

# The Effect of Marriage on Perceived Health

MICROECONOMETRICS PROJECT

TYRYN CARNEGIE

## Contents

Introduction .....	2
Literature review.....	2
Data used .....	3
Method.....	5
Results .....	6
Conclusion.....	12
Bibliography .....	13

## Introduction

This paper investigates the relationship between marital status and health. More specifically, it tests the hypothesis that in terms of its effects on self-assessed health, South African men and women benefit equally from marriage. This paper finds that marital status does not have a statistically significant relationship on self-assessed health among men or women.

However, when we allow for omitted variable bias we find marital status to have a positive effect on men's self-assessed health.

This paper is divided into a literature review, an overview of the data and variables used, an overview of the methodology and lastly a review of the results.

## Literature review

There is a wealth of literature investigating whether married individuals have better health outcomes on average. Research done in developed countries has shown that compared to single, widowed and divorced persons, married persons enjoy better physiological and psychological health, make fewer demands on the healthcare system and have higher life expectancies (Goldman, 1993) (Bonner et al, 2017).

There are two agreed upon reasons broadly explaining this pattern. The first is *selection into marriage*, that being the healthier and more psychologically well-adjusted are likelier to get married than those not. The second, and regarded to be the more significant, is *marriage protection*. It posits that the marriage provides an environment that is healthier (Goldman, 1993). This includes social pressure towards healthier behaviour, financial stability, as well as a home that provides care and support (Ren, 1997) (Waldron et al, 1997).

Going further, research suggests that being never married carries with it as harmful or perhaps more harmful effects on health than being divorced or separated. This despite the expected emotional and financial burdens that divorce and separation brings (Waldron et al, 1997).

The aim of this paper is to compare marriages effect on perceived health between men and women in South Africa. Channon et al is one of only a handful pieces of research that have looked at marital status's impact on health in the African context. Their research acknowledged that South Africa has a relatively low marriage rate, with many couples opting for cohabitation instead, incorporating that fact into their methodology. Moreover, they accounted for HIV's impact, finding that among younger cohorts relationships have a

negative effect on mortality. Overall the paper found itself in line with the consensus which is that the associated support structures of cohabitation or marriage protect against mortality (Channon et al, 2016).

This project will differ from Channon et al in that it will be making a comparison between genders rather than the impact of romantic relationships solely on women. Generally, the literature finds that marriage has a stronger positive impact on the health of men than women (Gove, 1973) (Ben-Shlomo et al, 1993).

Further, rather than looking at mortality rates as a measurement of health, it will be using the sample's responses to the variable "self-perceived health". As an ordinal variable, it faces issues such as cultural response biases and inconsistent answers between identical respondents. Nevertheless, there is evidence showing that respondents provide reliable information on their own health status and how it changes over time (Vaillant & Wolff, 2012).

This project's findings may offer useful insights for South Africa's health services policy makers.

## Data used

The data used comes from the National Income Dynamic Survey (NIDS) Wave 4. Although Wave 5 is the most recent, unfortunately the maximum likelihood estimation used with a gologit does not work with the dataset. The issue seems to be caused by the income variable, a variable we would rather not omit. The cross section has 27,103 observations from a survey undertaken in 2014, with the adult and household level data used. Of the survey, we use the data from the 15,765 observations that responded to the question on their perceived health. The variables used are similar to those of Bonner et al with the exception of us including additional health indicators (such as BMI and exercise). Care was taken to look for data capturing error. The variables are listed and described below:

As already said in the literature review, the project uses perceived health as an ordinal variable. It starts from 'Poor' to 'Fair', 'Good', 'Very Good', then lastly 'Excellent'.

'Marital status' is a dummy variable that doesn't distinguish between cohabiting and married couples. Combining cohabiting and married couples seems reasonable given the dramatic growth of cohabitation in South Africa along with new legislation that has made it virtually indistinguishable from formal marriage in the eyes of the law (Moore & Govender, 2013). As

well as those who have never been married, the unmarried include the widowed, divorced and separated.

We expect marriage to have different effects on perceived health between genders and we expect age to have a negative effect on perceived health.

‘Diseased’ is a dummy variable that equals 1 if the respondent has either diabetes, heart problems, TB, high blood pressure or asthma. It is coded 0 otherwise. These chronic diseases were all incorporated into one variable, ‘diseased’ so as to make modelling more parsimonious

‘BMI’ was created and used as continuous variable for the summary statistics and recreated as categorical variable for the ordinal logistic models. The latter was done in order to distinguish between unhealthily high and unhealthily low BMIs. The categorical variable BMI is coded into four categories from ‘Underweight’ to ‘Obese’. We set ‘healthy’ as the base category to make interpretation easier.

‘Exercise’ is a dummy variable coded as 1 if the respondent exercises more than once a week.

‘Medical aid’ is a dummy variable controlling for the effect that the security of having medical aid may impose on perceived health. We also expect there to be some correlation between having medical aid and marriage.

‘Depressed’ is recoded to a dummy variable, where we assign 1 to those who have at least moderate depression and 0 to those who at most feel depression sometimes. We expect there to be at least some relationship between being depressed, marital status and perceived health

We include ‘disability’ under the assumption that there is a relationship between being married, perceived health and being disabled.

We include race to account for systemic racial differences in healthcare and possible cultural differences in attitudes towards healthy lifestyles. Race is also included to try control for cultural differences towards answering questions of opinion (Dolnicar & Grun, 2007).

As per Zizzamia et al, income has been tiered into the ‘Poor’, ‘Vulnerable’, ‘Middle Class’ and ‘Elite’. ‘Poor’ is per capita income of less than R1283 per month, ‘Vulnerable’ between R1284 and R3104, ‘Middle class’ between R3105 and R10387, and ‘Elite’ per capita income over R10387 a month (Zizammia et al, 2017).

Highest attained education has been categorised into ‘No schooling’, ‘Primary school’, ‘High school, no matric’, ‘Matric’ and ‘Tertiary’.

The National Technical Certificate (NTC) level 3 is assumed to be equivalent to matric (Educonnect, 2016). We also cap the number of education years to seventeen, so the additional effect of PhDs are not accounted for. Neither are additional diplomas after having done a Master's degree.

The dummy variable 'urban' is included because we may expect there to be a relationship between the likelihood of being married, health and living in an urban environment.

## Method

For all estimation we use the sampling weights calculated by NIDS (Wittenberg, 2009). We also cluster the observations by their household IDs. This is because we expect the regressors and errors to be correlated within households. For example, if a household member has a high BMI, we'd expect it to be more likely that their family members have high BMI than if the household member did not. Not accounting for this would lead to misleadingly small standard errors (Cameron & Miller, 2015). To account for likely heteroscedasticity, we also make use of robust standard errors.

We first provide summary statistics for the entire sample and for subsamples between the genders and married vs non-married.

We then provide an ordinal logit for the entire sample. Because we are using survey weights we cannot make use of a Brant test for the proportional odds assumption<sup>1</sup> (Williams, 2016). So instead we use the results of a Wald test given by the Stata output and use the Brant test on an unweighted ologit.

We find that the ologit fails the proportional odds assumption thus we use a generalised ordinal logit (gologit). It allows variables that do not meet the assumption to have the proportionality restriction relaxed. If the proportional odds assumption fails, we may find the ologit estimate to underestimate the effect of marital status at the lower levels of perceived health attitudes and overestimates its effect at the higher levels of perceived health (or vice versa). The gologit model is less restrictive than a model estimated by ologit would be (whose assumptions are violated in this case) but much more parsimonious than a non-ordinal alternative such as an mlogit. We repeat the procedure with male and female subsamples.

---

<sup>1</sup> The proportional odds assumption means that for each term included in the model, the 'slope' estimate between each pair of outcomes across two response levels are assumed to be the same regardless of which partition we consider (Williams, 2016).

As we find the effect marriage has on perceived health to be insignificant in every case, we repeat the procedure without the BMI, disability, exercise, diseased, depression and medical aid variables, looking for evidence of marriage selection or marriage protection. We suspect that those who are married are either likelier to get married because they are healthy and/or are on average healthier because of spousal pressure to be so, *ceteris paribus*.

## Results

In table 1 we present the proportions and averages from the sample. The table suggests that men are generally older than women when they get married. We have *prima facie* evidence of marriage having a positive effect on perceived health with the proportion of unmarried in the ‘poor health’ category higher than with the married. Similarly, we find the proportion of unmarried in the ‘very good health’ and ‘excellent health’ categories to be less than the married.

However, the unmarried seem to be objectively healthier than the married. The unmarried have a lower proportion with chronic diseases, disability, depression, lower average BMI and a higher proportion who exercise regularly. The reason for this apparent contradiction is due to us not controlling for age (especially), and a host of other socioeconomic variables, some of which are listed in the below table.

Interestingly, we see that depression seems to be about as prevalent among the married and unmarried. We might have expected the unmarried to be lonelier and thus likelier to be depressed than the married.

The married seem likelier to have health insurance than the unmarried, likely due to a combination of the married earning more because they are on average older and can thus afford insurance, that the married are likelier to have dependents that they would want insured, that they’re older and are more likely to fall ill, and lastly because of discounts on insurance plans for married couples.

We find a higher proportion of married are in the higher income categories than the unmarried. This is consistent with international findings and reasons for this include marriage selection, with those with higher income more in demand in the marriage market (Goldman, 1993). The difference in proportions is also likely due to age, with older people more likely to earn more and likelier to be married.

We find that the married are likelier to have tertiary education than the married. Once again, this could be because of age and older generations being better educated, as well as because of marriage selection. Another reason could be less educated communities tending not to get married for cultural or financial reasons (Taylor & Glen, 1976) (Bennet, Bloom & Craig, 1989).

The race categories suggest that the proportion of married is lowest among black people and highest among white people. The differences could be due to differences in education, income and cultural pressure to marry (Bennet, Bloom & Craig, 1989).

**TABLE 1: MEANS/PROPORTIONS AND OBSERVATIONS**

	Married			Unmarried		
	Total	Male	Female	Total	Male	Female
Age	48.64	51.13	46.45	32.21	31.28	33.13
	6411	2895	3516	13891	6196	7695
Perceived health categories						
i. Poor health	0.29	0.3	0.28	0.37	0.4	0.34
	1859	868	984	5138	2477	2616
ii. Fair health	0.27	0.28	0.26	0.31	0.31	0.32
	1731	810	914	4305	1920	2462
iii. Good health	0.31	0.28	0.33	0.25	0.24	0.26
	1987	810	1160	3472	1486	2000
iv. Very good health	0.11	0.11	0.1	0.05	0.04	0.07
	705	318	352	694	248	539
v. Excellent health	0.03	0.03	0.03	0.02	0.02	0.02
	192	87	105	278	124	154
Diseases						
i. Diabetes	0.07	0.08	0.06	0.01	0.01	0.02
	427	220	200	137	62	151
ii. Heart problems	0.02	0.01	0.03	0.01	0.01	0.02
	125	28	102	138	62	152
iii. TB	0.03	0.04	0.03	0.03	0.03	0.03
	308	165	143	552	215	337
iv. High blood pressure	0.17	0.15	0.19	0.05	0.04	0.08
	915	376	546	662	243	573
v. Asthma	0.03	0.02	0.04	0.02	0.02	0.03
	186	56	136	272	122	226
Disabled	0.07	0.07	0.06	0.06	0.04	0.07
	448	202	211	832	247	538
BMI	28.7	26.21	30.87	24.86	22.5	27.17
	6281	2827	3454	13743	6126	7617
Exercise						
i. Never	0.68	0.62	0.73	0.6	0.48	0.72
	4353	1791	2564	8322	2966	5537
ii. Less than once a week	0.09	0.11	0.08	0.09	0.1	0.08
	576	318	281	1248	618	615
iii. Once a week	0.05	0.05	0.05	0.07	0.07	0.06
	320	144	176	971	433	461
iv. Twice a week	0.05	0.06	0.04	0.07	0.09	0.05
	320	173	141	971	556	385



v.	Three times a week or more	0.13	0.16	0.1	0.17	0.25	0.09
		832	462	351	2358	1545	692
	Depressed in last week	0.14	0.12	0.15	0.13	0.12	0.14
		897	347	527	1805	743	1077
	Has medical aid	0.26	0.27	0.25	0.1	0.11	0.1
		1666	781	879	1387	681	769
	Income category						
i.	Poor	0.26	0.26	0.26	0.39	0.36	0.43
		1667	753	914	5418	2231	3309
ii.	Vulnerable	0.3	0.3	0.3	0.32	0.32	0.32
		1923	869	1055	4445	1983	2462
iii.	Middle class	0.29	0.3	0.28	0.21	0.23	0.2
		1859	869	984	2917	1425	1539
iv.	Elite	0.15	0.14	0.16	0.07	0.09	0.06
		962	405	563	972	558	462
	Education						
i.	No years of education	0.03	0.03	0.03	0.01	0.01	0.01
		179	80	99	136	61	75
ii.	Primary school education	0.18	0.2	0.16	0.12	0.14	0.1
		1074	536	526	1630	852	750
iii.	High school, no matric	0.35	0.32	0.37	0.48	0.48	0.48
		2088	858	1215	6521	2922	3599
iv.	Completed matric	0.22	0.23	0.22	0.23	0.23	0.24
		1313	617	723	3125	1400	1799
v.	Tertiary education	0.22	0.21	0.23	0.15	0.14	0.16
		1313	563	756	2038	852	1200
	Urban	0.70	0.71	0.70	0.62	0.63	0.62
		(6411)	(2895)	(3516)	(13892)	(6197)	(7695)
	Race						
i.	African	0.65	0.65	0.64	0.86	0.86	0.86
		4167	1882	2250	11946	5329	6618
ii.	Coloured	0.13	0.13	0.12	0.08	0.07	0.08
		833	376	422	1111	434	616
iii.	Asian/Indian	0.05	0.05	0.05	0.02	0.02	0.01
		321	145	176	278	124	77
iv.	White	0.17	0.16	0.18	0.05	0.05	0.05
		1090	463	633	695	310	385
	Observations	6411	2895	3516	13892	6197	7695

When we control for the covariates listed above, evidence for marriage having a positive effect on health does diminish. We first perform an ordinal logit with perceived health as the ordinal dependent variable. The coefficients are interesting. As expected, we find on average there to be a positive correlation between marriage and better perceived health and we find a very strong negative relationship between better perceived health and age (*ceteris paribus*). There is also, on average and *ceteris paribus*, a strong negative relationship between having a chronic disease and better perceived health. Unexpectedly, we find BMI to have a statistically insignificant relationship with perceived health at the 5% level. Similarly, with income and depression too.

While the ordinal logit gives a coefficient on marital status that we expect, as mentioned in the methods section the ologit model fails the proportional odds assumption. This is strongly

suggested by a Brant test (with weights removed on the ologit) and by a Wald test. The Brant test gives a Chi-squared value of 272.91 with a negligible p-value. The Wald test is given by the Stata output.

Thus, we use a gologit model instead. This time, at the 5% level we get statistically insignificant coefficients on marital status for the entire sample as well as for the gender subsamples. Excellent health is the base category when we present the truncated gologit output below.

**TABLE 2: GOLOGIT - ALL**

	Poor health	Fair health	Good health	Very good health
Marital status	0.115	0.115	0.115	0.115
Age	-0.0301***	-0.0388***	-0.0250***	-0.0193***
Gender	-0.159**	-0.159**	-0.159**	-0.159**
Chronic disease	-0.962***	-0.962***	-0.962***	-0.962***
...	...	...	...	...
Disabled	-1.976***	-1.473***	-1.003***	-1.053***
Medical aid	-0.125	-0.125	-0.125	-0.125
Urban	-0.239	-0.0356	-0.174**	0.100
Constant	5.806***	4.342***	1.458***	-0.174
Observations	15,765	15,765	15,765	15,765

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

**TABLE 3: GOLOGIT - MALES**

	Poor health	Fair health	Good health	Very good health
Marital status	0.225*	0.225*	0.225*	0.225*
Age	-0.0301***	-0.0388***	-0.0250***	-0.0193***
Chronic disease	-0.962***	-0.962***	-0.962***	-0.962***
...	...	...	...	...
Disabled	-1.976***	-1.473***	-1.003***	-1.053***
Medical aid	-0.125	-0.125	-0.125	-0.125
Urban	-0.239	-0.0356	-0.174**	0.100
Constant	5.806***	4.342***	1.458***	-0.174
Observations	15,765	15,765	15,765	15,765

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

**TABLE 4: GOLOGIT - FEMALES**

	Poor health	Fair health	Good health	Very good health
Marital status	0.0397	0.0397	0.0397	0.0397
Age	-0.0391***	-0.0439***	-0.0221***	-0.0178***
Chronic disease	-0.562	-0.570*	-1.550***	-1.152***

...	...	...	...	...
Disabled	-1.030***	-1.030***	-1.030***	-1.030***
Medical aid	-0.447*	-0.447*	-0.447*	-0.447*
Urban	-0.113	-0.0770	-0.231**	0.106
Constant	5.806***	4.342***	1.458***	-0.174
Observations	15,765	15,765	15,765	15,765

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

Because we have insignificant coefficients on marital status, we omit health variables as covariates. We now find there to be on average a statistically significant relationship between perceived health and marital status only among men. We also find that the omitted variable bias increases the magnitudes of other covariates. The truncated output is presented below:

**TABLE 5: GOLOGIT - ALL**

	Poor health	Fair health	Good health	Very good health
Marital status	0.0792	0.0792	0.0792	0.0792
Age	-0.0419***	-0.0464***	-0.0347***	-0.0295***
Gender	-0.234***	-0.234***	-0.234***	-0.234***
...	...	...	...	...
Urban	-0.337	-0.144	-0.265***	0.0584
Constant	5.255***	4.018***	1.652***	0.0745
Observations	19,542	19,542	19,542	19,542

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

**TABLE 6: GOLOGIT - MALES**

	Poor health	Fair health	Good health	Very good health
Marital status	0.209**	0.209**	0.209**	0.209**
Age	-0.0446***	-0.0526***	-0.0382***	-0.0314***
...	...	...	...	...
Urban	-0.401	-0.0876	-0.140	0.118
Constant	5.255***	4.018***	1.652***	0.0745
Observations	19,542	19,542	19,542	19,542

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

**TABLE 7: GOLOGIT - FEMALES**

	Poor health	Fair health	Good health	Very good health
Marital status	0.0107	0.0107	0.0107	0.0107
Age	-0.0344***	-0.0344***	-0.0344***	-0.0344***
...	...	...	...	...
Urban	-0.230	-0.195	-0.352***	-0.0204
Constant	4.662***	3.057***	1.191***	-0.170
Observations	10,781	10,781	10,781	10,781

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

For interpretation's sake, we look at the marginal effects given by the gologit restricted to males with omitted health variables. We are not investigating the other gologit's because they do not have significant coefficients on marital status. The marginal effects at the means are given in Table 8 below.

**TABLE 8: GOLOGIT MARGINAL EFFECTS - MALES**

	Poor health	Fair health	Good health	Very good health	Excellent health
Marital status	-0.00282**	-0.00876**	-0.0334**	-0.00306*	0.0481**
Age	0.000604***	0.00232***	0.00533***	-0.00102	-0.00724***
Race					
ii. Coloured	0.00181	0.00564	0.0212	0.00148*	-0.0301
iii. Asian/Indian	-0.00399	-0.0181	-0.136***	0.239***	-0.0809
iv. White	0.00789	0.0239*	0.0782**	-0.00622	-0.104**
Income categories					
ii. Vulnerable	0.00179	0.00550	0.0199	0.000469	-0.0277
iii. Middle Class	-0.00117	-0.00365	-0.0142	-0.00171	0.0207
iv. Elite	-0.00326	-0.0102	-0.0420	-0.00857	0.0640
Education					
ii. Primary school	-0.00650	-0.0144	-0.0529	0.00159	0.0722*
iii. High school, no matric	-0.00650	-0.0144	-0.0529	0.00159	0.0722*
iv. Matric	-0.00872*	-0.0194*	-0.0747**	-0.00256	0.105**
v. Tertiary education	-0.0203***	-0.0104	-0.0448	-0.0436	0.119**
Urban	0.00543	-0.000566	0.0253	-0.0574***	0.0272
Observations	8,761	8,761	8,761	8,761	8,761

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

All interpretation assumes the ceteris paribus condition. Looking at marital status, on average a married male is 0.28 percentage points less likely to respond as having poor health than if he were unmarried, 0.87 percentage points less likely to respond as having fair health than if

he were unmarried, 3.2 percentage points less likely to respond as having good health than if he were unmarried, and 4.6 percentage points likelier to respond as having excellent health than if he were unmarried. We do not find sufficiently statistically significant marginal effects for marital status on very good health.

For age, we find that on average each year older increases the probability of answering as having poor health 0.06 percentage points, fair health by 0.23 percentage points, good health by 0.53 percentage points and lastly decreases the probability of responding as having excellent health by 0.72 percentage points.

Interestingly, white men are on average 10.4 percentage points less likely to respond as having excellent health than black men. This is interesting given that we control for socioeconomic factors like income. In fact, when we include all the omitted health covariates, the marginal effect increases to 14 percentage points. This suggests possible cultural differences between black and white males in the way they respond to questions with a subjective answer.

It is also curious that income does not have a statistically significant on perceived health. We'd expect that the wealthier you are, the better access you have to decent healthcare, food and exercise.

We find that on average men who have tertiary education are two percentage points less likely to respond as having poor health compared to men with no education. This is perhaps an oddly low difference in probability. We do however see differences of greater magnitudes when making the same comparison except with the excellent health response.

Lastly, compared to men in rural areas, men who live in urban environments are on average 5.7 percentage points less likely to say that they have good health. This is curious considering how we might expect healthcare to be more available and of better quality in cities. It may be saying something about the effect of densely populated areas on health.

## Conclusion

If we control for variables directly associated with health, like exercise or BMI, we find there to be no relationship between self-assessed health status and marital status. However, when we omit those variables, the omitted variable bias suggests that among men there seems to be marriage selection, marriage protection or some combination of the two. That is, men who are healthy have a higher probability of being chosen for marriage and/or that those who are

married possibly benefit from the care and added pressure to live healthily. The stronger effect of marriage on men than on women is consistent with the earlier cited literature.

## Bibliography

- Bennet, N., Bloom, D. & Craig, P., 1989. The Divergence of Black and White Marriage Patterns. *American Journal of Sociology*, 95(3), pp. 692-722 .
- Ben-Shlomo Y., Smith G.D., Shipley M., Marmot M.G., 1993. Magnitude and causes of mortality differences between married and unmarried men. *Journal of Epidemiology and Community Health*, 47(3), p. 200–205.
- Bonner, W., Weiler, R., Orisatoki, R., & Lu, X., 2017. Determinants of self-perceived health for Canadians aged 40 and older and policy implications. *International Journal for Equity in Health*, 16(94), pp. 1-9.
- Cameron, A. & Miller, D., 2015. *A Practitioner's Guide to Cluster-Robust Inference*, s.l.: UC-Davis.
- Channon, M., Hosegood, V., & McGrath, N., 2016. A longitudinal population-based analysis of relationship status and mortality in KwaZulu-Natal, South Africa 2001-2011. *Journal of Epidemiological Health*, Volume 70, pp. 56-64.
- Dolnicar, S. & Grun, B., 2007. Cross-cultural differences in survey response patterns. *International Marketing Review*, 24(2), pp. 127-143.
- Educonnect, 2016. *National Technical Certificate*. [Online] Available at: <https://educonnect.co.za/national-technical-certificate/> [Accessed 17 10 2018].
- Goldman, N., 1993. Marriage Selection and Mortality Patterns: Inferences and Fallacies. *Demography*, 30(2), pp. 189-208.
- Gove, W., 1973. Sex, marital status, and mortality. *American Journal of Sociology*, 79(1), p. 45–67.
- Moore, E. & Govender, R., 2013. Marriage and Cohabitation in South Africa: An Enriching Explanation?. *Journal of Comparative Family Studies*, 44(5), pp. 623-639.
- Ren, X., 1997. Marital status and quality of relationships: The impact on health perception. *Social Science & Medicine*, 44(2), pp. 241-249.
- Taylor, P. & Glen, N., 1976. The Utility of Education and Attractiveness for Females' Status Attainment Through Marriage. *American Sociological Review*, 41(3), pp. 484-498.
- Vaillant, N. & Wolff, F., 2012. On the reliability of self-reported health: Evidence from Albanian data. *Journal of Epidemiology and Global Health*, Volume 2, pp. 83-98.

Waldron, I., Weiss, C., & Hughes, M., 1997. Marital Status Effects on Health: Are There Differences Between Never Married, Divorced and Separated Women. *Soc. Sci. Med.*, 45(9), pp. 1387-1397.

Williams, R., 2016. Understanding and interpreting generalized. *The Journal of Mathematical Sociology*, 40(1), pp. 7-20.

Wittenberg, M., 2009. *Weights: Report on NIDS Wave 1*, s.l.: s.n.

Zizammia, R., Schotte, S., Leibbrandt, M. & Ranchod, V., 2016/17. Vulnerability and the middle class in South Africa. *SALDRU Working Paper*, Issue 188, pp. 1-42.