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I. Introduction

In South Africa from 1993 to 1998, a period spanning the end of apartheid and the creation of a more inclusive democracy, there were huge changes in the level and distribution of reported life satisfaction. The percentage of South Africans reporting neutral or better life satisfaction increased for every racial group, with the largest changes found among black South Africans. For the overall population, the percentage reporting dissatisfaction with their lives as a whole fell by over 35 percentage points. For black South Africans, the changes were even more dramatic with a drop of 45 percentage points. While household survey data suggest that the economic and material living conditions of most South Africans improved between 1993 and 1998, by a few important measures these conditions stayed constant or even worsened. What then, was driving these large increases in household subjective well-being?

A second question we address is what exactly drives subjective well-being both at a moment in time and over a time period. For policy makers, knowledge of what makes their constituents happiest or contributes the most to their subjective well-being should help guide the allocation of scarce public resources. Prior to these household surveys, the government had limited knowledge of the conditions under which black South Africans lived, or the types of changes that would make them better off. Our findings highlight the fact that household preferences can vary significantly over time.

To answer these questions we use two household surveys to model the determinants of subjective well-being for black South African households. The large subjective well-being literature in economics suggests many contributors to household subjective well-being including income, wealth, expenditures, housing, infrastructure and public goods, to name just a few. Bookwalter and Dalenberg (2004), using one of the two household surveys used in this paper, show that infrastructure and other factors with large public goods components contributes the most to household subjective well-being in South Africa. While those are of interest here and play an important role understanding subjective well-being, we take advantage of the time gap between the surveys to apply a decomposition technique developed by Oaxaca (1973) to examine the sources of the changes. Applying the Oaxaca decomposition to life satisfaction regressions from 1993 and 1998 we find over 85 percent of the improvement in life satisfaction responses is attributable to changes in the satisfaction derived from specific living conditions rather than changes in the level of those living conditions.

This work shows a shift in the return to factors that determine subjective well-being among black South Africans in the post-apartheid era that is consistent with the process of hedonic adaptation. Some of these changes are likely attributed to the social churn and uncertainty that came with the dramatic political and societal shifts at the end of apartheid. However, some of the changes in returns are driven by the improvements in living conditions themselves – as households became accustomed to basic factors, their preferences and thus their subjective well-being payoffs shifted to higher-level factors.

II. Modeling Subjective Well-Being

Economists typically make the assumption that human behavior is driven by utility maximization. However, utility is neither observable nor directly measurable. Empirical analysis requires some sort of proxy, and household surveys that ask people about their level of happiness or life satisfaction have proven useful in this regard.[1] While standard economic theory suggests that utility is affected by income, Easterlin (1974) is largely credited with fueling the research interest in the relationship between life satisfaction and income. Easterlin (2001, p. 468) states, "As far as I am aware, in every representative national survey ever done a significant positive bivariate relationship between happiness and income has been found."

Several decades of social science research suggests that wealth, health, family, education, employment, access to infrastructure, quality of governance, and many other factors have large and important effects on happiness. In the economics literature, particular attention has been paid to the effects of both income and employment on happiness and subjective well-being. Other studies have focused on less obvious conditions and events suspected to play a role in determining an individual's well-being, such as personality traits, expectations about the future, and memories of the past.

Perhaps the most interesting finding, which has become known as the Easterlin Paradox, describes the substantial growth of real income in the developed world in the second half of the 20th century without any corresponding rise in reported levels of happiness. A number of recent studies have attempted to explain the Easterlin Paradox by considering the effects of relative income. Easterlin (1995, p. 36) argues

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[1] Much of the economics literature considers happiness and subjective well-being to be interchangeable, as they tend to be highly correlated and have similar sets of determinants. We treat them as such in the literature review and the more general parts of the paper. The household surveys that provide us data ask exclusively about subjective well-being, so when discussing our empirical results, we only refer to subjective well-being.

that increases in welfare from raising the income of all are "offset by the negative effect of higher living level norms brought about by the growth in incomes." A number of studies have found a negative relationship between an individual's happiness and the wealth of peer groups (e.g. McBride, 2001; Ferrer-i-Carbonell, 2005; and Luttmer, 2005). Ferrer-i-Carbonell (2005) argues that the comparison is 'upward,' meaning that individuals whose income is lower than the comparison group have lower levels of well-being while those with incomes higher than the comparison are not happier due to their above-average incomes.

A second area of research on the Easterlin Paradox focuses on the hedonic adaptation, which the tendency for humans to return to a stable level of happiness at some time following a positive or negative change to living conditions. At the extremes, researchers have looked at lottery winners and those suffering accidents or disabilities. The evidence is decidedly mixed. For example, Gardner and Oswald (2007) find small improvements to well-being after medium-sized lottery wins, while Oswald and Powdthavee (2008) find considerable recovery in levels of well-being after becoming disabled.

There are a number of reasons for economists to study happiness or subjective well-being. Veenhoven (1984) and Ng (1996) provide empirical evidence in support of the idea that happiness is the main objective of most, if not all, people. Clark et al. (2008) argue that a number of economic topics such as individual savings, education, career decisions, and wage and tax policies, could be improved through happiness research. Clark and Oswald (1994) supported by Oswald (1997) and Di Tella et al. (2001) find that the subjective cost of unemployment is much greater than the associated loss of income. Helliwell (2003) finds that unemployment has a larger negative effect on happiness for individuals in developed countries, suggesting that unemployed individuals in developing countries, where unemployment is often higher and longer-lasting, are more adapted to unemployment and this lessens the negative effect of unemployment on subjective well-being. Ferrer-i-Carbonell and Frijters (2004), Helliwell (2003), Kahneman et al. (2004), Kahneman and Krueger (2006), Ng (1997), Sen (2000), and Veenhoven (2002), among many others, provide in-depth discussions of why the study of subjective well-being can inform policy decisions and, consequently, improve the lives of people around the world.

Health, education, income, housing, and marriage are some of the most often considered factors found to have positive relationships with happiness. Van Praag et al. (2003) find that satisfactions with finances, job, and health, in that order, have the strongest connection to overall life satisfaction. The

relationship between happiness and education appears to be positive but weaker than might be expected (Fuentes and Rojas, 2001; Helliwell, 2003). However, the effects of education on happiness are sometimes thought to be indirect. That is, they occur through other channels because higher education is thought to correspond with such things as higher income and better health. Van Praag et al. (2003) report that with higher education comes a more critical outlook of one's living conditions, or alternatively, that higher education brings higher expectations that are then harder to meet.

The empirical work on the Easterlin Paradox suggests that an increase in comparison group income would correspond to a decrease in well-being. However, Bookwalter and Dalenberg (2010) and Kingdon and Knight (2006, 2007) find surprising results in South Africa. They both find that not only does an increase in one's own income correspond to increases in well-being, so too does an increase in the median income of a comparison group. Bookwalter and Dalenberg (2010, p. 345) conclude that at the very low levels of income and expenditure common in South Africa, "the benefit of living among wealthier people and the public goods it brings outweighs the negatives associated with being the poorest of a peer group." Kingdon and Knight (2006, 2007) find that incomes of close neighbors in South Africa affect household subjective well-being positively. Comparison income from groups that are geographically, socially or racially "further away" show the more traditional negative effect on household subjective well-being.

Numerous authors, including Easterlin (1974) and Blanchflower and Oswald (2004) consider changes in subjective well-being over time. We do as well, taking advantage of a repeated cross section to examine both how household characteristics and living situations changed and how those characteristics and living situations affect subjective well-being.

III. Data

The data used in this paper include two separate cross-sections from household surveys conducted in South Africa in 1993-1994 and 1998. The 1993-1994 survey (hereafter: SALDRU) was conducted by the South African Labour and Development Research Unit at the University of Capetown and supported by the World Bank's Project for Statistics on Living Standards and Development (South Africa Labour Development Research Unit, 1994). Approximately 9,000 households were surveyed in late 1993 and early

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1994. The 1998 data (hereafter: OHS) are from Statistics South Africa's October Household Survey, conducted each year from 1995 to 1999 (Statistics South Africa, 1998). We use the data from 1998 because they provide the largest temporal gap from 1993 for which the majority of variables, particularly those involving subjective well-being, were comparable to the SALDRU data. Over 100,000 individuals, making up nearly 20,000 households, were surveyed.

Many variables across the two surveys are directly comparable. Where they were not, we chose the appropriate comparison. For example, in the SALDRU and OHS data there were six and eight different categories for household sanitation, respectively. We recoded both of them into three categories – minimal or no sanitation, latrine, flush toilet. Appendix A provides a concordance for these changes.

Life satisfaction in both surveys was reported at the household level. The head of the household was asked, "Taking everything into account, how satisfied is this household with the way it lives these days?" Responses were given on a five-point scale that we have ordered: very dissatisfied (1), dissatisfied (2), neutral (3), satisfied (4), and very satisfied (5).[2] There are some concerns about how accurately the head speaks for the entire household. However, using the same South African data, Bookwalter et al. (2006) show a stronger link between relative well-being and household characteristics than between relative well-being and individual head of household characteristics, suggesting that household heads are considering the entire household in their answers.

Between 1993 and 1998 there were substantial increases in reported subjective well-being across the South African population. When broken down by race, Figure 1 shows some clear differences, with black South Africans showing the largest increases in reported life satisfaction. Only 33 percent of black South Africans reported neutral or better life satisfaction in 1993 but 77 percent reported so in 1998. In addition, the percentages improved for all of the other racial groups with coloureds, Indians/Asians, and whites seeing increases of 30, 17, and 8 percentage points, respectively.

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[2] The original SALDRU and OHS data codes the responses to the question in descending order, from very dissatisfied (5) through very satisfied (1). We recoded them for our analysis.
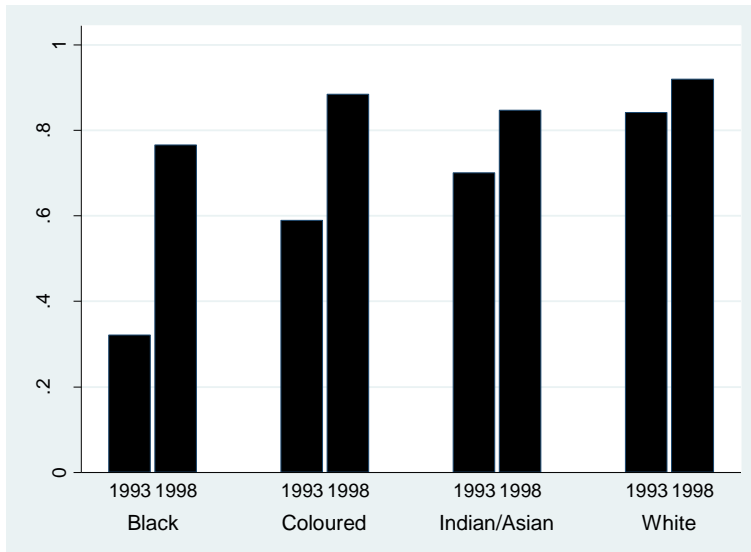
Figure 1. Percentage of respondents neutral or satisfied by year and race.

Many measures of living conditions show modest improvements between 1993 and 1998 for black South Africans. However, Figure 2 shows a large increase in reported levels of life satisfaction from an average of 2.32 in 1993 to 3.44 in 1998. The percentage of South Africans reporting neutral or better life satisfaction nearly doubled from 1993 to 1998.
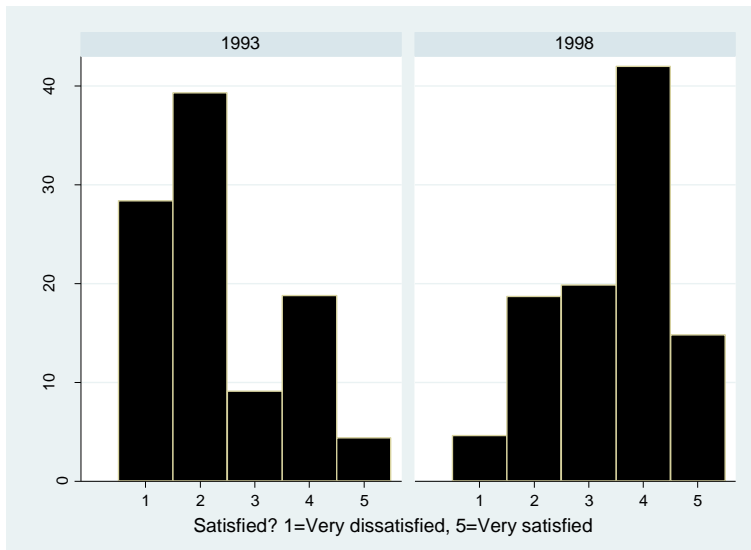

Figure 1. Reported satisfaction for black South Africans in 1993 and 1998.

Because the dependent variable reflects household-level life satisfaction, characteristics of individual household members have been collapsed to the household level. The income measure used is real household income per household member and is measured in one-thousand Rand with 2008 as the base year. Household levels of education are captured through a measure of the highest level of education achieved by the most educated household member. Unemployment is measured as the percentage of household members over 16 years old that were unemployed in the week preceding the survey. An estimate of illness and injury indicates whether a household had a member who was ill or injured in the two weeks leading up to the survey. Table 1 presents the descriptive statistics for black South Africans.

Table 1 - Descriptive statistics.

	Mean 1993	Mean 1998	Std. Dev. 1993	Std. Dev. 1998
Dependent variable				
Satisfied? 1=v. dis. 5=v. sat.	2.32	3.44	1.19	1.09
Household characteristics				
Household size	5.50	4.59	3.57	2.81
Children per adult	0.68	0.72	0.77	0.87
Male head of household	0.69	0.57	0.46	0.50
Urban household	0.41	0.45	0.49	0.50
Married head of household	0.54	0.48	0.50	0.50
Live alone	0.14	0.14	0.34	0.35
Income and income potential				
Real income in 1000 rand (2008)	0.58	0.73	1.07	2.18
Pct of household unemployed	0.54	0.66	0.33	0.36
Injury or illness	0.30	0.29	0.46	0.45
Crime victim	0.08	0.05	0.27	0.22
No or little schooling (base case)	0.51	0.46	0.50	0.50
Some high school	0.42	0.47	0.49	0.50
High school or beyond	0.07	0.07	0.25	0.25
Housing Characteristics				
Shack (base case)	0.14	0.13	0.34	0.34
House or flat	0.47	0.60	0.50	0.49
Hut or other	0.39	0.27	0.49	0.44
Own dwelling	0.67	0.78	0.47	0.42
Rooms per person	0.92	1.07	0.96	0.97
Cook with other material (base case)	0.35	0.29	0.48	0.46
Cook with electricity or gas	0.28	0.42	0.45	0.49
Cook with wood or dung	0.38	0.28	0.48	0.45
Minimal sanitation (base case)	0.23	0.20	0.42	0.40
Flush toilet	0.32	0.37	0.47	0.48
Latrine	0.45	0.43	0.50	0.49
Water at distance (base case)	0.56	0.43	0.50	0.50
Water piped into house	0.17	0.21	0.38	0.41
Water outside but close	0.27	0.36	0.45	0.48
n	6085	13462	6085	13462

Between 1993 and 1998 there are several obvious improvements in factors with important subjective well-being effects. Many of the housing and infrastructure measures show marked improvements. Given the importance of these factors, it is not surprising to see improvements in reported subjective well-being. However, several important measures did worsen over this time period. A significantly larger percentage of adults were not working, and the proportion of households living in urban areas increased. Previous studies found that urban dwellers report substantially lower subjective well-being.

IV. Empirical Strategy and Results

To examine the change in reported levels of life satisfaction, we estimate a model of life satisfaction for black South Africans separately for 1993 and 1998. The set of independent variables is based on those commonly used in modeling subjective well-being and includes measures of income, employment, health, education and housing. Additionally, variables representing household characteristics - household size, the number of children per adult, whether the household head is male, whether the household is in an urban or rural living environment, marital status, and whether any household members have been the victim of a recent crime – are included.

To account for the ordinal nature of the dependent variable, we estimate an ordered probit model for each year. To ease interpretation, we collapsed the categories *very dissatisfied* and *dissatisfied* into one category and did similarly with the categories *satisfied* and *very satisfied* . This leaves three categories: 1 dissatisfied, 2 neutral and 3 satisfied. The coefficient estimates for this three-category ordered probit model are presented in Table 2 and the marginal effects are presented in Table 3. The results for each year have many similarities, but there are some interesting changes from 1993 to 1998. Overall, the estimation results in this study are in line with past models of subjective well-being.

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Table 2 - Three response category ordered probit estimates[a].

Dep. Var.	Ordered Probit 1993	Ordered Probit 1998
	Satisfied with Life? 1=dissatisfied, 2=neutral, 3=satisfied	
Household size	-0.007	-0.027**
	(0.006)	(0.005)
Children per adult	-0.005	0.026
	(0.027)	(0.014)
Male head of household	0.022	0.000
	(0.061)	(0.023)
Urban household	-0.236**	-0.139**
	(0.051)	(0.033)
Married head of household	0.072	0.007
	(0.062)	(0.022)
Live alone	0.212**	-0.142**
	(0.078)	(0.043)
Real income in 1000 rand	-0.024	0.013
	(0.021)	(0.008)
Pct household unemployed	-0.445**	-0.226**
	(0.065)	(0.038)
Injury or illness	-0.016	-0.164**
	(0.037)	(0.023)
Crime victim	-0.142*	-0.301**
	(0.066)	(0.048)
Some high school	0.049	0.032
	(0.039)	(0.024)
High school or beyond	0.195**	0.096
	(0.073)	(0.050)
House or flat	0.204**	0.265**
	(0.060)	(0.036)
Hut or other	0.386**	0.146**
	(0.064)	(0.039)
Own dwelling	-0.013	0.034
	(0.044)	(0.032)
Rooms per person	-0.059**	0.076**
	(0.019)	(0.015)
Cook with elect. or gas	0.201**	0.291**
	(0.051)	(0.029)
Cook with wood or dung	-0.205**	0.052
	(0.048)	(0.032)
Flush toilet	0.029	-0.033
	(0.076)	(0.041)
Latrine	0.238**	0.040
	(0.046)	(0.029)
Water piped into house	0.188*	0.153**
	(0.075)	(0.043)
Water outside but close	0.154**	0.158**
	(0.054)	(0.028)
Cut 1	0.541**	-0.585**
	(0.093)	(0.064)
Cut 2	0.829**	-0.006
	(0.093)	(0.064)
n	6085	13462
Psuedo R^2	0.039	0.030
Chi-square	373.97**	751.74**

[a] Robust standard errors in parenthesis. * Significant at 5%, ** Significant at 1%.

Table 3
Estimated marginal effects for the three response category ordered probit[a].

	Marginal effect Dissatisfied		Marginal effect Neutral		Marginal effect Satisfied	
	1993	1998	1993	1998	1993	1998
Household size	0.002	0.008**	-0.000	0.002**	-0.002	-0.010**
	(0.002)	(0.001)	(0.000)	(0.000)	(0.002)	(0.002)
Children per adult	0.002	-0.008	-0.000	-0.002	-0.001	0.010
	(0.009)	(0.004)	(0.001)	(0.001)	(0.008)	(0.005)
Male head of household	-0.008	-0.000	0.001	-0.000	0.006	0.000
	(0.021)	(0.007)	(0.003)	(0.002)	(0.018)	(0.009)
Urban household	0.079**	0.041**	-0.012**	0.011**	-0.067**	-0.052**
	(0.017)	(0.010)	(0.003)	(0.003)	(0.014)	(0.012)
Married head of household	-0.025	-0.002	0.004	-0.001	0.021	0.003
	(0.021)	(0.006)	(0.003)	(0.002)	(0.018)	(0.008)
Live alone	-0.075**	0.043**	0.010**	0.011**	0.065**	-0.054**
	(0.028)	(0.013)	(0.003)	(0.003)	(0.025)	(0.016)
Real income in 1000 rand	0.008	-0.004	-0.001	-0.001	-0.007	0.005
	(0.007)	(0.002)	(0.001)	(0.001)	(0.006)	(0.003)
Pct household unemployed	0.152**	0.066**	-0.023**	0.019**	-0.129**	-0.085**
	(0.022)	(0.011)	(0.003)	(0.003)	(0.019)	(0.014)
Injury or illness	0.005	0.049**	-0.001	0.013**	-0.005	-0.062**
	(0.013)	(0.007)	(0.002)	(0.002)	(0.011)	(0.009)
Crime victim	0.047*	0.096**	-0.008*	0.019**	-0.039*	-0.115**
	(0.021)	(0.016)	(0.004)	(0.002)	(0.018)	(0.018)
Some high school	-0.017	-0.010	0.003	-0.003	0.014	0.012
	(0.013)	(0.007)	(0.002)	(0.002)	(0.011)	(0.009)
High school or beyond	-0.068**	-0.028*	0.009**	-0.008	0.059*	0.036
	(0.026)	(0.014)	(0.003)	(0.005)	(0.023)	(0.019)
House or flat	-0.065**	-0.082**	0.012**	-0.020**	0.053**	0.102**
	(0.019)	(0.012)	(0.004)	(0.002)	(0.015)	(0.014)
Hut or other	-0.129**	-0.047**	0.021**	-0.009**	0.108**	0.056**
	(0.020)	(0.013)	(0.004)	(0.002)	(0.016)	(0.015)
Own dwelling	0.004	-0.010	-0.001	-0.003	-0.004	0.013
	(0.015)	(0.009)	(0.002)	(0.003)	(0.013)	(0.012)
Rooms per person	0.020**	-0.022**	-0.003**	-0.006**	-0.017**	0.029**
	(0.007)	(0.004)	(0.001)	(0.001)	(0.006)	(0.006)
Cook with elect. or gas	-0.073**	-0.086**	0.009**	-0.025**	0.064**	0.111**
	(0.019)	(0.008)	(0.002)	(0.003)	(0.016)	(0.011)
Cook with wood or dung	0.068**	-0.017	-0.012**	-0.004	-0.056**	0.020
	(0.016)	(0.010)	(0.003)	(0.002)	(0.013)	(0.012)
Flush toilet	-0.009	0.010	0.002	0.003	0.008	-0.013
	(0.025)	(0.012)	(0.004)	(0.003)	(0.020)	(0.015)
Latrine	-0.081**	-0.012	0.012**	-0.003	0.069**	0.015
	(0.015)	(0.009)	(0.003)	(0.002)	(0.013)	(0.011)
Water piped into house	-0.065*	-0.046**	0.010**	-0.013**	0.055*	0.058**
	(0.026)	(0.012)	(0.004)	(0.004)	(0.023)	(0.016)
Water outside but close	-0.053**	-0.047**	0.008**	-0.013**	0.045**	0.060**
	(0.019)	(0.008)	(0.003)	(0.002)	(0.016)	(0.011)
n	6085	13462	6085	13462	6085	13462

[a] Marginal effects are average marginal effects. Robust standard errors in paratheses. * Significant at 5%, ** Significant at 1%.

The marginal effects in Table 3 represent the percentage point change in the probability of falling

into a specific life-satisfaction category given a one unit change in the relevant independent variable. In

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1993, for example, living in an urban environment, relative to a rural environment, corresponds to a 7.9 percentage point increase in the likelihood of a 'dissatisfied' life satisfaction response and a 6.7 percentage point decrease in the likelihood of a 'satisfied' response.

Ferrer-i-Carbonell and Frijters (2004) examine the effects of modeling methodology on estimates of the determinants of life satisfaction and find that the estimates from a linear model differ surprisingly little from an ordered model. They conclude that assuming cardinality of satisfaction responses "makes little difference to the results" (p 642). Helliwell (2003), using data from the World Values Survey finds that the change from one level of happiness to the next is the same across the entire scale and that "the results do not depend importantly on whether the measures of subjective well-being are treated as ordinal or cardinal" (p 354). We report OLS results in Table 4 below. The primary advantage of the OLS model is that estimated coefficients are easily interpreted as the change on the five-point life-satisfaction scale resulting from a one-unit change in the respective independent variable.

There are both some general similarities and striking differences across the two surveys in all of the results. In discussion, we focus on the ordered probit results, but the OLS results show a similar pattern. Most of the household demographic characteristics are either statistically insignificant or do not change markedly. Residing in an urban area has large negative effects in both years. For black South Africans, being categorized as urban often corresponds to living in a township adjacent to one of South Africa's large urban areas (e.g. the Alexandra township to the northeast of Johannesburg). These townships are very poor, have little infrastructure and high rates of crime and violence. The effect of living in an urban area is large and negative and more black South Africans lived in urban areas in 1998 than in 1993.

Table 4 - Ordinary least square estimates[a].

Dep. Var.	OLS 1993 Satisfied with Life 1= very dissatisfied 5=very satisfied	OLS 1998 Satisfied with Life 1= very dissatisfied 5=very satisfied
Household size	-0.005	-0.026**
	(0.005)	(0.004)
Children per adult	0.002	0.028*
	(0.022)	(0.013)
Male head of household	0.035	-0.013
	(0.055)	(0.020)
Urban household	-0.140**	-0.131**
	(0.048)	(0.029)
Married head of household	0.049	0.003
	(0.056)	(0.019)
Live alone	0.256**	-0.104**
	(0.072)	(0.037)
Real income in 1000 rand	-0.048*	0.011
	(0.021)	(0.006)
Pct household unemployed	-0.516**	-0.174**
	(0.058)	(0.033)
Injury or illness	-0.001	-0.150**
	(0.033)	(0.021)
Crime victim	-0.125*	-0.268**
	(0.057)	(0.045)
Some high school	0.066	0.048*
	(0.034)	(0.021)
High school or beyond	0.235**	0.122**
	(0.069)	(0.041)
House or flat	0.238**	0.259**
	(0.051)	(0.033)
Hut or other	0.455**	0.169**
	(0.055)	(0.037)
Own dwelling	0.040	0.032
	(0.040)	(0.028)
Rooms per person	-0.057**	0.052**
	(0.016)	(0.011)
Cook with elect. or gas	0.166**	0.258**
	(0.048)	(0.026)
Cook with wood or dung	-0.170**	0.048
	(0.042)	(0.029)
Flush toilet	-0.077	-0.035
	(0.067)	(0.038)
Latrine	0.171**	0.041
	(0.037)	(0.027)
Water piped into house	0.172*	0.165**
	(0.073)	(0.038)
Water outside but close	0.121*	0.156**
	(0.049)	(0.025)
Constant	2.224**	3.248**
	(0.081)	(0.056)
n	6085	13462
R^2	0.065	0.059
Adjusted R^2	0.061	0.057
F	18.44**	38.58**

[a] Five response categories. Robust standard errors in parenthesis in paratheses. * Significant at 5%, ** Significant at 1%.

Income rose across the period, but having more income did not contribute positively to subjective well-being. From 1993 to 1998 the effect of income on well-being switches from negative to positive, but it is tiny in both years, implying very little practical significance. Bookwalter and Dalenberg (2004) argue that income, at the margin, does little to improve the factors most important to South African households – many of which have a large public good component. Compared to the larger effects of the other variables, this suggests that income plays a surprisingly small role in determining life satisfaction in South Africa during the period considered. The number of unemployed adults in a household has the expected, and statistically significant, negative correlation with subjective well-being. This relationship is stronger in 1998 than in 1993, though it is more consistent over time than most other relationships examined in this paper.

In both years, the direction and magnitudes of the estimated marginal effects of the education variables suggest that higher levels of education correspond with higher levels of subjective well-being. In 1998, attendance or completion of high school has a significant positive relationship with subjective well-being. Also worth noting is that completing high school or beyond in 1993 corresponds to an increase in the likelihood of a negative subjective well-being response (a 6.8 percentage point increase of 'dissatisfied' responses). In 1998 this drops to an increase of only 2.8 percentage points for 'dissatisfied.' Subjective well-being payoffs to basic education rose, while payoffs to higher education (high school graduate or beyond) actually fell slightly. The fall in payoffs to higher education could simply be from noisy data, or it might indicate changes in the ways education is perceived or rewarded in labor markets.

Housing and infrastructure variables had large and statistically significant effects on subjective well-being in the 1993 survey. By 1998, there were improvements in nearly all of them, including type of housing, cooking fuel, availability of clean water and sanitation. In the models, the base case for each variable was the least desirable. For the models using the 1998 survey, moving up one category from the base case yielded small improvements – often smaller than 1993. Moving up to the highest category generated larger gains in 1998.

For example, the ordered probit results (Table 3) show that living in a hut (rather than a shack) in 1993 increased the likelihood of the household reporting they were satisfied by 10.8 percentage points. By 1998 that effect weakened to only 5.6 percentage points. The effects were reversed in the case of having

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the highest quality housing. Living in a house or flat (rather than a shack) in 1993 increased the likelihood of the household reporting they were satisfied by 5.3 percentage points. By 1998 that effect nearly doubles to 10.2 percentage points. This pattern of lower level improvements having shrinking effects is found in numerous variables. One interpretation is that as housing and infrastructure improved between 1993 and 1998, it took higher order improvements to get the same changes in subjective well-being.

These findings are also consistent with one of the primary explanations of the Easterlin Paradox. Rising income or improved living conditions buy some additional subjective well-being in the short run. However, over time, households adapt to these new realities and require more or higher-level improvements to maintain the gains in subjective well-being.

The overall relationship between housing and infrastructure and subjective well-being remains important across the period. There were marked improvements in many of the housing and infrastructure variables, suggesting that many South African households benefited from the governments new emphasis on the provision of public goods and the normalization of many informal settlements. Möller and Saris (2001) find that rural blacks report higher satisfaction with their housing, even though a higher percentage of them live in traditional mud huts, as opposed to the shacks more typical of urban blacks. Given the importance of these factors in the 1993 survey, improvements in housing stock, sanitation, water or cooking fuel infrastructure would have improved reported subjective well-being. Satisfying some of these constraints to subjective well-being would also have allowed black South African households to look beyond these basic needs to higher-order needs.

A consistent theme from the subjective well-being models, regardless of specification, is that life satisfaction and many of the contributions to life satisfaction changed over the 1993 to 1998 period. Some of the biggest changes across this period is how the 'payoffs' to illness and crime victimization changed. In household survey analysis, wealthier respondents generally report more health problems and illness. This isn't because they are less healthy, rather they have higher standards or the resources to get treatment and name their conditions. The analysis here is consistent with those findings. For example, in the ordered probit model, being ill or injured has no effect on the likelihood of reporting one is dissatisfied with life in 1993. In 1998, when per capita household income was 25 percent higher, being ill or injured increases the likelihood of reporting dissatisfaction by nearly 5 percentage points.

A similar change shows up in the way crime victimization affects subjective well-being. In 1993, being a crime victim increased the likelihood of reporting dissatisfaction by nearly 5 percentage points. In 1998 when per capita household income was substantially higher, being a crime victim increased the likelihood of reporting dissatisfaction by nearly 10 percentage points. This increase could reflect that households had more to lose in property crimes or were worrying less about more basic components of life satisfaction.

The data show that black South Africans, on average, report much higher levels of life satisfaction after the end of apartheid. These results suggest a relationship between subjective well-being and living conditions that changes over time, regardless of the extent of actual improvement in those living conditions. Comparing the results of the two different years of the survey provides some understanding of these changes, but a decomposition of the change provides a much clearer picture.

V. Oaxaca Decomposition and Changes in Subjective Well-Being

Ronald Oaxaca (1973) developed a method of decomposing wage differentials into two parts: one part is attributed to differences in mean characteristics of the groups (male and female in his original article) while the other part is attributed to differences in the payoffs to those characteristics. The decomposition was originally used to explore the extent of wage discrimination faced by women in the labor force. This tool has also proven useful for a wider set of topics, including the decomposition of student test scores (Krieg and Storer 2006 and McEwan and Marshall 2004) and home ownership rates (DeSilva and Elmelech 2009). After estimating models separately for each year, we apply a Oaxaca decomposition to divide the changes in reported life satisfaction from 1993 to 1998 into two groups: the portion due to changes in living conditions, education, and other measurable characteristics (the endowments effect), and the portion due to changes in the way that a household's subjective well-being is determined by given levels of endowments (the coefficients effect). For further discussion of the Oaxaca decomposition, see Oaxaca (1973), Blinder (1973) or Borjas (2008).

To apply the Oaxaca decomposition to subjective well-being, suppose that life satisfaction in each year is determined only by income. This model of life satisfaction in year t can be written:

$$S_t = \alpha_t + \beta_t I_t \tag{1}$$

where S is the level of life satisfaction, I is a measure of income, t denotes the year and α is a constant. Following Oaxaca's wage example, the average difference in life satisfaction between two years can then be written:

$$\Delta \bar{S} = \bar{S}_1 - \bar{S}_2 = \alpha_1 - \alpha_2 + \beta_1 \bar{I}_1 - \beta_2 \bar{I}_2. \tag{2}$$

We add and subtract the term $\beta_1 \bar{I}_2$ from the right side of (2), rearrange and get:

$$\Delta \bar{S} = [(\alpha_1 - \alpha_2) + (\beta_1 - \beta_2)\bar{I}_2] + [\beta_1 (\bar{I}_1 - \bar{I}_2)]. \tag{3}$$

If income influences life satisfaction the same in 1998 as it does in 1993, then $\beta_1 - \beta_2 = 0$. Similarly, if subjective well-being levels for people with no income are the same in both years we should see $\alpha_1 - \alpha_2 = 0$. Then we see that the first term in square brackets in equation (3) is the portion of the life satisfaction difference due to differences in the way that income influences happiness in each year (the coefficient effect). The second term in square brackets is the portion of the happiness difference due to a difference in the average levels of income in 1993 and 1998 (the endowment effect). The Oaxaca decomposition in this case is complicated by the ordinal nature of the dependent variables. We follow the appropriate extension as described by Bauer and Sinning (2008) and Sinning, Hahn and Bauer (2008).

The Oaxaca decompositions show that the vast majority of the change in average levels of subjective well-being from 1993 to 1998 is due to changes in the estimated coefficients. The results of the Oaxaca decompositions for the linear and ordered probit models, calculated as we move from 1993 to 1998, are presented in Table 5.

Table 5 - Oaxaca decomposition results.

Results	Estimates	Percentage
Ordinary Least Squares		
Raw Differential	1.120	
Endowments	0.087	7.8%
Coefficients	1.033	92.2%
Ordered Probit (three category response)		
Raw Differential	0.487	
Endowments	0.633	13.0%
Coefficients	0.424	87.0%

For each model, only small percentages (between 7.8 and 13 percent) of the increase in life satisfaction are due to improvements in the levels of the independent variables while between 87 and 92 percent is due to changes in the way that given levels of these factors influence a household's well-being. This suggests that South Africans are happier in 1998 not because of the direct effect of having higher incomes or higher levels of education, better houses, improved access to water, etc., but because having the same levels of these factors brings a greater reward, in terms of subjective well-being, in 1998 than it did in 1993. The coefficient effects clearly dominate the changes in subjective well-being between 1993 and 1998, despite the fact that many endowments improved over the time period.

VI. Concluding Remarks

Many indicators of material well-being, education, health, housing and infrastructure showed improvement, and black South Africans were substantially happier in 1998 than they were in 1993. The conclusion might seem obvious – improved, measurable living conditions made people happier. However, results presented in this paper show that the improvements were mostly due to changes in the way that household and individual characteristics influence happiness. In other words, the determinants of happiness, or the happiness "formula," underwent major changes over this four-year period. Improvements in actual, measurable living conditions had only small effects.

One plausible explanation for the way the 'payoffs' to various household characteristics changes has to do with the actual change in living conditions. Bookwalter and Dalenberg (2004) and the 1993 SALDRU models all show that housing and infrastructure characteristics were among the most important determinants of household subjective well-being. Between 1993 and 1998, there were some important improvements in many of those categories. As households got accustomed to these improvements, their attentions seemed to be more focused on different contributors to subjective well-being. These changes were most apparent when looking at the effects of being a crime victim or reporting illness or injury.

The shifting determinants of life satisfaction are consistent with the notion of hedonic adaptation. As households get accustomed to an improvement in material well-being, they stop getting a happiness 'payoff,' and require some further improvement to maintain their higher level of reported well-being. This is one of the common explanations for the existence of the Easterlin Paradox.

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The findings in this paper provide insights as to what drives happiness for black South Africans. However, they also illustrate some broadly important ideas. First, even over a relatively short time frame – four years- the factors that make people better off can change dramatically. Sometimes this is just a result of economic development and the shifting priorities of the population. Sen (1988) refers to these changes as 'value endogeneity,' and argues for a constant re-evaluation of what is important. Sen's point, supported by ample empirical evidence from this and other studies, should give policy makers good reasons to think regularly about allocation of scarce public resources.

References

Bauer, T., Sinning, M., 2008. An extension of the Blinder-Oaxaca decomposition to nonlinear models. Advances in Statistical Analysis. 92, 197-206.

Blanchflower, D., Oswald, A., 2004. Well-being over time in Britain and the USA. J. Pub. Econ. 88, 1359-1386.

Blinder, A., 1973. Wage discrimination: reduced form and structural estimates. J. Hum. Resour. 8, 436-455.

Bookwalter, J., Dalenberg, D., 2004. Subjective well-being and household factors in South Africa. Soc. Indic. Res. 65, 333-353.

Bookwalter, J., Dalenberg, D., 2010. Relative to whom or what? The importance of relative standing to subjective well-being. World Dev. 38, 345-355.

Bookwalter, J., Fuller, B., Dalenberg, D., 2006. Do household heads speak for the household? A research note. Soc. Indic. Res. 79, 405-419.

Borjas, G., 2008. Labor Economics. McGraw Hill Irwin, Boston.

Clark, A., Frijters, P., Shields, M., 2008. Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. J. Econ. Lit. 46, 94-144.

Clark, A., Oswald, A., 1994. Unhappiness and unemployment. Econ. J. (London). 104, 648-659.

DeSilva, S., Elmelech, Y., 2012. Housing Inequality in the United States:A Decomposition Analysis of Racial and Ethnic Disparities in Homeownership. Housing Studies. 21, forthcoming.

Di Tella, R., MacCulloch, R., Oswald, A., 2001. Preferences over inflation and unemployment: Evidence from surveys of happiness. Am. Econ. Rev. 91, 335-341.

Diener, E., Suh, E., Lucas, R., Smith, H., 1999. Subjective well-being: three decades of progress. Psychol. Bull. 125, 276-302.

Easterlin, R., 1974. Does economic growth improve the human lot? Some empirical evidence, in: David, R., Reder, M. (Eds.), Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz. Academic Press, New York, pp. 89-125.

Easterlin, R., 1995. Will raising the incomes of all increase the happiness of all? J. Econ. Behav. Organ. 27, 35-47.

Easterlin, R., 2001. Income and happiness: Towards a unified theory. Econ. J. (London). 111, 465-484.

Ferrer-i-Carbonell, A., 2005. Income and well-being: an empirical analysis of the comparison income effect. J. Pub. Econ. 89, 997-1019.

Ferrer-i-Carbonell, A., Frijters, P., 2004. How important is methodology for the estimates of the determinants of happiness? Econ. J. (London). 114, 641-659.

Fuentes, N., Rojas, M., 2001. Economic theory and subjective well-being: Mexico. Soc. Indic. Res. 53, 289-314.

Gardner, J., Oswald, A., 2007. Money and mental wellbeing: A longitudinal study of medium-sized lottery wins. J. Health Econ. 26, 49-60.

Helliwell, J., 2003. How's life? Combining individual and national variables to explain subjective well-being. Econ. Model. 20, 331-360.

Kahneman, D., Krueger, A., 2006. Developments in the measurement of subjective well-being. J. Econ. Perspect. 20, 3-24.

Kahneman, D., Krueger, A., Schkade, D., Schwarz, N., Stone, A., 2004. Toward national well-being accounts. Am. Econ. Rev. 94, 429-434.

Kingdon, G., Knight, J., 2006. Subjective well-being poverty vs. income poverty and capabilities poverty? J. Dev. Econ., 42, 1199-1229.

Kingdon, G., Knight, J., 2007. Community, comparisons, and subjective well-being in a divided society. J. Econ. Behav. Organ. 64, 69-90.

Krieg, J., Storer, P., 2006. How much do students matter? Appling the Oaxaca decomposition to explain determinants of adequate year progress. Contemp. Econ. Policy 24, 563-581.

Luttmer, E., 2005. Neighbors as negatives: relative earnings and well-being. Q. J. Econ. 120, 963-1002.

McBride, M., 2001. Relative income effects on subjective well-being in the cross-section. J. Econ. Behav. Organ. 45, 251-278.

McEwan, P., Marshall, J., 2004. Why does academic achievement vary across countries? Evidence from Cuba and Mexico. Education Economics 12, 205-217.

Möller, V., Saris, W., 2001. The relationship between subjective well-being and domain satisfactions in South Africa. Soc. Indic. Res. 55, 97-114.

Myers, D., Diener, E., 1995. Who is happy? Psychol. Sci. 6, 10-19.

Ng, Y., 1996. Happiness surveys: some comparability issues and an exploratory survey based on just perceivable increments. Soc. Indic. Res. 38, 1-27.

Ng, Y., 1997. A case for happiness, cardinalism, and interpersonal comparability. Econ. J. (London). 107, 1848-1858.

Oaxaca, R., 1973. Male-female wage differentials in urban labor markets. Int. Econ. Rev. (Philadelphia). 14, 693-709.

Oswald, A., 1997. Happiness and economic performance. Econ. J. (London). 107, 1815-1831.

Oswald, A., Powdthavee, N., 2008. Does happiness adapt? A longitudinal study of disability with implications for economists and judges. J. Pub. Econ. 92, 1061-1077.

Sen, A., 1988. The concept of development, in: Chenery, H., Srinivasan, T.N., (Eds.), Handbook of Development Economics, volume 1, Elsevier, New York, pp. 9-26.

Sen, A., 2000. Development as Freedom. Anchor Books, New York.

Sinning, M., Hahn, M., Bauer, T., 2008. The Blinder-Oaxaca decomposition for nonlinear regression models. Stata J. 8, 480-492.

South Africa Labour Development Research Unit, 1994. South Africans Rich and Poor: Baseline Household Statistics. University of Cape Town, South Africa.

Statistics South Africa. 1998. October Household Survey (South Africa), 1998. South African Data Archive, Pretoria, South Africa.

Van Praag, B., Ferrer-i-Carbonell, A., Frijters, P., 2003. The anatomy of subjective well-being. J. Econ. Behav. Organ. 51, 29-49.

Veenhoven, R., 1984. Conditions of happiness. D. Reidel Publishing Company, Dordrecht, Holland.

Veenhoven, R. 2002. Why social policy needs subjective indicators. Soc. Indic. Res. 58, 33-45.

Appendix A: Survey concordance for housing and infrastructure

	Housing Categories	
New	Original	
	SALDRU	OHS
House	house/part of a house flat, maisonette	dwelling/house or brick structure on a separate stand or yard, flat or apartment in a block of flats, town/cluster/semi-detached house
Poor	hut/traditional dwelling hostel, outbuilding, combination of buildings	traditional dwelling/hut/structure made of traditional materials, dwelling/house/flat/room in backyard, room/flatlet, unit in retirement village
Shack	shack	informal dwelling/shack, in backyard/shack not in back yard, e.g. in an informal squatter settlement, caravan/tent
Other	other	other

	Water Source Categories	
New	Original	
	SALDRU	OHS
Piped in	piped - internal	piped water, in dwelling
Easy access outside	piped - yard tap water carrier/tanker rainwater tank	piped water, on site or in yard water carrier/tanker borehole on site, rainwater tank on site
Haul	public tap (free) public tap (paid for) borehole flowing river/stream dam/stagnant water well (non-borehole) protected spring other	public tap borehole off site/communal flowing water stream dam/pool/stagnant water well spring other

	Cooking Energy Source Categories	
New	Original	
	SALDRU	OHS
Electricity	electricity from grid electricity from generator	electricity
Gas	town gas (piped) gas from bottle	gas
Burn (other than wood, dung)	charcoal/coal paraffin	coal paraffin
Gathered	Wood, dung	Wood, dung

| Other | other | Other |
| | | solar |

	Sanitation Categories	
New	Original SALDRU	OHS
Flush	flush toilet	flush toilet
Latrine	improved pit latrine (with ventilation)	pit latrine (with ventilation)
	other pit latrine	other pit latrine
	chemical toilet	chemical toilet
Minimal	bucket toilet	bucket toilet
	none	none
		other pit latrine
		other