	.715	.507	.458	1.04
(obs=117)	(.189)	(.447)	(.327)	(.243)
Light work around the house (if	.966	.893	.495	1.16
you had to) (obs=118)	(.173)	(.431)	(.497)	(.173)
Managing money	.835	.423	.505	1.23
(if you had to) (obs=119)	(.264)	(.410)	(.383)	(.403)
Climbing a flight of stairs	.740	.784	.282	1.11
(obs=119)	(.132)	(.353)	(.173)	(.176)
Lifting or carrying heavy	.774	.611	.494	.996
objects (5 kg) (obs=119)	(.138)	(.404)	(.287)	(.150)
Number of observations reporting a SRHS	122	30	44	48

Source: Older Adult Module, Section E, Physical Health

Notes to Table 6. Standard errors reported in parentheses. Each number in the table comes from a different regression where the dependent variable is self-reported health status. A constant term and an indicator that the respondent is female are estimated, but not reported here. In all regressions reported in the first column, controls are included indicating that the respondent is 'Black' or 'Coloured.' All regressions are weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Total number of observations reported in the last row is the total number of observations with a self-reported health status (SRHS). For each Activity of Daily Living (ADL) analyzed, the numbers of observations in the regression in column 1 appear in parentheses under the ADL.

Table 7. Body Mass Index and Chronic Diseases
Adults Ages 18 and Up, All Races

	Dependent Variable:							
	Heart Trouble	Stroke	High Cholesterol	Diabetes	Emphy-sema	Asthma	Cancer	TB
Control variables:								
Indicator: BMI>30	−.014 (.025)	.058 (.028)	.128 (.048)	.066 (.034)	−.039 (.022)	−.008 (.016)	.026 (.033)	−.007 (.037)
Number of observations	609	610	612	610	612	611	612	608

Standard errors in parentheses. Each column reports results for a different regression, where the dependent variable is that listed at the top of the column. Included in all regressions are the respondent's age, and indicators that respondent is Black, is Coloured, and is female.

All regressions are weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 8. Depression Module

Proportion of respondents answering that the following was true "most of the time"

	Older Adults (55+)			Younger Adults (18-54)		
	Black	Coloured	White	Black	Coloured	White
I felt that I could not stop feeling miserable	.20	.06	0	.06	.05	.06
I felt depressed	.23	.08	0	.10	.07	.03
I felt sad	.17	.02	0	.05	.06	.02
I cried a lot	.11	.02	.03	.08	.06	.01
I did not feel like eating	.09	.04	.04	.08	.07	.04
I felt that everything I did was of an effort	.17	.09	.04	.07	.07	.04
My sleep was restless	.09	.13	.09	.09	.08	.06
I could not get going	.06	.15	.05	.06	.02	0

Source: Older Adult Module, Section F.1 and Younger Adult Module Section J

Notes on Table 8. Sample means have been weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 9. Correlation between Depression and Chronic Disease

All Adults Ages 18 and above

Control variables:	Dependent Variable: Index of Depression		
Number of Chronic Conditions	--	.228 (.070)	--
Self-reported Health Status	--	--	.464 (.097)
Respondent's Age	.005 (.004)	.000 (.003)	−.005 (.005)
Indicator: Female	.238 (.078)	.172 (.080)	.178 (.076)
Indicator: Black	.448 (.139)	.393 (.131)	.006 (.146)
Indicator: Coloured	.271 (.146)	.250 (.141)	.148 (.117)
Number of Obs	661	643	625

Source: Younger Adult Module Section I Physical Health and Older Adult Module Section E

Standard errors in parentheses. Each column reports results for a different regression, where the dependent variable is the sum of eight behavioral measures correlated with depression. All regressions are weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Results are quantitatively and qualitatively similar if we restrict the sample to those individuals who answered questions both on depression and self-reported health status.

Table 10. Health Conditions and Individual and Household Incomes
Adults Ages 18 and Up, All Races

	Dependent Variable:							
	Heart Trouble	Stroke	High Cholesterol	Diabetes	Emphy-sema	Asthma	Cancer	TB
Control variables:								
Respondent's Earned Income (R 1000s)	−.0080 (.0039)	−.0022 (.0016)	−.0038 (.0046)	−.0043 (.0027)	.0008 (.0031)	−.0037 (.0021)	−.0023 (.0019)	−.0006 (.0021)
Respondent's Unearned Income (R 1000s)	−.0074 (.0115)	−.0061 (.0055)	−.0017 (.0225)	.0019 (.0098)	.0047 (.0147)	−.0075 (.0052)	−.0154 (.0116)	−.0088 (.0043)
Household Other Income (R 1000s)	−.0034 (.0036)	−.0020 (.0016)	−.0000 (.0034)	−.0019 (.0015)	.0016 (.0025)	.0013 (.0018)	−.0010 (.0024)	−.0005 (.0016)
Respondent's age	.0040 (.0017)	.0020 (.0010)	.0091 (.0023)	.0014 (.0008)	.0014 (.0011)	.0019 (.0015)	.0003 (.0003)	.0015 (.0009)

Standard errors in parentheses. Number of observations = 605. Each column reports results for a different regression, where the dependent variable is that listed at the top of the column. Included in all regressions are respondent's education, number of household members, indicators that respondent is Black, is Coloured, is female, and female indicator interacted with age. All regressions are weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 11. The impact of health conditions on Respondent's Earnings and Self-Reported Health Status

	Dependent Variable:	
Control Variables:	Indicator variable: =1 if the Respondent reports working for money	Respondent's Earned Income (in R1000) Conditional on reporting that he or she works
Heart Trouble	−.121 (.078)	−1.30 (.454)
Stroke	−.186 (.114)	−.551 (1.13)
High Cholesterol	−.059 (.059)	−.610 (.671)
Diabetes	−.074 (.097)	−.947 (.606)
Emphysema	.035 (.069)	.585 (.939)
Asthma	−.171 (.079)	−.906 (.495)
Cancer	−.246 (.072)	−1.35 (1.09)
TB	.062 (.070)	−.062 (.688)
Black	−.216 (.064)	−2.94 (.752)
Coloured	.005 (.050)	−2.45 (.773)
N observations	661	354

Included in all regressions are respondent's age, an indicator that the respondent is female. Standard errors in parentheses. All regressions are weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 12. Skipping Meals Because There Was Not Enough Money For Food

	Adult skipped a meal	Adult went all day without eating (conditional on reporting a meal was skipped)	Child skipped a meal or size was cut conditional on the presence of a member aged 0-17
All Households	.266	.303	.194
nobs	293	107	195
Black Households	.597	.437	.459
nobs	102	62	72
Coloured Hholds	.270	.278	.169
nobs	126	36	96
White Households	.124	.115	.079
nobs	65	9	27

Source: Household Module Section B. Household Income and Expenditure Questions B15-17

Sample means have been weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

Table 13. Measures of Hunger and Depression

	Dependent Variable: Depression Index (The sum of eight behavioral measures correlated with depression)			
	All Races	Black	Coloured	White
Control Variables:				
Indicator: a child's meal was reduced or eliminated because of lack of funds	.131 (.112)	.577 (.145)	−.030 (.160)	−.082 (.140)
Indicator: Female respondent	.181 (.109)	−.011 (.291)	.240 (.118)	.161 (.297)
Indicator: Black respondent	.335 (.174)	--	--	--
Indicator: Coloured respondent	.057 (.169)	--	--	--
Number of Observations	495	176	260	59

Standard errors in parentheses. Each column reports results for a different regression, where the dependent variable is the sum of eight behavioral measures correlated with depression. All regressions are weighted using weights based on the 1996 South African census, taking into account the stratification of the sample (by race), and the clustering of observations (by enumerator area).

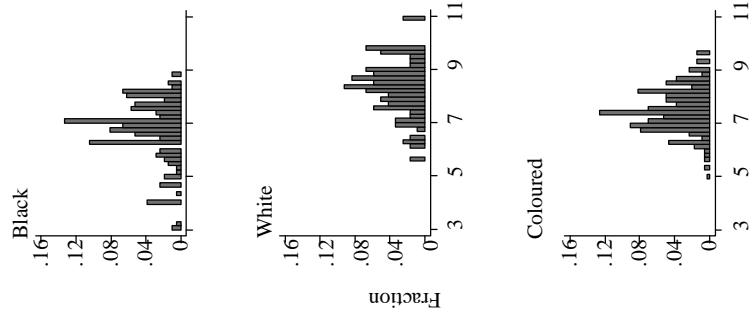Figure 1. Log (total monthly household incomes)
By Race

Figure 2. Household Financial Situation
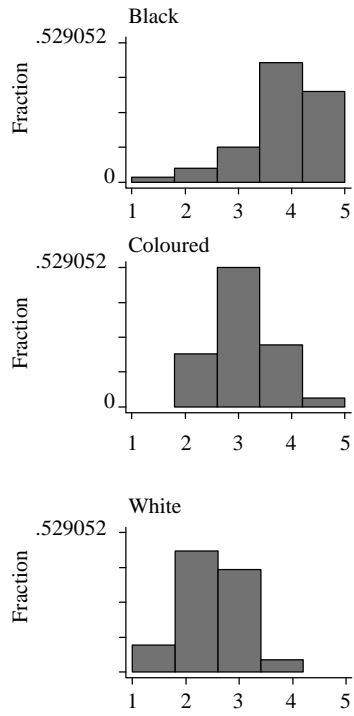1=Very Comfortable, 5=Extremely Poor

Figure 3. Self-Reported Health Status
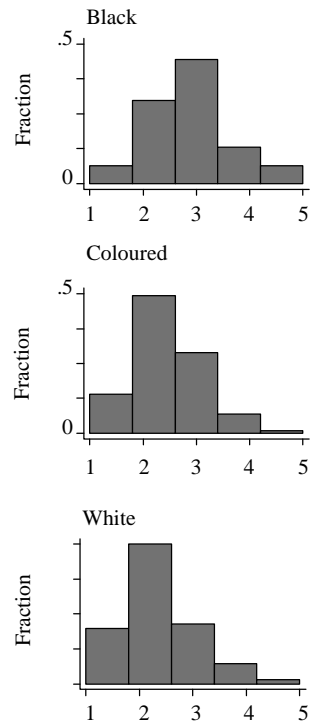1=Excellent, 2=Good, 3=Average, 4=Poor, 5=Very Poor

Figure 4. Self Reported Health Status For Older Coloured
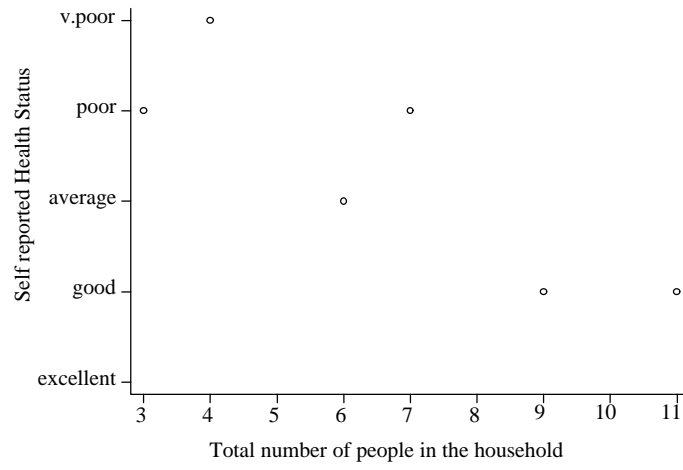Respondents Who Report Difficulty Dressing,
By Household Size

Figure 5. Body Mass Index, by Race and Sex
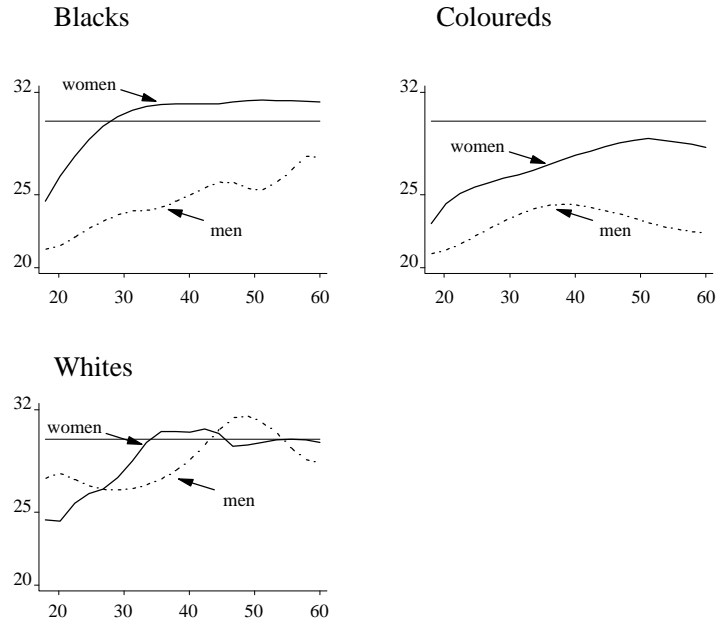
Blacks

Coloureds

Whites

Figure 6. Self-reported Health Status
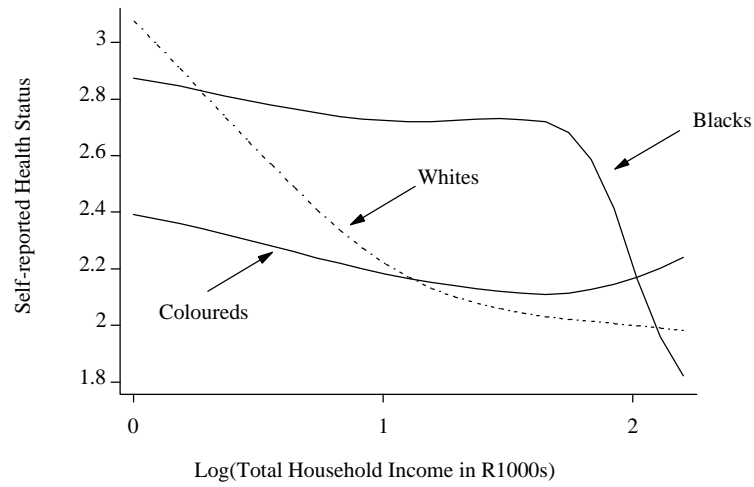and Log of Total Household Income, By Race

Figure 7. Fan Regressions of Self-report Health Status on Age
Black and Coloured Men and Women