Unhappiness and Crime: Evidence from South Africa

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Abstract

This paper is the first of its kind to study quality of life responses of crime victims. Using cross-sectional data from the OHS97 survey of South Africa, we show that victims report significantly lower well-being than the non-victims, *ceteris paribus*. Happiness is lower for nonvictimized respondents currently living in higher crime areas. However, we find some evidence that criminal victimization hurts, but hurts less if regional crime rate on our reference group is high.

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The one who throws the stone forgets; the one who is hit remembers forever.

Angolean Proverb.

Fear defeats more people than any other one thing in the world.

Ralph Waldo Emerson.

INTRODUCTION

Politicians around the world have been expressing concern for decades about the extent to which rising crime rates can a¤ect the lives of individuals in the society. The growing distress over the e¤ects of crime on individuals in rich and poor countries alike is thought to have been fueled by the perception that crime victims su¤er greatly in terms of …nancial loss and psychological trauma from their experiences. There is also an increasing awareness among policy makers that these exposures to crime can have long-lasting impacts on the victims and those close to them. As a result, crime and the perception of personal safety are important factors in any assessment of social well-being and an individual's happiness level. Yet less attention has been paid in terms of research on the link between crime-related variables and measures of satisfaction with quality of life in general.

This paper has two aims. The …rst is to show that, on average, crime victims report signi…cantly lower levels of subjective well-being than the nonvictimized. The second is to present evidence that subjective well-being may also be a¤ected by the fear of crime as well as the direct experience of it. In other words, we test whether crime on others in the region has a negative relationship with the nonvictimized's well-being. We also test the hypothesis that, even though criminal victimization hurts, people may feel relatively better once they know that a large part of the population living in the same neighbourhood as they are is also e¤ected by crime. Using the perceived quality of life data taken from the post-apartheid South Africa in 1997, we argue below that all of the above ideas are strongly supported by the data and that there is a robust relationship between crime-related variables and subjective measures of well-being.

We brie‡y discuss in Section 1 some of the key literature in psychology, sociology, and economics. Section 2 describes the dataset for South Africa. Section 3 begins empirical analysis on the correlation between

criminal victimization and the reported well-being. We present in Section 4 the main results on regional crime rate. Conclusions are then set out in Section 5.

I. PREVIOUS LITERATURE

Criminal damages have so far been studied by economists in terms of pecuniary costs on individuals and the society. The cost of murder, for example, can be measured by loss in earnings for victims and accumulated public spending on policemen and court personnel to increase the probability of criminal apprehension and conviction (Becker, 1968). The current paper, however, takes a more psychological approach to the analysis of individuals' welfare following criminal victimization by looking directly at the reported subjective well-being of crime victims. Although this is not yet standard in economics, subjective well-being responses have increasingly, and successfully, been applied in the studies of unemployment (e.g., Winkelmann and Winkelmann, 1998, Frey and Stutzer, 1999; Kingdon and Knight, 2001; Blanch‡ower and Oswald, 2004), the role of absolute and relative income (e.g., Clark and Oswald, 1996; McBride, 2000; Easterlin, 2001; Stutzer, 2002), the impact of macroeconomics indicators (e.g., Di Tella et al, 2001; 2004), and general development and poverty issues (e.g., Ravallion and Lokshin, 2001; Graham and Pettinato, 2002; Powdthavee, 2003). However, empirical research in economics on the well-being of crime victims is still relatively unexplored, comparing to other areas of economic issues mentioned above, simply because adequate data are not readily available or are too unreliable for general public use.

While the link between criminal victimization measures and subjective well-being responses remains largely ignored by economists, the idea has been studied intensively by psychologists and partly by sociologists for decades. A common result from the psychology literature is that crime victims have been shown to su¤er from a variety of signi…cant and persistent psychological problems which include, for example, depression, anxiety, fear, and post-traumatic stress disorder as well as feelings of hostility and personal violation (e.g., Atkeson et al, 1982; Davis and Friedman, 1985; Kilpatrick et al, 1985; Frieze et al, 1987; Skogan, 1987; Burnam et al, 1988, Sorenson and Golding, 1990; Norris and Kaniasty, 1994). These psychological symptoms commonly found among crime victims, especially fear and anxiety, are shown to be negatively associated

with individual's subjectively measured health (Ross, 1993) and measures of subjective well-being and overall perceived quality of life (Michalos, 1991). Attitudes towards crime-related issues in the area, i.e., whether individuals view local crime to be a problem or not, has a negative impact on the reported satisfaction with the neighbourhood (e.g., Hartnagel, 1979; Parkes et al, 2002). Furthermore, using data from the city of Prince George, British Columbia survey (N = 633), Michalos and Zumbo (2000) show measures of fear and actual cases of victimization to correlate negatively with measures of happiness and satisfaction with life as a whole. A recent study by Kingdon and Knight (2003) also reports a similar …nding on the correlation between the reported subjective well-being and the victim of crime variable. Using a sample size of approximately 900 victimized households from the South African Labour and Development Research Unit (SALDRU) survey of 1993, they have been able to show that crime victims report signi…cantly lower subjective well-being than the nonvictimized. However, despite growing attention on the subject by sociologists recently, the literature on empirical analysis of crime and subjective well-being is still relatively small, comparing to studies in psychology on the victim's mental health following criminal victimization.

II. DATA AND DESCRIPTIVE STATISTICS

The current paper uses a rich data set from the October Household Survey (OHS) study of South Africa. The OHS is an annual and nationally-representative survey based on a probability survey of a large number of households, carried out - with di¤erent sample designs for each year - by the Statistics South Africa (StatsSA). Our analysis will refer to the OHS study of 1997, which covers around 30,000 randomly selected households across 3,000 community clusters. This general survey contains detailed information on a series of socio-demographic characteristics including - but not limited to - household composition, education, employment status, and expenditure activities. It also includes, in a section to be completed by one of the household representatives, a battery of questions on perceived quality of life and on crime committed on household members in the past year. The proxy utility measure used in this article is the measure of Perceived Quality of Life (PQOL, henceforth). This is captured by the question "Taking everything into account, how satis…ed is this household with the way it lives these days?" Responses range on a 5-point scale from the lowest

"1.Very dissatis…ed" to the highest "5.Very satis…ed". The analysis will refer to those PQOL respondents of working age (16-65). This produces 24,949 observations in as many as 2,500 enumeration areas in total. Table 1 provides a …rst look at the distribution of PQOL for the sample population. The distribution in table 1 shows a skewness in the reported quality of life towards the "satis…ed" category commonly found in data on developed nations, with a mean PQOL score of 3.64 and over 16% report the maximum score of 5.

[TABLE 1 HERE]

Victim of crime status is made up from the responses to the two following questions: (i) "During the past 12 months, has this household experienced any burglaries, robberies, or housebreaking?", and (ii) "During the past 12 months, has anyone been murdered while he/she was a member of this household?". The number of property crime (i.e. burglaries, robberies, housebreaking) victims dominates the number of violent crime (i.e. murder) victims by 10 to 1: N = 1,933 and 188 reported property and violent crime victims, respectively. We also had to eliminate around 30 observations where respondents had answered "Yes" to both victims of property and violent crime questions for simplicity reasons. The total number of crime victims used in the analysis is therefore 2,121, giving an average crime rate across the population sample of 8.5%.

III. THE CORRELATION BETWEEN CRIMINAL VICTIMIZATION AND PERCEIVED QUALITY OF LIFE RESPONSE

We assume that there exists a reported well-being function of the general form

$$R_h = H(W(V C_h; X_h; Z_h)) + \varepsilon; \quad (1)$$

where R_h represents the well-being at the household-level reported by an individual, and is adequately captured by responses to a question on perceived quality of life, on a scale of 1 to 5, $H(:)$ is a non-di¤erentiable function that relates actual to reported well-being, $W(:)$ is the true well-being only observable to that individual, X is a vector of private goods consumed by the entire household, Z is a set of socio-demographic characteristics across household members, and ε is an error term that subsumes the inability of human beings to communicate accurately the true well-being levels, as well as unobserved personal traits such as optimism

and intelligence. The variable VC is the victim of crime variable, taking the value of 1 if the household has been victimized by crime in the past 12 months and 0 otherwise. In this paper we aim to test whether the reported perceived quality of life is associated negatively with the victim of crime variable, ceteris paribus. Note that measures of subjective well-being and experiences of criminal victimization in the OHS97 are recorded at the household-level, and not at the individual-level. Hence, this implies that we can only make inter-household comparisons of reported well-being, and not comparisons between individuals living in the same households, in our victim of crime analysis.

To provide some information about the correlations in the raw data, table 2 describes reported PQOL levels for different groups. In consonance with the findings in the psychology literature, respondents from the nonvictimized households report, on average, a significantly higher subjective well-being level than the respondents from the victimized households. The means of perceived quality of life for the nonvictimized and victimized households are 3.660 and 3.395, respectively. A similar result is also obtained for both male and female respondents. The figures in parentheses represent the t-statistic for the null hypothesis that the means of the two groups are the same, and in all cases the test strongly rejects at the conventional level the equality of the means for the two groups. This is our first tentative evidence of lower psychological well-being following criminal victimization.

[TABLE 2 HERE]

A more systematic analysis of the reported PQOL data begins in table 3. As the measure of PQOL is ordinal, not cardinal, the preferred method of estimation is by ordered probit (Zavoina and McKeley, 1975). We also correct for underestimated standard errors by including enumerator or cluster controls in the estimations so as to capture any grouping effects present within the data set. See Moulton (1990) for more discussions on potential pitfalls of estimating aggregate variables on micro units when standard errors are not corrected for.

Table 3 explores the relationship between criminal victimization and perceived quality life when other factors are held constant by estimating a simple micro-econometric counterpart to equation (1). Descriptive

statistics of all variables are provided in appendix A. The dummy for victim of crime enters the regression in the theoretically expected negative way, with a robust z-statistic of -10.99.

[TABLE 3 HERE]

It is worth noting here that the PQOL measure of well-being is rather unusual in the literature, i.e. a household and not an individual measure. The question is whether the main respondent is able to evaluate the well-being of all individuals in the household, especially those who have a direct experience of crime. However, considering that both types of crimes (e.g. residential burglaries and murder of at least one of the household members in the last 12 months) recorded in the survey are probably better thought of as crimes on households and less so as crimes that are committed with a speci…c aim to a¤ect only a particular individual living in the premises, the negative e¤ects may be equally spread across all existing household members, making PQOL a valid measure of the well-being impact of criminal victimization.

Other results from table 3 show quality of life to associate positively with log of household expenditure, while household size enters the equation with a negative sign. One possible explanation for this is that an increase in the household size may lead to a reduction in household expenditure per capita, and hence reduces the quality of life for everybody in the household (Graham and Pettinato, 2002; Powdthavee, 2003). Controlling for household expenditure quintiles and the right to ownership of the dwelling, individuals with a telephone connection in the dwelling have reported, on average, higher PQOL levels than those without one. Black respondents have reported, on average, a signi…cantly lower well-being score than individuals of other races, especially individuals of mixed race. The searching unemployed (i.e., those unemployed and looking for a job) and part-time workers have signi…cantly reported lower well-being than those in full-time employment, while reported well-being is higher for PQOL respondents with higher level of education (measured by the levels of school grade completed by the main respondent). Similar to other …ndings from developed countries, there is also a U-shaped relationship between well-being response and age for South Africa, minimizing around the early 40's (Warr, 1992; Clark et al, 1996). Those who were married under civil, which is a more recent type of marriage arrangement, rather than South Africa's customary or

traditional law, have the highest level of well-being. One possible explanation for this could be that people who were married under the civil law may have had more freedom in choosing their current partners and have more legal rights compared to those married under the customary law. The divorced or separated, on the other hand, have reported the lowest current well-being. The results are robust to controls for average unemployment rates measured at the magistrate district level (which is generated within-sample) and personal characteristics of household members other than the main respondent. Hence, it can be concluded that, in most comparable cases, the coe¢cient signs of the already identi…ed socio-economic factors in the well-being regression equations are the same in South Africa as is the case in more-developed countries.

Of other interest is the role of crime type in the determination of victim of crime variable in these equations. In particularly, we would like to know whether the negative correlation between victim of crime and perceived quality of life is driven by a single type of crime and not the other. A direct test splits victim of crime variable into property and violent cases. The introduction of these split case variables suggests that victims of residential burglaries report lower well-being than those victims with at least one household member murdered within the last 12 months, contrasting with Davis and Friedman's (1985) …nding of lower psychological well-being among the violent crime victims, comparing to property crime victims. The result thus implies that the negative correlation between victims of crime and perceived quality of life may be largely driven by property crimes (N = 1,933) than by violent crimes (N = 188). One possible explanation could be that, while burglaries or housebreaking normally take place in the household, a murder could have been committed elsewhere away from the household. In addition, although property crimes are more likely to a¤ect all household members equally, there may exists a degree of variation in the psychological impact of murder, which can depend upon whether the actual murder victim is closely related to the PQOL respondent. However, it can still be concluded from our estimations that respondents from victimized households, from either property or violent crimes, have reported lower well-being than the nonvictimized households, ceteris paribus.

The well-being impacts of crime are quantitatively important as well as statistically signi…cant. Since

the coe¢cients from ordered probits cannot be interpreted directly as marginal e¤ects, 'compensating expenditure variations' can be calculated instead to illustrate the size of the estimated psychological e¤ect of crime on households. Given that our expenditure variable is in terms of log household expenditure, compensating expenditure variations (CEV) equation can be written as follows:

$$CEV = EP\,¢\,\left[\exp\frac{-_1 \,i\, -_0}{,\,\ln EP} \,¡\, 1\right] \tag{2}$$

where CEV is compensating expenditure variations, i.e. expenditure required to compensate an average household for a drop in psychological well-being resulting from crime, EP is current household expenditure, $-_1$ represents the reference coe¢cient for nonvictimized, $-_0$ as the coe¢cient for criminal victimization, and , is the estimated coe¢cient on log household expenditure. Based on an average crime rate of 8.5% across the population sample, the calculation suggests that it would take an extra household expenditure of around R97,424 (or approximately US$21,142) per month to compensate for being victimized by crime, for an average household spending R1,187 (or US$240) per month. In other words, an average household would require a …nancial package worth 82 times of their current spending to make them feel indi¤erent about their experiences of crime. The estimates of other life events, on the other hand, have quantitatively smaller valuations comparing to the estimated main e¤ect of crime. For example, searching unemployment (comparing to employment with regular wages) and no formal education (comparing to the highest level of education) for the respondent is estimated to be worth about R4,300 (US$933) and R7,370 (US$1,600) on average. Thus the estimation implies crime to have the largest psychological cost comparing with changes in other relevant socio-demographic factors, for an average female respondent in the sample. However, as expenditure is potentially endogenous in the happiness regression, the interpretation of these results are only illustrative and should therefore be treated with caution.

IV. THE ROLE OF OTHERS' CRIME RATE BY REGION

While it has been robustly established in the last section that victims of crimes are worse o¤ than the non-victims in terms of their perceived quality of life, the relationship between crime on other societal members in the community and measures of subjective well-being remains relatively unexplored. A suggestive evidence

comes from Kingdon and Knight (2003), where they …nd the negative relationship between the reported well-being and the victim of crime variable to be more signi…cant for the poor-households (those de…ned as earning less than the household supplementary level of poverty line), where regional crime rates are lower compared to areas lived by their non-poor counterparts. However, to our best knowledge, the only work that explicitly includes a crime rate variable in the happiness regressions comes from a paper by Alesina et al (2001), which compares the e¤ects of inequality on happiness across Europe and America. By using a set of individual-level data from the US General Social Survey (1972-1994), they have been able to show for the US sample that there is a negative, albeit insigni…cant, relationship between the murder rate and the reported happiness scores. However, they had failed to distinguish in their regression results the e¤ects of murder rate between individuals from households with murder victims and those from nonvictimized households.

In this section, we aim to extend the idea by Alesina et al, and, …rst, examine whether regional crime rate correlates signi…cantly with the well-being of the nonvictimized households. The standard externality of regional crime rate on others is negative: e.g. an increase in the regional crime rate may heighten the feelings of fear and insecurity for the nonvictimized households in the neighbourhood, etc. The other question of interest is whether certain groups of individuals are hurt less by crime than others. A hypothesis in economics and psychology suggests that stigmatizing e¤ect from crime may in fact be lower in high crime rate regions. With less social disapproval towards crime victims in high crime areas, the externality from local crime rate on the overall well-being of the victimized households may be positive: e.g. the higher the regional crime rate, the better I feel about myself for being one of the victims.

Hence, the current section aims to test the following two hypotheses of interest:

(i) crime on "relevant others" - i.e. other people living in the same region as the respondents - reduces the current well-being of the nonvictimized households.

(ii) the correlation between the victim of crime variable and perceived quality of life is smaller for those crime victims who have been living in an area with a high crime rate.

In doing so, we extend the well-being equation (1) to include a measure of crime on relevant others, $\overline{VC}$,

to be estimated in table 4 as follows:

$$R_h = \bar{}_1(VC)_h + \bar{}_2(\overline{VC})_h + \bar{}_3(VC_h \pounds \overline{VC}_h) + X^{0}_{h}, + Z^{0}_{h}\pm + "_h: \quad (3)$$

The analysis will focus on two di¤erent measures of crime rates for South Africa in 1997. The …rst measure of crime rate comes from within-sample, generated according to the reported crime cases by the magistrate district level in the OHS97. This experimental variable is based on a reasonable sample-size with an average of 168.53 households per district area (over 150 data points on regional crime rate), and is allowed to vary across households. The second measure of crime rate comes from the Crime Information Analysis Centre (CIAC) reports on the provincial speci…c crime statistics, published annually since 1994 by the South African Police Service in South Africa. To make it consistent to the crime rate generated within the OHS97 data, we will refer only to the reported incidences of residential burglaries and murder at the provincial level for the year 1997 (see appendix B for the o¢ cial crime statistics in 9 provinces). In addition to the full sample analysis, we intend to examine the role of others' crime rate on reported well-being levels according to the gender of the PQOL respondents. The current hypothesis is that female respondents who were selected to evaluate the well-being at the household-level for everybody else may possess a very di¤erent attitude towards crime-related issues, compared to male respondents. For example, females tend to be more convinced that crime in their region had increased, to be more worried about being victimized (e.g. Giles-Sims, 1984; Lira and Andrade-Palos, 1993), to perceive more neighbourhood problems, to be less satis…ed with their own and their family's safety in their neighbourhood, and to be less likely to walk alone in their neighbourhood at night than males (e.g. Gomme, 1988; Sprott and Doob, 1997; Michalos and Zumbo, 2000). On the other hand, females tend to communicate more to each other about their experiences of crime, whereas males have a greater unwillingness to admit or talk about their fears relating to criminal victimization in general (e.g. Stanko and Hobdell, 1993; Walklate, 1997).

[TABLE 4 HERE]

The …rst column of table 4 produces full sample evidence, adding the crime rate measured at micro-level (i.e. by magistrate district) and macro-level (i.e. by province). Note that there is an average of 20

magistrate districts per one province in the OHS97 data. It can be seen in the …rst panel that victim of crime variable continues to enter the equation with a negative and signi…cant coe¢cient. The interaction between own experiences of crime and regional crime rate at the magistrate district level attracts a strongly positive coe¢cient (with a z-statistic of 2.06), whereas the main relationship between regional crime rate and reported well-being is negative and signi…cant. This result thus suggests that the well-being gap between crime victims and non-victims may be smaller in high crime rate regions. It is also worth noting here that there is no signi…cant variation in the supply for both police services and victim support programs by magistrate district (in terms of …nancial or clinical helps) in South Africa (and, in any case, should there be any signi…cant variation in the police support by provincial level, the e¤ects will be captured by the province dummies).

Consistent to Alesina et al's results on the US data, the main e¤ect of regional crime rate on the reported well-being scores continues to be negative and signi…cant in the second panel when the measure of crime rate at the micro-level is replaced by the measure of crime rate at the macro-level. The estimated coe¢cients (z-statistics in parentheses) for residential burglaries and murder cases per 100 of the population in the two separate regressions are -0.317 (-5.36) and -7.103 (-10.10), respectively. The coe¢cient on crime victim variable remains negative and signi…cant with the introduction of crime statistics at macro-level, whilst the interaction terms are insigni…cant (with mixed signs) in both of our speci…cations.

Table 4, columns 2 and 3, deviate from the full sample analysis to examine the correlations between crime-related variables and the reported well-being by gender of the main respondent. The victim of crime and regional crime rate (both micro- and macro-level measures) variables continue to be associated negatively with the reported well-being for both sexes, but are more signi…cant for females than males. The gender results also reveal a positive interaction term between own experiences of crime and crime rate on relevant others measured at the district level for both male and female respondents, but only slightly signi…cant (with a z-statistic of 1.70) for females. The interaction between own experiences of crime and provincial crime rate of residential burglaries is negative but insigni…cant for both males and females. Lastly, the interaction term between own experiences of crime and provincial crime rate of murder is positive but largely insigni…cant

for both sexes. Hence there are some signi…cant evidence in the data set that crime hurts less in high crime areas at the magistrate district level, but not at the provincial level.

In order to illustrate how regional crime rate - at least at micro-level - a¤ects the reported well-being of victims and non-victims di¤erently, we can calculate for an average individual the probability of recording the highest level of PQOL (= 5) based on the coe¢cients of the regression, and see how this probability varies as regional crime rate on others changes. The method generalizes as it has also been used by Clark et al (2001) to illustrate for Germany the di¤erent e¤ects of past unemployment on the reported life-satisfaction of the unemployed and those in employment. Figures are presented for the full sample taken from the …rst column of table 4.

[TABLE 5 HERE]

Table 5 shows how the gap in the probability of recording a PQOL score of 5 between victims and non-victims reduces as regional crime rate on others rises. An initial increase in the regional crime rate from 0% to 10% reduces this gap from almost 4% to around 3.33%, while a further rise of 10% reduces this gap by a similar amount (from 3.33% to 2.92%). Further calculation implies that, controlling for other relevant factors, an average respondent from a victimized household would have reported the same current well-being as an average respondent from a nonvictimized household at a regional crime rate of approximately 36% ($¡0:497 + 1:363 £ 0:36 = 0$). This is an unusually high …gure for a crime rate at the magistrate district level, and in a sense is a re‡ection of a small (positive) impact of crime rate on the well-being of crime victims. However, the limitation of this …nding comes from the fact that our regional crime rate variable has been generated within-sample of the OHS97 data set, and hence the results should be viewed with care.

V. CONCLUSION

The aim of this paper was to examine the relatively unexplored link between subjective well-being and crime. It estimates for South Africa's micro-econometric well-being equations based on the perceived quality of life response for the year 1997. Controlling for household expenditure and relevant factors, we …nd that respondents from victimized households report a substantially lower subjective well-being score, on average,

compared to those from nonvictimized households. Second, we show that crime on others in the area is associated with lower levels of perceived quality of life for the respondents from nonvictimized households. One interpretation is that crime on others in the neighbourhood may increase the probability of victimization and therefore heighten the levels of fear and anxiety for the non-victims living in the area. Third, we show that, although the victim of crime variable is associated sharply with lower levels of subjective well-being, the negative correlation is attenuated - at least at the magistrate district level - as crime on others rises. The estimated coe¢cients suggest that a representative victim living in an area where roughly 36% of other people are crime victims is indi¤erent in terms of current subjective well-being between victimization and non-victimization. A possible explanation is that crime victims may feel less victimized if a larger part of the population living in the area also shares their same experiences of crime.

The …ndings reported here have important policy implications. One of them is to supply and channel su¢cient professional services for the victimized. Despite the evidence presented in this article suggesting for an urgent need of mental help services for victims of crime, studies in the medical literature reveal that, at present, only a small proportion of victims receive such professional help (Golding et al, 1988; Norris et al, 1990). Furthermore, the weak role of expenditure variable in well-being regressions casts doubt on the e¢cacy of governmental policy aimed solely at giving …nancial support for the victims. Thus, signi…cant improvements in terms of clinical help per case of victimization is needed if the overall levels of quality of life were to be raised in the society. Secondly, the presence of externalities linked to other crime victims at the micro-level suggests that not everyone in the region bene…ts from crime prevention programs, providing that these programs are not 100% e¤ective in taking crime away from the neighbourhood. This is because victims of crime may su¤er less stigma from victimization in regions with higher crime rates, according to the results in Table 4. Given that this result holds generally, an alternative way of tackling the issue is for the authorities to take some advantages from the externalities linked to regional crime rate by encouraging better contacts among the victimized, especially in areas where there is no centralized victim support unit for crime victims to meet up should they want to. Future research should therefore focus on how these externalities could in‡uence the rates with which these individuals can recover from victimization over time.

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Table 1: Distribution of Perceived Quality of Life for South Africa, 1997

Perceived Quality of Life	Observations	Percentage	Cumulation
Very Dissatisfied	860	3.45%	3.45%
Dissatisfied	2,801	11.23%	14.68%
Neither	4,951	19.84%	34.52%
Satisfied	12,238	49.05%	83.57%
Very Satisfied	4,099	16.43%	100.00%
Total	**24,949**	**100%**	**100%**

Source: October Household Survey (OHS), 1997.

Table 2: Victim of Crime and Perceived Quality of Life Means, By Category

Categories	Observations	Percentage	Mean Perceived Quality of Life
Nonvictim	22,828	91.99%	3.660
Victim	2,121	8.01%	3.395
			(11.78)
Male; victim	7,215	90.46%	3.677
Male; victim	761	9.54%	3.440
			(6.02)
Female; victim	15,613	91.50%	3.653
Female; nonvictim	1,360	8.50%	3.370
			(10.13)

Note: Values in parentheses are t-statistics based on the test that the two populations have equal means.

Table 3: Perceived Quality of Life Regression with Victim of Crime Variable for South Africa, 1997 (Ordered Probit Results)

	Coefficient	z-statistic
Victim of Crime (=1)	-0.358	(-10.99)
A) Household Characteristics		
Ln(Household Expenditure)	0.081	(6.24)
Household Size	-0.017	(-4.30)
Urban (=1)	-0.071	(-2.17)
Home Ownership (=1)	0.030	(1.00)
Phone in Dwelling (=1)	0.163	(5.83)
B) Main Respondent's Characteristics		
Race: Coloured	0.282	(4.84)
Race: Indian	0.082	(1.27)
Race: White	0.054	(1.22)
Male (=1)	-0.050	(-2.13)
Unemp; Looking for work	-0.124	(-5.13)
Unemp; Not looking for work	-0.089	(-1.41)
Working part-time	-0.127	(-2.79)
Housewife/Students	-0.048	(-2.12)
Retired	0.023	(0.55)
Disabled	-0.095	(-1.02)
Education: Standard Level 1-3	-0.013	(-0.26)
Education: Standard Level 4-6	0.063	(1.90)
Education: Standard Level 7-9	0.094	(3.05)
Education: Standard Level 10 and higher	0.160	(4.67)
Age	-0.011	(-2.38)
Age^2/100	0.011	(2.03)
Married; Civil	0.122	(3.29)
Married; Traditional (Custom)	0.003	(0.09)
Living together with partner	-0.007	(-0.16)
Widower/widow	-0.074	(-1.67)
Divorced/separated	-0.100	(-1.75)
Province dummies (9)	Yes	
Relation to head of household (9)	Yes	
N	20,634	
Log Likelihood	-26491.058	
Pseudo R^2	0.0345	

Note: Reference variables are: black (race), working full-time (employment status), no education (education level), never married (marital status). Other controls include unemployment rate measured at the magistrate district level, the ratios of other male members in the household, as well as the education levels and employment status of household members other than the main respondents.

Table 4: Perceived Quality of Life Regressions with Victim of Crime Variable and Different Measures of Crime Rates for South Africa, 1997 (Ordered Probit Results)

	All	Males	Females
A) Crime Rates at Micro-level			
Victim of Crime (=1)	-0.497	-0.533	-0.484
	(-6.64)	(-3.98)	(-5.59)
Crime Rates at the Magistrate District Levels*	-0.982	-1.004	-0.973
	(-3.51)	(-2.30)	(-3.17)
Victim of Crime*Average Crime on Others	1.363	1.565	1.292
	(2.06)	(1.34)	(1.70)
B) Crime Rates at Macro-level			
Victim of Crime (=1)	-0.255	-0.206	-0.290
	(-3.10)	(-1.48)	(-2.93)
Provincial Crime Rates: Reported Burglaries, 1997**	-0.317	-0.305	-0.316
	(-5.36)	(-3.72)	(-4.75)
Victim of Crime*Reported Burglaries, 1997	-0.157	-0.213	-0.112
	(-1.30)	(-1.09)	(-0.76)
Victim of Crime (=1)	-0.470	-0.467	-0.493
	(-4.04)	(-2.38)	(-3.60)
Provincial Crime Rates: Reported Murder, 1997***	-7.103	-7.657	-6.900
	(-10.10)	(-6.89)	(-9.07)
Victim of Crime*Reported Murder, 1997	1.821	1.759	2.197
	(1.00)	(0.58)	(1.02)

Note: * Crime rates on others at the magistrate district levels, calculated using the OHS97 data. ** Burglaries - residential premises (and attempt) in South Africa, 1997: ratio per 100 of the population. *** Murder in South Africa, 1997: ratio per 100 of the population. Absolute z-values in parentheses; other controls as in Table 3.

Table 5: Predicted Probabilities of PQOL score of 5 (Highest Level)

	ordered probit on full sample
Non-victim; magistrate district crime rate of 0%	6.58%
Non-victim; magistrate district crime rate of 10%	6.11%
Non-victim; magistrate district crime rate of 20%	5.66%
Non-victim; magistrate district crime rate of 30%	5.23%
Victim; magistrate district crime rate of 0%	2.64%
Victim; magistrate district crime rate of 10%	2.78%
Victim; magistrate district crime rate of 20%	2.92%
Victim; magistrate district crime rate of 30%	3.06%

Note: PQOL - Perceived Quality of Life.

Appendix A: Variable Means, Standard Deviation (in parentheses), and Definitions

Variable	Mean	Definition
perceived quality of life	3.638 (0.995)	taking everything into account, how satisfied is this household with the way it lives today? (1=very dissatisfied, 5=very satisfied)
victim of crime	0.085 (0.279)	during the last 12 months, has this household experienced robbery, burglaries, housebreaking, or has any household member murdered? (1=yes)
crime at the magistrate district levels	0.085 (0.048)	average crime on other households in the same magistrate district as the repondents, calculated using the OHS97 information.
ln(household expenditure)	6.481 (1.011)	log of household expenditure per month
race	1.453 (0.928)	race of household (1=african, 2=coloured (i.e. mixed race), 3=asian, 4=white)
household size	4.752 (2.655)	number of person currently living in the household
education: standard level 1-3	0.038 (0.192)	highest education dummy, 1=completed grade 1-3
education: standard level 4-6	0.156 (0.363)	highest education dummy, 1=completed grade 4-6
education: standard level 7-9	0.380 (0.486)	highest education dummy, 1=completed grade 7-9
education: standard level 10 and higher	0.287 (0.452)	highest education dummy, 1=completed grade 10 and higher
gender	0.320 (0.466)	gender dummy, 1=male
urban	0.539 (0.498)	area dummy, 1=urban
married - civil	0.355 (0.478)	marital status dummy, 1=married under civil law
married - traditional (custom)	0.147 (0.354)	marital status dummy, 1=married under traditional, South African law
living with partner	0.064 (0.245)	marital status dummy, 1=cohabiting with a partner
widower/widow	0.078 (0.268)	marital status dummy, 1=widowed
divorced/separated	0.042 (0.200)	marital status dummy, 1=divorced or separated
age	38.053 (13.074)	age of respondents
age^2/100	16.189 (10.617)	square of age of respondents/100
unemployed, looking for work	0.235 (0.424)	employment status dummy, 1=unemployed and looking for work
unemployed, not looking for work	0.019 (0.137)	employment status dummy, 1=unemployed but not looking for work
working part-time	0.042 (0.199)	employment status dummy, 1=working part-time
housewife/student	0.304 (0.459)	employment status dummy, 1=housewife or student
retired	0.057 (0.232)	employment status dummy, 1=retired
disabled	0.013 (0.113)	employment status dummy, 1=disabled and unable to work
home ownership	0.808 (0.394)	whether own household outright (1=yes)
phone in dwelling	0.232 (0.423)	whether have phone in the dwelling (1=yes)
proportion of other male household members	0.514 (0.395)	average male members other than the main respondent in the household
other household members with education level 1-3	0.034 (0.147)	average number of other household members completed grade 1-3
other household members with education level 4-6	0.145 (0.287)	average number of other household members completed grade 4-6
other household members with education level 7-9	0.417 (0.402)	average number of other household members completed grade 7-9
other household members with education level 10+	0.294 (0.391)	average number of other household members completed grade 10 and higher
other unemployed (looking) household members	0.235 (0.349)	average number of unemployed (looking) members in the household
other unemployed (not looking) household members	0.020 (0.113)	average number of unemployed (not looking) members in the household
other part-time workers in the household	0.038 (0.161)	average number of part-time workers in the household
other housewife/student in the household	0.321 (0.369)	average number of housewives/students in the household
other retired household members	0.048 (0.174)	average number of retired members in the household
other disabled household members	0.009 (0.083)	average number of disabled members in the household
relation to head of household	1.996 (1.583)	the relationship between the respondent and the head of household dummies (9)
provinces	5.114 (2.595)	South African province dummies (9)
observations	24,949	

Appendix B: Reported Provincial Crime Statistics in South Africa, 1997

	Burglaries per 100 of population	Murder per 100 of population
Western Cape	0.986	0.080
Eastern Cape	0.427	0.066
Northern Cape	0.577	0.063
Free State	0.607	0.048
KwaZulu Natal	0.482	0.073
North West	0.462	0.040
Gauteng	1.047	0.076
Mpumalanga	0.570	0.044
Northern Province	0.266	0.020

Source: Crime Information Analysis Centre: Provincial Crime Specific Statistics, 1997. Note that crime statistics for burglaries include only reported burglaries (and attempt) on residential premises, and not on business premises.