Southern Africa Labour and Development Research Unit

Distance as a barrier to health care access in South Africa

by
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Working Paper Series
Number 97

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We thank Nicola Branson for expert assistance with clinic matching and Sarah Michell, Julie-Ann Michell and Tom Harris for assistance with data cleaning. We are grateful to the National Income Dynamics Study for granting us access to the confidential geographic and clinic data. We acknowledge the National Department of Health, Western Cape Department of Health, KwaZulu-Natal Department of Health, Human Sciences Research Council and National Health Laboratory Service for sharing facility data.
McLaren, Ardington and Leibbrandt acknowledge funding from the William and Flora Hewlett Foundation/Population Reference Bureau Research program on Population, Reproductive Health, and Economic Development. McLaren gratefully acknowledges funding from the University of Michigan Global Public Health Faculty Pilot Grant. Ardington gratefully acknowledges funding from the National Institutes of Health Fogarty Internal Centre under grant R01 TW008661-01. Leibbrandt acknowledges the Research Chairs Initiative of the Department of Science and Technology and National Research Foundation for funding his work.

Recommended citation

McLaren, Z., Ardington, C., Leibbrandt, M., (2013). Distance as a barrier to health care access
in South Africa. A Southern Africa Labour and Development Research Unit Working Paper Number 97.
Cape Town: SALDRU, University of Cape Town

ISBN: 978-1-920517-38-0

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Distance as a barrier to health care access in South Africa

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SALDRU Working Paper Number 97
University of Cape Town
May 2013

Abstract

Access to health care is a particular concern given the centrality of poor access in perpetuating poverty and inequality. South Africa's apartheid history leaves large racial disparities in access despite post-apartheid health policy to increase the number of health facilities, even in remote rural areas. However, even when health services are provided free of charge, monetary and time costs of travel to a local clinic may pose a significant barrier for vulnerable segments of the population, leading to overall poorer health. Using new data from the first nationally representative panel survey in South Africa together with administrative geographic data from the Department of Health, we investigate the role of distance to the nearest facility on patterns of health care utilization. We find that many apartheid legacies remain in place. Ninety percent of South Africans live within 7km of the nearest public clinic, and two-thirds live less than 2km away. However, 15% of Black African adults live more than 5km from the nearest facility, in contrast to only 7% of coloureds and 4% of whites. There is a clear income gradient in proximity to public clinics. Also, we find distance decay in the uptake of important health services such as having a skilled birth attendant, an immunization record and a growth chart for children. The poorest tend to reside furthest from the nearest clinic and an inability to bear travel costs constrains them to lower quality health care facilities. Within this general picture, men and women have different patterns of health care utilization, with the reduction in utilization of health care associated with distance being larger for men than it is for women. Much has been done to redress disparities in South Africa since the end of apartheid but progress is still needed to achieve equity in health care access.

Keywords:
Health care access, inequality, South Africa

Introduction

Inequality in access to health care is an important concern for health policy in developing countries. Because health status influences human capital acquisition, economic status and the inter-generational transmission of socio-economic status, access to care plays a role in determining and reinforcing other measures of inequality (Yazbeck, 2009; Wilkinson and Pickett, 2009). To counteract this, public health services are often subsidized as a means to promote equitable access. In post-apartheid South Africa, the government has emphasized equity and made access to clinics the centerpiece of primary health care (Gilson and McIntyre, 2007; Harris et al. 2011, Burger et al. 2012). This makes it important to understand which members of the population actually benefit from these services and who is being left behind (Yazbeck, 2009; Gwatkin et al., 2005).

Access to health care is particularly salient in places where policies have historically privileged certain groups over others, leaving behind large gaps in health status that current policy must take into account. These gaps depend on a complex set of linkages among demographic factors, spatial components, and institutional constraints. These factors are particularly important in South Africa because the legacy of apartheid leaves non-whites in remote areas, which are potentially underserved (Harris et al. 2011; Coovadia et al., 2009).

Even when health services are provided free of charge, monetary and time costs of travel to a local clinic represent the price of access to health care. These costs may pose a significant barrier for vulnerable segments of the population, leading to overall poorer health. Even twenty years after the advent of the post-apartheid era, residential location remains largely racially defined and this residential segregation can exacerbate barriers if health facilities are located far from non-White neighborhoods (Christopher, 2001). Travel costs in South Africa are particularly high relative to other developing countries in Africa and elsewhere, which means that small differences in distance can translate into large differences in access (Klasen, 1997).

In this study we investigate the role of distance to the nearest health facility on patterns of health care utilization in South Africa. We make use of new data from the National Income Dynamics Study (NIDS) (SALDRU, 2012). We start with a descriptive analysis of differences in proximity to health facilities and patterns of care seeking behavior by race, gender and income at the national level to contextualize the inequality in access to health care. The Black African race group is shown to be especially vulnerable to lack of access and we limit the rest of our analyses to this group. We use locally-weighted regression and multivariate regression with a rich set of control variables to investigate the relationship between proximity and access to care, health insurance and high quality facilities. Because these relationships could be driven by actual or perceived need for curative care, we focus additional analyses on important non-curative health care that all South Africans should use.

Distance decay in utilization of health services has been documented in many contexts, including Bangladesh (Rahaman et al., 1982), Papua New Guinea (Muller et al., 1998), rural Nigeria (Stock, 1983), rural Ghana (Buor, 2003), Namibia (Alegana, 2012), Kenya (Gething et al., 2004), Ethiopia (Okwaraji, 2012), and the United States (Nemet and Bailey, 2000). There are differences in the rate of distance decay by gender and age (Muller et al., 1998; Bloom et al., 2001; Woldemicael and Tenkorang, 2010); income, education and cost of services (Buor, 2003); socio-demographic factors and village characteristics (Stock, 1983); and access to transportation (Nemet and Bailey, 2000). Nemet and Bailey (2000) find that the distance from home, work and shopping areas to health facilities influences utilization patterns. Individuals may use a clinic far from home but near their workplace.

The type of care sought is important too. Arcury et al. (2005) find that distance reduces the likelihood of check-ups and chronic care but not acute care in a poor rural region of the United States. Stock (1983) finds that the type of facility influences distance decay: people travel further the higher the position of the facility in the service hierarchy (i.e. district hospital vs. local clinic). This may be due to obtaining specialized services, better quality care, or treatment for more serious illnesses.

Tanser et al. (2006) find evidence of distance decay in primary health care access in South Africa. Even in the case of take-up of life-saving anti-retroviral therapy for AIDS, there is a strong negative association with distance to the nearest facility: individuals 5kms from the nearest clinic are only half as likely to access ART as those living next-door to the facility (Cooke et al., 2010). These results are demonstrative of the importance of distance in mediating care seeking behavior. If distance reduces take-up of a life-saving treatment regime, it surely reduces take-up of less essential care.

Despite the importance of patterns of health service utilization in determining health care financing and delivery, there is a limited literature on the role of travel costs in developing countries. The major challenge is obtaining reliable measures of travel time and monetary travel cost to access health services. This requires information on the precise location of the household and the health facility, the network of roads, availability of and waiting time for public transportation, and the reliability of self-reported data. In South Africa, studies have been conducted in a Demographic Surveillance Site in rural KwaZulu-Natal; however, it is unclear whether these estimates can be generalized to the rest of the country (see Tanser et al., 2006; Cooke et al., 2010). Indeed, there are few large-scale studies of this sort in developing countries and the existing nationally representative studies rely on self-reported estimates of distance or time to the nearest clinic (Burger et al., 2012; Harris et al., 2011).

In this study, we follow Tanser et al. (2001) and use geographic coordinates of the households and clinics to calculate Euclidean distance as a measure of distance traveled. In

South Africa, reliable geocoding is not available to calculate travel time for respondents throughout the country. Rosero-Bixby (2004) found the correlation between Euclidean distances and travel times to be high, but not perfect. In the absence of geocoding, Euclidean distance provides a good measure of travel costs. By allowing distance to enter regression models flexibly, we capture non-linearities in the relationship between Euclidean distance and travel cost.

In sum, our contribution here is three-fold. First, we assemble and verify geographic coordinates for all health facilities in South Africa, drawing on partial lists from several sources. We are the first to use nationally representative facility- use data from NIDS. These data in combination with the information in the NIDS survey on individuals and their households provide a rich set of control variables which the above literature has highlighted as important in determining health care access and utilization. Second, geographic information on available facilities near a respondent's residence allows us to compare potential access to actual use. Third, we conduct our analysis in a context where high racial, gender and income inequality as well as substantial travel costs create salient frictions in health care access. We contribute to a limited literature where the need for policy guidance is great.

Methods

Our data come from the first wave of the NIDS, the first nationally-representative panel survey in South Africa. The NIDS data include information on income, expenditure, household composition, fertility, mortality, human capital formation, health and social capital (Woolard et al., 2010). The first wave, conducted in 2008, samples all individuals in 7,305 households – a total of 15,634 adults and 9,408 children under 15. Important for this study is that the data set contains an especially rich set of individual, household and community level characteristics. Each adult respondent that reported consulting someone about their health in the past year was asked for the name and location of the health facility where the consultation took place. This is the first study to use the confidential data on the location of clinic attended together with the location of respondent's household.

Our data on health facilities come from five public sources (National Department of Health (DOH), Western Cape DOH, KwaZulu-Natal DOH, Human Sciences Research Council and National Health Laboratory Service) and two private sources (MedPages and AfriGIS), which we combined to create a master list of all facilities. The data include facility name, facility type (e.g. clinic, hospital, etc.), health district and geographic coordinates. We compared partially-overlapping lists to verify names and geographic coordinates of each facility.

We calculated the exact distance between households and clinics using geographic positioning system (GPS) coordinates. Using this variable, we generate descriptive means of

the sample, use locally-weighted regression to plot the non-linear relationship between proximity to health facilities and care seeking behaviors, and perform our main analyses using multivariate regression analysis, controlling for several individual and household characteristics. Because women and men have different opportunity costs of travel due to different time use patterns involving a mix of work, home production, and leisure we examine differences in access and utilization by gender.

For ease of interpretation, we estimate linear probability models. All substantive findings are robust to the use of logistic regression (results not shown but available on request). Our estimating equation is as follows:

$$Y_{ij} = \beta D_{ij} + \phi' X_{ij} + \alpha_j + \varepsilon_{ij} ,$$

where Y_{ij} is a binary indicator for the health care utilization outcome in question for individual i in province j, D_{ij} is a measure of distance to the nearest public health facility, X_{ij} is a rich set of individual and household-level control variables that have been identified by the literature as important determinants of health care access and utilization and α_j are province fixed effects.

The X vector for adult respondents includes the following individual controls: number of years of primary education, number of years of secondary education, an indicator for having completed high school (matric), an indicator for having completed some post-high-school education, an indicator for never married (and not cohabitating), an indicator for being employed and an indicator for being not economically active (NEA). NEA excludes discouraged workers, which is appropriate for South Africa because much of the non-seeking unemployed are limited by financial constraints rather than preferences (Kingdon and Knight, 2006). In some specifications, we add subjective and objective measures of health status. The subjective measures include the following: an indicator for having reported being "too sick to work", the number of symptoms of ill health in the last month and an indicator that the individual reports themselves to be in fair or poor health. Respondents were classified as hypertensive if their measured blood pressure was equal to or above 140/90mmHg or if they were taking hypertensive medication. Individuals with a measured body mass index over 30 were classified as obese. Regressions for child respondents include controls for sex and age.

All regressions include the following household-level controls: urban residence, number of adults, number of children under 15, an indicator for at least one pension-eligible household member and an indicator for having moved in the last two years (i.e. since 2006). All descriptive statistics and regressions are weighted using the post-stratification individual-level weights provided by NIDS. Standard errors are clustered at the primary sampling unit level and are robust to heteroskedasticity.

Results

We find important racial differences in proximity to health facilities and care seeking behavior (Table 1). Ninety percent of South Africans live within 7km of the nearest public clinic, and two-thirds live less than 2km away. Coloured adults are substantially more likely to be within 2km of a public clinic due, in part at least, to higher levels of urbanization. Although the majority of South Africans live in close proximity to a public clinic, there are clear racial disparities amongst those who live some distance away from a health facility. Fifteen percent of Black African adults live more than 5km from the nearest facility, in contrast to only 7% of coloureds and 4% of whites. There are marked racial differences in health seeking behavior with around 60% of white and coloured adults having consulted a health professional in the last year in contrast to only 44% of Black Africans.

Amongst those who had a health consultation, 79% of whites, 46% of coloureds and 35% of Black Africans went to a private facility. Differences in access to medical aid (health insurance) are even starker with two-thirds of white adults covered in contrast to less than one tenth of Black Africans. Medical aid is often provided by employers so differences in unemployment rates account for some of the difference in coverage. White respondents, the majority of whom are covered by medical aid, overwhelmingly use the private health care system and almost half of coloured adults report attending a private facility. As our focus is on differences in access to publically provided health care, in what follows we restrict our attention to black Africans who make up about 80% of the South African population, about 95% of the rural population and about 95% of South Africa's poor (Leibbrandt et al., 2012).

The patterns in Figure 1 demonstrate that black South African households in higher income quintiles have better access to health facilities. There is a clear income gradient in proximity to public clinics, particularly with respect the proportion of households that are within 1km of a public clinic. Less than 30% of households in the lowest income quintile are within a kilometer of the nearest clinic, in contrast to over 40% of households in the top two income quintiles. Households in the bottom income quintile have the greatest amount of density farthest from the clinics (more than 10kms away). Figure 2 shows that virtually all Black African rural households (left panel) are on average 4 km from the nearest facility while urban households (right panel) are located less than 2 km away. Around 10% of rural households are more than 10 km from the nearest public clinic. Within a given residential district, however, the distributions by income quintile are almost indistinguishable.

We analyze men and women separately as they exhibit substantial differences in health seeking behavior and measures of health status. Table 2 presents descriptive statistics for Black African men and women aged 18 and older with respect to health status and utilization. Around 23% of women report themselves to be in fair or poor health in contrast

to only 16% of men. On average, women report 2.5 symptoms of ill health in the last 30 days while men report 1.7 symptoms. Women not only tend to report poorer health but their objectively measured health status is also worse than men – they are significantly more likely to be obese and hypertensive. Just over half of Black African women report a health consultation in the last year in contrast to around a third of Black African men. Conditional on reporting a health consultation, men are significantly more likely to use private health care than women.

We now examine how proximity to health care facilities is associated with three measures of access: whether the respondent had a consultation in the past year, used a private facility and used the nearest facility. Private facilities have higher quality care on average than public facilities and we use this as a measure of access to high-quality care.

Figure 3 presents locally weighted regression estimates of the relationship between distance to the nearest facility and the likelihood of having a health consultation in the last year. At every distance to the nearest facility, women are more likely to have had a health consultation. For women, the probability of a health consultation does not appear to be sensitive to distances from the nearest facility under 2km. Thereafter, the likelihood of a consultation declines. For men, the probability of a consultation is sensitive to the proximity of the closest clinic for distances greater than 1km. The slope between proximity to a clinic and a health consultation is much steeper for men than women indicating that they are likely more sensitive to travel costs.

Table 3 uses multivariate regressions to examine the relationship between distance to the nearest facility and the likelihood of having a health consultation in the last year for men (columns 1-4), and for women (columns 5-8). All regressions include the full set of individual and household level controls described in the methods section. Men who are an additional kilometer further from the nearest health facility are 0.8 percentage points less likely to report a health consultation on average. The coefficient on distance to the nearest health facility is, however, not a significant predictor of health consultation for women. The relationship between proximity to a clinic and the probability of a health consultation shown in Figure 3 is clearly not linear. The regressions in columns 2 and 6 assess this by replacing the distance in kilometers with an indicator for being more than 2km away. Given that we are measuring the Euclidean distance between the household and the clinic, travel costs are likely to play a role for distances greater than 2km. The results in column 2 show that men who are more than 2km from the closest facility are 10 percentage points less likely to have had a health consultation in the last year. The relationship between proximity to a clinic and having a health consultation is weaker but still significant for women. Women who are more than 2km from the closest facility are 5.5 percentage points less likely to have had a consultation.

The regressions in columns 3 and 7 include additional controls for the individual's health status which serve as a proxy for the need for care. Including these controls reduces the coefficients on our indicator that the individual lives more than 2km from the nearest facility and the coefficient is no longer significant for women. The coefficients on the health status variables are very similar for men and women. Individuals reporting themselves to be in poor or fair health are around 24 percentage points more likely to have had a health consultation. Reporting that one is too sick to work is associated with an 18 percentage point higher probability of a health consultation. Each additional symptom of ill health over the last 30 days is associated with around a 3 percentage point higher probability of having a health consultation. In contrast to these subjective measures of health status, neither of our objectively measured health variables (hypertension and obesity) have a significant relationship with health seeking behavior.

The final regressions in Table 3 include an indicator that the individual has medical insurance. Even after controlling for education, employment and household income, all of which are significant predictors of having medical insurance, individuals with medical insurance are between 20 and 23 percentage points more likely to have a health consultation. Including an indicator for medical insurance, however, has little impact on the magnitude of the coefficient for proximity to a clinic.

In Table 4 we focus on the likelihood of using private facilities, which generally provide higher-quality care than public facilities. We report results from a similar set of regressions as above but now examining the association between respondent characteristics and the likelihood of using a private facility, conditional on reporting a health consultation in the last year. Distance to the nearest clinic is not associated with an increased likelihood of using a private facility. The quality of care is higher and the wait times are lower in private facilities compared to public facilities, so individuals with more serious conditions would have a greater incentive to seek out private care. Men who report that they are too sick to work presumably have a great need for such care, but they are 10 percentage points less likely to use private facilities. This suggests that there are financial and other barriers to care that those who are too sick to work are not able to overcome. Because medical aid is expensive and often provided by employers, those who are too sick to work are extremely unlikely to have coverage. Men and women who are hypertensive are also significantly less likely to use a private health care facility. The results in columns 3 and 6 show that having health insurance coverage is strongly related to the use of private clinics.

If travel costs are an important consideration in the decision as to which health facility to attend and constrain decisions about health care seeking, we would expect Black South Africans to be more likely to use the nearest facility, the farther away the nearest facility is. For individuals who attend a public clinic, we are able to use the reported name of the clinic to calculate distance to that clinic. Table 5 shows regression results with a binary outcome

variable for having used the nearest facility (or a facility no more than 0.5km from the nearest facility, to account for the fact that some small differences in distance are less perceptible to the respondent and therefore do not factor in as highly). Both men and women are significantly less likely to use the nearest clinic the greater the distance to the clinic. Men are 41 percentage points less likely to use the closest clinic if it is more than 2km away while women are 33 percentage points less likely to use their nearest clinic if it is more than 2km away. These point estimates don't change when we control for the local density of clinics by including a variable for the number of clinics within a 5 km radius of the household (results not shown but available on request). For men, none of the health status variables are associated with the probability of using the closest clinic. For women, obesity and reporting more symptoms of ill health in the last 30 days are positively associated with using the closest clinic.

We now focus on whether there is distance decay in take-up for three important non-curative health services that even the healthiest respondents should access; namely, a health professional being present at a child's birth, preventative health care and immunization for children aged 2 and under, and having a "road to health card" which tracks immunizations and growth rates for children under 5. Households may choose to live near health facilities if they anticipate having greater needs for curative care, which could be driving the results in the prior analyses, but all households should be accessing these three important non-curative services. The proportion of children reporting each of these health services is presented in Table 6. Just over half (55%) of children under the age of 5 had a skilled birth attendant and around 98% have a road to health card. Amongst children aged 2 and under around 75% have visited a facility for a check-up when not ill in the last year.

Figures 4 to 6 show locally weighted regression estimates of the relationship between these measures of health care utilization and proximity to public clinics. In Figure 4, there is some evidence of a negative relationship between distance and having an attended birth for children within 5km of a clinic. For the 20% of children who live more than 5km from a clinic, the probability of an attended birth drops sharply with distance. The probability of having a road to health card appears to decrease linearly with distance from a clinic (Figure 5). There is however, little variation in this variable and the range of values in Figure 5 is only one-sixth of the range in Figure 4. Figure 6 shows that the relationship between distance and having a check-up is neither linear nor monotonic. The range of values on the vertical axis of this figure is also fairly modest.

Table 7 investigates the association between distance and utilization of these three non-curative health services in a multivariate context. The first column shows results from a regression of an indicator for having a skilled birth attendant (either a doctor or a nurse) present at the birth of the child on distance to the closest public clinic. In order to measure proximity to the closest clinic at birth, the sample is restricted to children that were born

within the last five years and who have not moved since birth. All regressions include a full set of indicators for age, an indicator for female, an indicator for urban residence, the number of children under the age of 15 in the household, the number of adults in the household, the number of individuals of pension eligible age, indicators for province and indicators for household per capita income quintile. Distance from the nearest public clinic is statistically significantly negatively related to the likelihood of having an attended birth. Each kilometer further from the nearest public health facility is associated with a 1 percentage point reduction in the probability of a doctor or nurse attending at the birth.

Column 2 includes the interaction between distance and an indicator that the mother is over 35 years old, which associated with higher rates of maternal mortality (Stanton et al., 2007). Mothers over 35 years of age at birth are significantly more likely to have an attended birth. However, distance is a particularly important predictor of health care utilization for high-risk births. For every additional kilometer from the nearest clinic, the probability of attended birth for these older mothers decreases by 2.2 percentage points.

Column 3 shows the relationship between distance to the nearest clinic and whether a child under the age of 5 had an immunization record and growth rate monitoring card (road to health card). The sample here is restricted to children under the age of 5 who have not moved in the last two years. Each kilometer further from the nearest health facility is associated with a 0.2 percentage point reduction in the probability of having a road to health card.

The final column in Table 7 shows that there is no significant association between distance from a clinic and a child aged 2 and under having a checkup in the past year. Alternate specifications of the distance variable also resulted in insignificant coefficients (results not shown but available on request). Taken together, the results in Table 7 show that, despite a universal need for these services, respondents living further from the nearest clinic are less likely to have either a trained birth attendant or a growth monitoring card.

Conclusion

This study finds clear evidence that distance to health facilities poses a barrier for South Africans wishing to access health care. We use new data from the NIDS that enables us to calculate the distance from a respondent's residence to nearby clinics, including the clinic that he or she reports attending for the most recent health consultation. We find that many apartheid legacies remain in place. Ninety percent of South Africans live within 7km of the nearest public clinic, and two-thirds live less than 2km away. However, 15% of Black African adults live more than 5km from the nearest facility, in contrast to only 7% of coloureds and 4% of whites. As expected, we find a clear income gradient in proximity to public clinics. Those who live furthest from the nearest facility are more likely to be in the lowest income

quintile of the population. This raises concerns that travel distance is constraining individuals' choices about seeking health care. Approximately 60% of Black African adults who use a public health facility use the facility closest to their residence. This suggests that travel costs (both monetary and time costs) are an important determinant of the choice of health service point.

As a legacy of resource allocation under apartheid, the quality of health care varies widely by service points in South Africa. These spatial inequities may map onto differential quality of care. If public facilities in poorer areas provide lower quality care to residents while wealthier areas have high quality public care, then the differences in health care quality across neighborhoods will reinforce rather than remedy inequality (Castro-Leal et al., 2000; Harris et al., 2011). We do not provide direct evidence on such differences in clinic quality across space. However, we do find distance decay even in the uptake of health services required by all healthy mothers and children – having a skilled birth attendant, an immunization record and a growth chart for children. These factors are crucial in breaking the cycle of intergenerational transmission of health. Moreover, we show the important mediating role of medical aid in accessing higher-quality private care. Such medical aid access is the exclusive preserve of the formally employed; the poorest who live furthest from the public clinics are least likely to have coverage. Though much has been done to redress the unequal provision of health care in South Africa since the end of apartheid, this study demonstrates that there is much to do to achieve equity in health care access.

Within the larger structural inequity, our analysis suggests subtle intra-household dynamics around clinic access decisions and behavior. Men and women have different patterns of health care utilization, with the reduction in utilization of health care associated with distance being larger for men than it is for women. These gender differences suggest that in addition to socio-cultural factors, differences in the opportunity cost of time by gender influence utilization. Higher wage earners will incur greater losses of income for a trip to a more distant health facility.

We find that individuals who live further from the nearest facility are less likely to use the nearest facility. The bundling of health facility visits with other travel within an individual's "activity space", such as for work, errands or visiting relatives may explain this (Nemet and Bailey, 2000). While the cost of travelling to clinics is an obstacle to the poor, flat-fee public transportation options reduce the travel cost differential to reach a slightly further, but potentially higher quality, facility. It seems that households are seeking to manage their health care as best they can within their socio-economic constraints.

The NIDS data has enabled us to consolidate and assess the factors that the existing literature suggests to be important in assessing the role of distance in health access. However, like most of the available literature we have to be cautious in interpreting these

results as causal. Constrained choices about where individuals choose to live relative to health facilities may bias our estimates. An individual's health status will influence his or her ability to earn income and, perniciously, individuals with poor health may have less choice about where they live relative to health clinics.

One limitation of our data is that it contains information only about the most recent health consultation rather than on all health utilization in a period of time. The importance of distance as a barrier is therefore likely to be underestimated. For example, distance not only prevents individuals from reaching a facility, it can also prevent individuals from even trying to seek care (Thaddeus and Maine, 1994). Individuals for whom distance to the nearest clinic is a barrier to accessing health care at all (in the past year) will not appear in our estimation sample. Types of consultations that occur more frequently, such as check-ups, will be over-represented in the data compared to consultations that occur less frequently, such as acute illness.

Distance plays a complex role in mediating health care utilization behavior, and more research is needed to characterize the relationship between the need for and access to health care. In particular, future studies should examine how the severity of the health concern and the perceived quality of care at health service points influence care seeking decisions. Even when public health care is provided free of charge or on a sliding scale, monetary and time costs of travel present a salient barrier for economically vulnerable populations.

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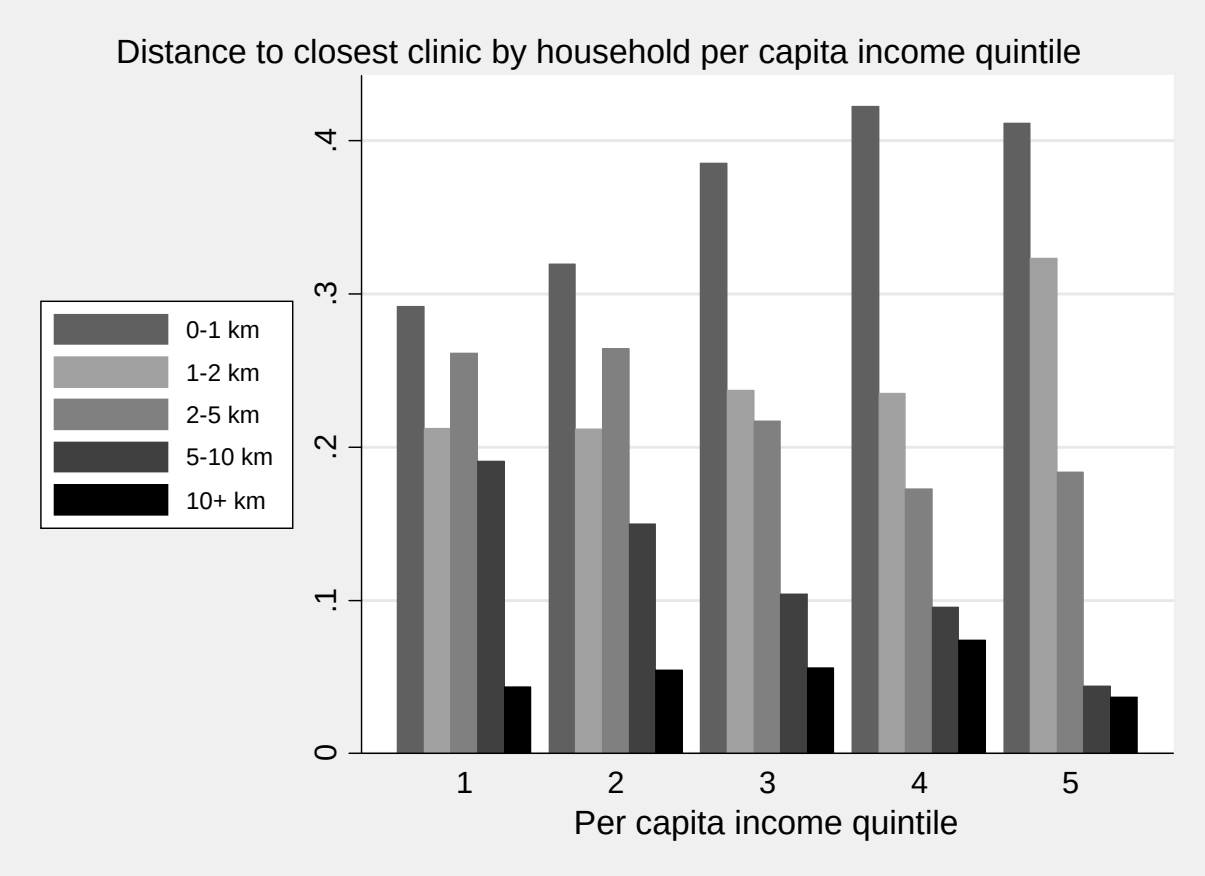
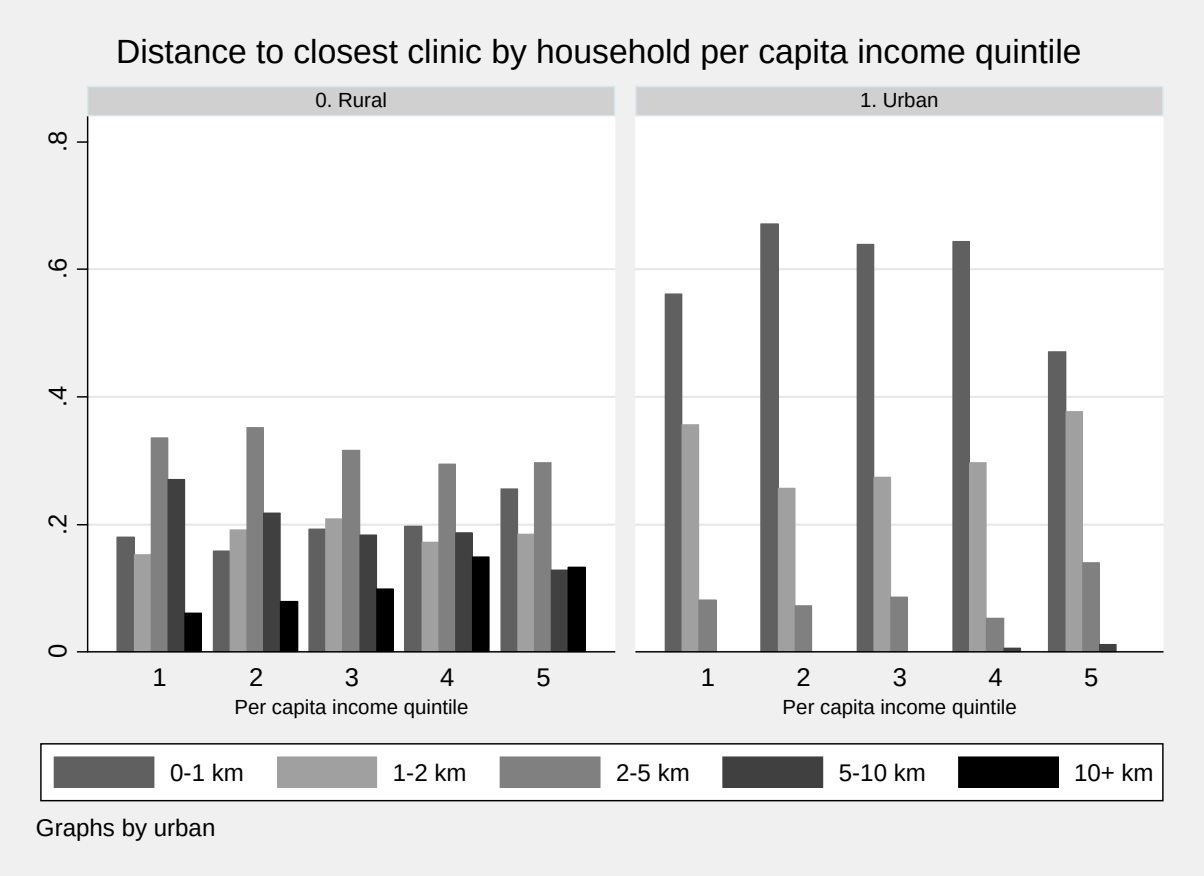
Figure 1: Distance to closest clinic by household per capita income quintile for Black African households



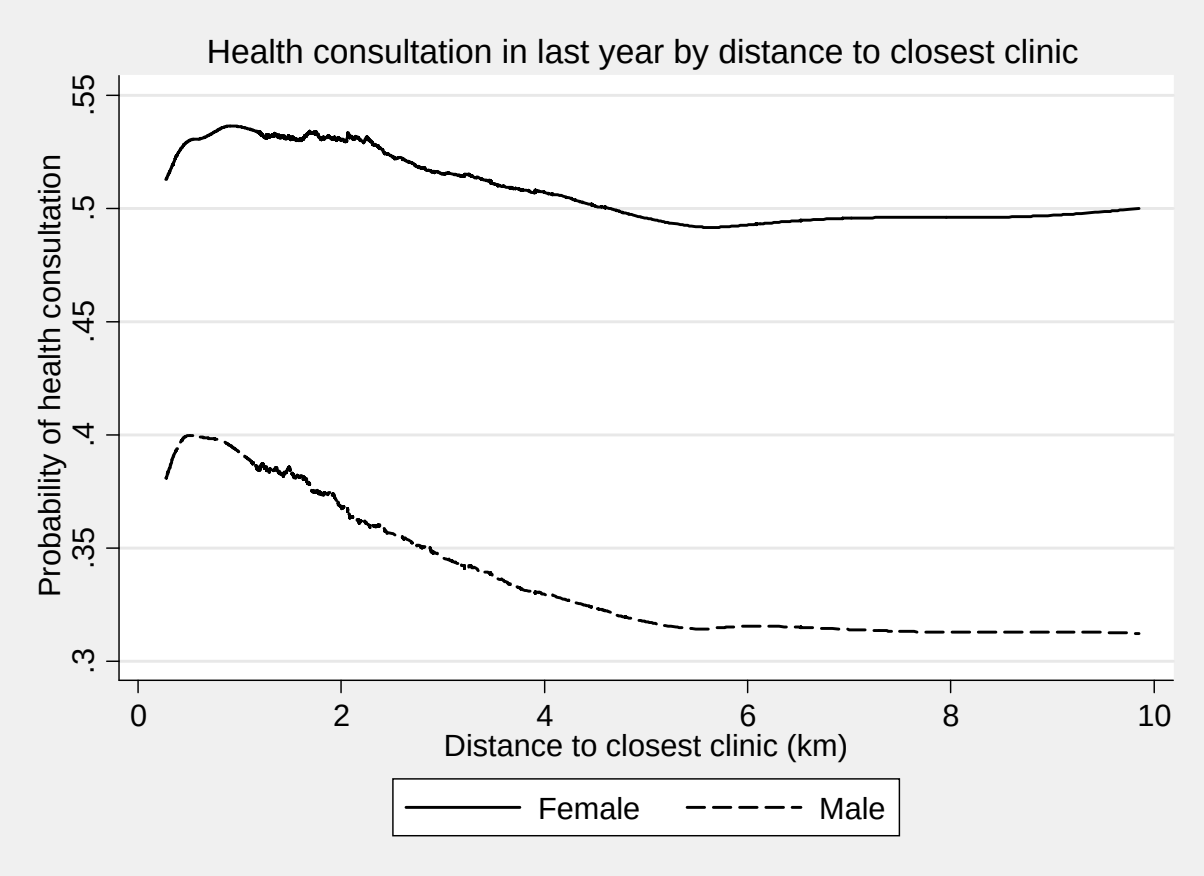
Notes to Figure 1:
Black African households are defined as households in which the majority population group of household members is recorded as Black African.
Authors' calculation using NIDS data and post-stratification weights.

Figure 2: Distance to closest clinic by household per capita income quintile and urban/rural location for Black African households



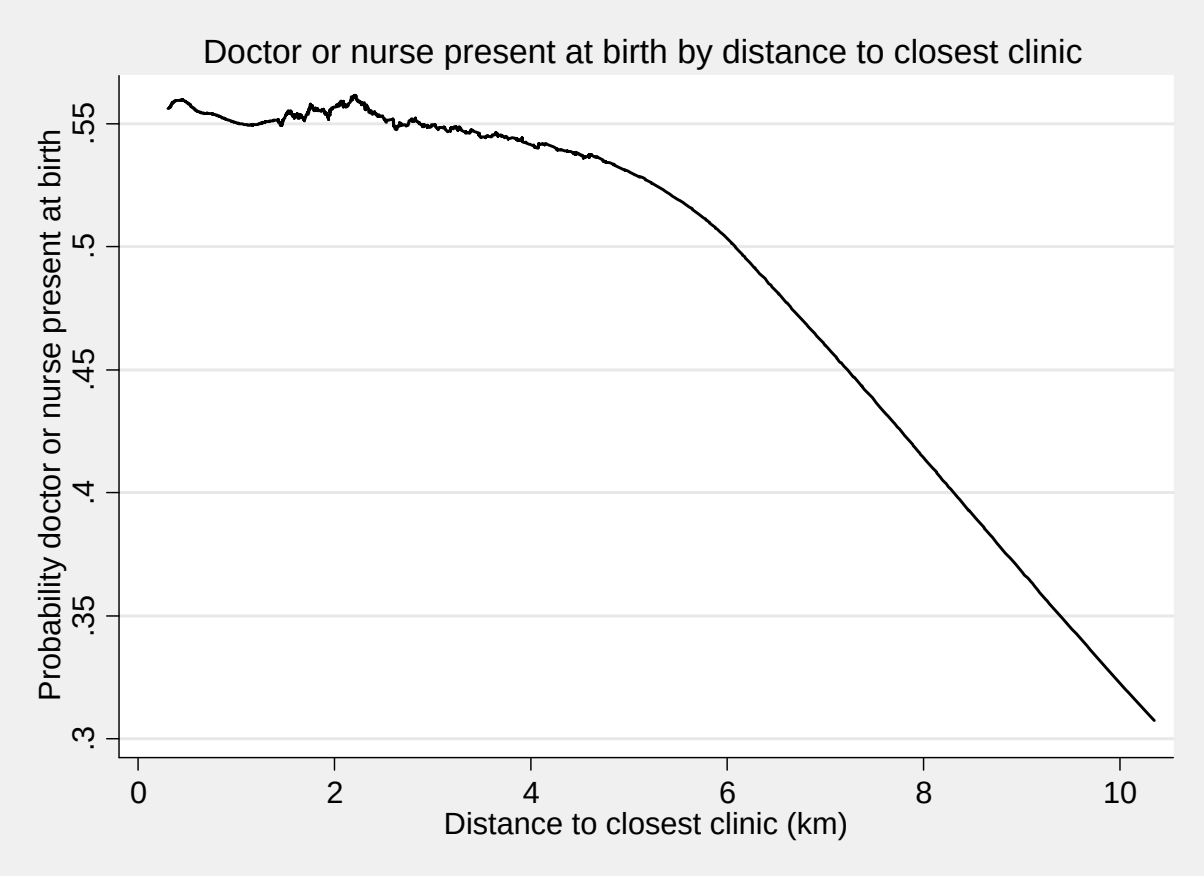
Notes to Figure 2:
Black African households are defined as households in which the majority population group of household members is recorded as Black African.
Authors' calculation using NIDS data and post-stratification weights.

Figure 3: Health consultation and distance to the closest clinic by sex for Black Africans aged 18 and older



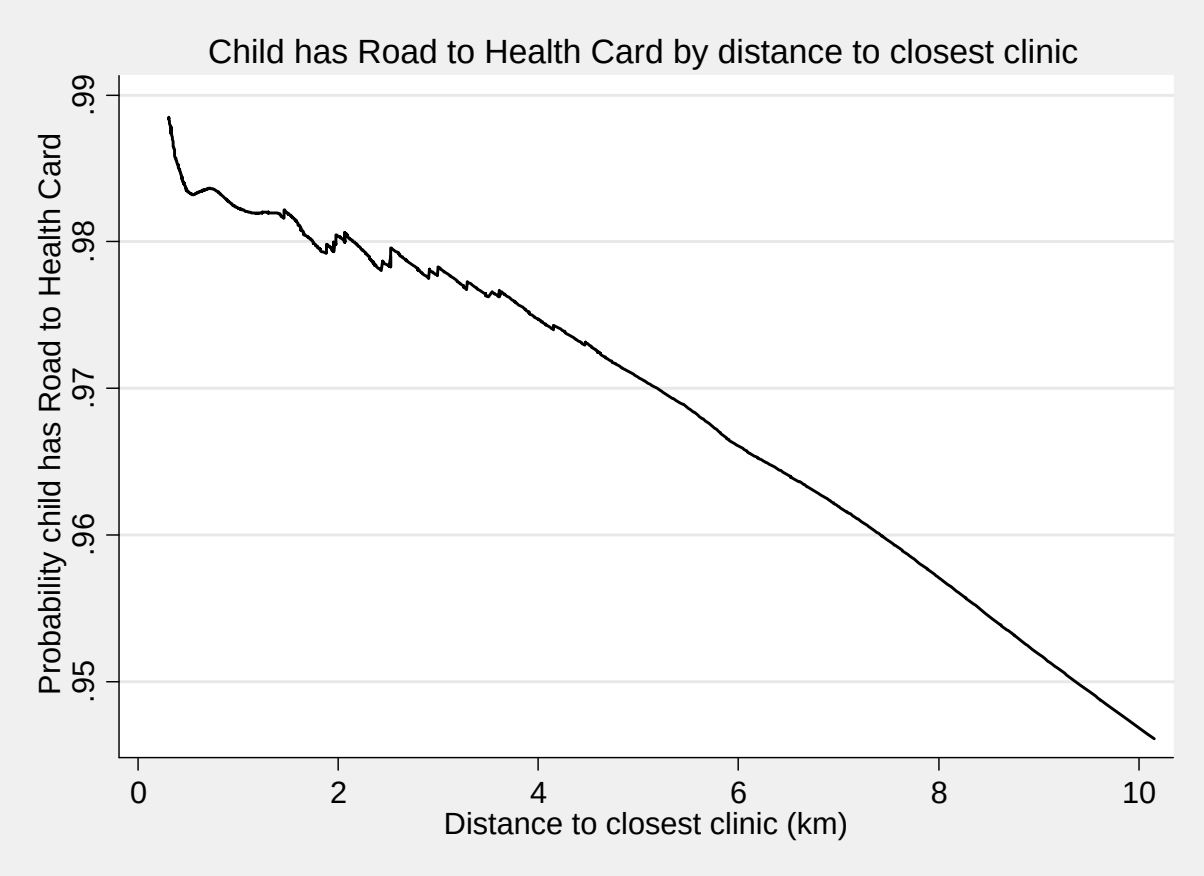
Notes to Figure 3:
Estimates from locally weighted regressions. Figure is restricted at the 5th and 95th percentile of distance to the closest clinic.

Figure 4: Presence of skilled birth attendant and distance to the closest clinic for Black Africans under age five who have not moved residence since birth



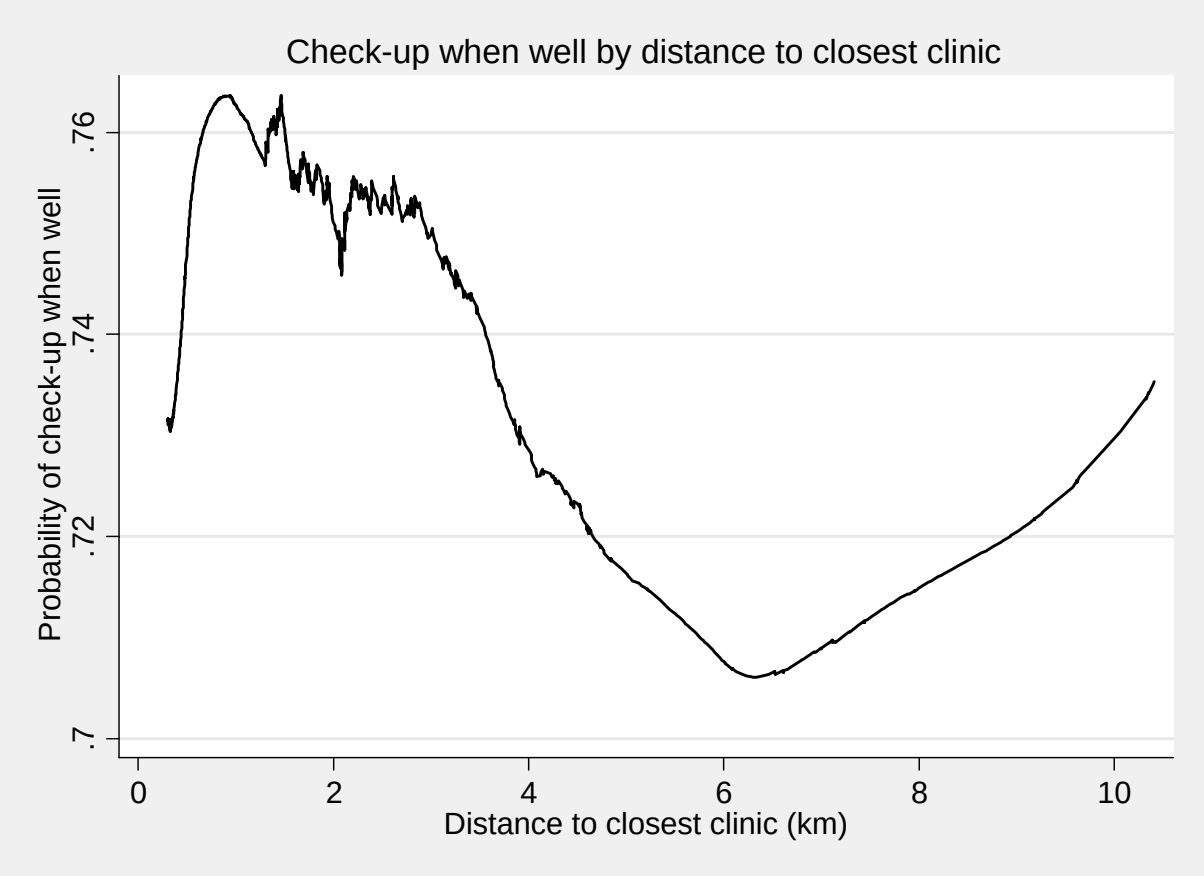
Notes to Figure 4:
Estimates from locally weighted regressions. Figure is restricted at the 5th and 95th percentile of distance to the closest clinic.

Figure 5: Ownership of a Road to Health card and distance to the closest clinic for Black Africans under five years of age who have not moved in the last two years



Notes to Figure 5:
Estimates from locally weighted regressions. Figure is restricted at the 5th and 95th percentile of distance to the closest clinic.

Figure 6: Probability of having a medical check-up when not ill in the last year for Black African children aged two and under who have not moved in the last two years



Notes to Figure 6:
Estimates from locally weighted regressions. Figure is restricted at the 5th and 95th percentile of distance to the closest clinic.

Table1: Health seeking behavior and distance to public clinics by population group for South Africans aged 18 and older

	Black African		Coloured		White	
	Mean	N	Mean	N	Mean	N
Within 2km of public clinic	0.649	10822	0.880	2037	0.674	888
2 to 5 km from public clinic	0.201	10822	0.047	2037	0.284	888
More than 5km from public clinic	0.151	10822	0.073	2037	0.042	888
Health consultation in last year	0.436	10476	0.618	1961	0.597	870
Used private doctor or facility	0.348	4764	0.458	1217	0.788	560
Covered by medical insurance	0.086	10753	0.160	2022	0.662	877

Notes to Table 1: Authors' calculation using NIDS data and post-stratification weights.

Table 2: Health characteristics, health seeking behavior and distance to public clinics among Black Africans aged 18 and older

	Female		Male	
	N	Mean	N	Mean
Health status				
Self reports poor or fair health	6581	0.231	4169	0.155
Too sick to work	6619	0.054	4205	0.049
Health symptoms in last 30 days	6619	2.47	4205	1.74
Measured hypertension	6129	0.336	3798	0.273
Aware of hypertension	2371	0.454	1172	0.211
Obese	5825	0.361	3558	0.102
Covered by medical insurance	6570	0.077	4183	0.098
Utilization				
Health consultation in last year	6416	0.512	4060	0.333
Used private doctor or facility	3314	0.323	1450	0.401
Used closest clinic	1436	0.591	575	0.632

Notes to Table 2: Authors' calculation using NIDS data and post-stratification weights.

Table 3: Determinants of having a health consultation in the past year for Black Africans aged 18 and older

	Dependent variable: Indicator that respondent had a health consultation in the past year							
	Males				Females			
Distance to closest clinic (km)	-0.008**				-0.001			
	(0.003)				(0.004)			
More than 2km from closest clinic		-0.102**	-0.090**	-0.089**		-0.055**	-0.035	-0.028
		(0.030)	(0.027)	(0.028)		(0.023)	(0.024)	(0.023)
Too sick to work			0.179***	0.186***			0.181***	0.186***
			(0.056)	(0.055)			(0.035)	(0.036)
Number of symptoms in last 30 days			0.032***	0.033***			0.027***	0.027***
			(0.004)	(0.004)			(0.003)	(0.003)
Self-reports poor or fair health			0.243***	0.240***			0.247***	0.250***
			(0.036)	(0.037)			(0.022)	(0.022)
Hypertensive			-0.007	-0.014			0.019	0.018
			(0.021)	(0.020)			(0.023)	(0.023)
Obese			0.021	0.011			0.012	0.009
			(0.037)	(0.035)			(0.018)	(0.018)
Covered by medical insurance				0.231***				0.198***
				(0.047)				(0.036)
Observations	4,023	4,023	3,320	3,311	6,359	6,359	5,483	5,448

Notes to Table 3:

1. All regressions include an indicator for urban residence, a quadratic in age, indicators for primary, secondary, matric and post-matric, an indicator for never married, the number of children under 15 in the household, the number of adults in the household, the number of pension eligible residents , an indicator for moving within the last two years, province indicators, household per capita income quintile, employed and not economically active.
2. Results are weighted using the post-stratification weights supplied by NIDS. Standard errors that allow for correlation in the unobservables between individuals from the same sampling cluster are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Probability of using a private health facility among Black Africans aged 18 and older who reported a health consultation in the past year

	Dependent variable: Indicator that respondent used a private facility for the most recent health consultation					
	Males			Females		
More than 2km from closest clinic	0.034	0.038	0.023	-0.003	-0.008	0.012
	(0.039)	(0.042)	(0.041)	(0.035)	(0.036)	(0.034)
Too sick to work		-0.107**	-0.107**		-0.062	-0.061
		(0.050)	(0.049)		(0.045)	(0.044)
Number of symptoms in last 30 days		-0.009	-0.006		0.007*	0.008**
		(0.006)	(0.005)		(0.004)	(0.003)
Self-reports poor or fair health		-0.027	-0.027		-0.030	-0.019
		(0.051)	(0.047)		(0.028)	(0.028)
Hypertensive		-0.080**	0.099***		0.081***	-0.067**
		(0.037)	(0.038)		(0.030)	(0.028)
Obese		0.038	0.016		0.021	-0.001
		(0.051)	(0.047)		(0.023)	(0.022)
Covered by medical insurance			0.281***			0.528***
			(0.062)			(0.040)
Observations	1,440	1,204	1,202	3,280	2,860	2,845

Notes to Table 4:

1. Sample restricted to respondents who reported a health consultation in the last two years. All regressions include an indicator for urban residence, a quadratic in age, indicators for primary, secondary, matric and post-matric, an indicator for never married, the number of children under 15 in the household, the number of adults in the household, the number of pension eligible residents , an indicator for moving within the last two years, province indicators, household per capita income quintile, employed and not economically active.
2. Results are weighted using the post-stratification weights supplied by NIDS. Standard errors that allow for correlation in the unobservables between individuals from the same sampling cluster are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Probability of using the closest facility among Black African individuals aged 18 and older who attended a public clinic for their most recent health consultation.

	Dependent variable: Indicator that the respondent used the closest facility					
	Males			Females		
More than 2km from closest clinic	-0.410***	-0.365***	-0.364***	-0.331***	-0.340***	-0.337***
	(0.082)	(0.085)	(0.085)	(0.062)	(0.060)	(0.061)
Too sick to work		0.024	0.023		-0.038	-0.038
		(0.087)	(0.087)		(0.081)	(0.080)
Number of symptoms in last 30 days		0.006	0.006		0.011**	0.011**
		(0.007)	(0.007)		(0.005)	(0.005)
Self-reports poor or fair health		0.061	0.065		-0.006	-0.001
		(0.063)	(0.062)		(0.050)	(0.050)
Hypertensive		0.071	0.069		-0.022	-0.021
		(0.061)	(0.061)		(0.059)	(0.059)
Obese		0.067	0.063		0.068*	0.066*
		(0.109)	(0.110)		(0.037)	(0.037)
Covered by medical insurance			0.111			0.049
			(0.228)			(0.212)
Observations	572	491	491	1,424	1,264	1,257

Notes to Table 5:

1. Sample restricted to respondents who reported a health consultation in the last two years. All regressions include an indicator for urban residence, a quadratic in age, indicators for primary, secondary, matric and post-matric, an indicator for never married, the number of children under 15 in the household, the number of adults in the household, the number of pension eligible residents , an indicator for moving within the last two years, province indicators, household per capita income quintile, employed and not economically active.
2. Results are weighted using the post-stratification weights supplied by NIDS. Standard errors that allow for correlation in the unobservables between individuals from the same sampling cluster are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Health seeking behavior among Black African babies and children

	Mean	N	Sample
Doctor or nurse present at birth	0.547	2182	Children under the age of 5 who have not moved since birth
Check-up when well in last year	0.750	1494	Children aged 2 and under who have not moved in the last two years
Road to health card	0.980	2464	Children under age 5 who have not moved in the last two years

Notes to Table 6: Results weighted using the post-stratification weights provided by NIDS.

Table 7: Distance to the nearest clinic and children's health seeking behavior

	Dependent variable:			
	Doctor or nurse present at birth	Doctor or nurse present at birth	Road to health card	Check up when well
Distance to closest clinic (km)	-0.010*	-0.004	-0.002**	0.003
	(0.005)	(0.006)	(0.001)	(0.005)
Distance x Mother aged 35 or older at birth		-0.022**		
		(0.010)		
Mother aged 35 or older at birth		0.092*		
		(0.053)		
Observations	2,182	2,056	2,464	1,494

Notes to Table 7:

1. The sample in columns 1 and 2 is restricted to Black African children under 5 who have not moved since birth. The sample in column 3 is restricted to Black African children under 5 who have not moved in the last two years. The sample in column 4 is restricted to Black African children aged 2 and under who have not moved in the last two years. All regressions include a full set of indicators for age, an indicator for female, an indicator for urban residence, the number of children under 15 in the household, the number of adults in the household, the number of individuals of pension eligible age, indicators for province and for household per capita income quintile.
2. Results are weighted using the post-stratification weights supplied by NIDS. Standard errors that allow for correlation in the unobservables between individuals from the same sampling cluster are presented in parentheses. *** p<0.01, ** p<0.05, * p<0.1

southern africa labour and development research unit

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

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

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