

# The Determinants Of The Economic Wellbeing Of An Ageing Population

Thobekile Zondi<sup>1</sup>, Nomusa Yolanda Nkomo<sup>2</sup>,  
Eyitayo Francis Adanlawo<sup>3</sup>

<sup>1</sup>*Department of Economics, University of Zululand, South Africa*  
*Email: 201520455@stu.unizulu.ac.za*

<sup>2</sup>*Department of Economics, University of Zululand, South Africa*  
*Email: NkomoY@unizulu.ac.za*  
*ORCID ID: 0000-0002-6526-6227*

<sup>3</sup>*Social Transformation Research Entity,*  
*Faculty of Humanities, North-West University, Mafikeng, South Africa*  
*Email: eyitayofadan@gmail.com 44642555@nwu.ac.za*  
*ORCID ID: 0000-0002-5407-5724*

## Abstract

Studying the impact of aging on GDP per capita does not give a clear picture of the economic wellbeing of elderly people. GDP per capita does not cater for people's level of development or improvements in their standard of living. As a result, it is not a reliable measure of wellbeing. Each person has a different perspective regarding their economic wellbeing, and as a result, this study examines the impact of population aging on the economic wellbeing of the elderly in the King Cetshwayo District Municipality. A cross-sectional data set consisting of one hundred and fifty (150) participants was utilized to explore the determinants of economic wellbeing. Househeads aged 60 and above were asked questions about their demographics, level of education, asset ownership, and affordability of basic needs. The logistic regression model was used to examine the relationship between economic wellbeing and independent variables like age, gender, level of education, household savings, and other variables. The findings revealed that population aging does not affect the economic wellbeing of the elderly. Economic wellbeing was found to be determined by factors such as gender, education, health care expenditure, household savings, and increases in price levels.

**Key Words:** Economic wellbeing, Population, Aging, Logistics regression, Standard of living.

## 1. Introduction

Older people need better health care services and easy access to basic amenities to live longer and have better wellbeing (Chaka and Adanlawo, 2023). To maintain the standard, pressure is on the government to increase the budget for health care and infrastructure. Population aging is also believed to affect economic wellbeing, as most older people are not working and cannot afford their basic needs and services (Adanlawo and Nkomo, 2023). This is one of the reasons why population aging

is a global challenge. Financial support for older people who are no longer employed comes from a variety of sources. According to Murdoch et al. (2018) and Nkomo and Adanlawo (2023), more than half of older adults (65 and older) who are no longer employed depended mostly on their family for financial support, while four out of ten had a retirement pension as their main source of income.

Many nations have reviewed their social pension systems in light of shifting demographics in order to help the elderly (Reddy and Adanlawo, 2018). One question will become an increasingly important concern in the economics of aging: how do older people fare in their post-retirement years? This paper tests two hypotheses:

H0: Population aging does not have a negative impact on the economic wellbeing of the elderly.

H1: Population aging has a negative impact on the economic wellbeing of the elderly.

H0: Population aging is not associated with the health care expenditure of the aged.

H1: Population aging is associated with the health care expenditure of the aged.

This research study uses the ability to afford basic needs as a proxy for economic wellbeing. In view of different authors conclusions that wellbeing is determined by different factors, a review of a few studies that evaluate the determinants of economic wellbeing and, most importantly, the relationship between population aging and wellbeing is provided.

## 2. Determinants of economic wellbeing

Wang et al. (2022) used the ARDL model on a time series data frame over the 1990-2020 timeframe to investigate the effects of population aging on wellbeing. The results showed that population aging is having a detrimental effect on wellbeing. Eliasi et al. (2017) used 380 participants who were 60 years of age or older to investigate the elements that influence the wellbeing or quality of life of the elderly in Iran. The findings showed that wellbeing was associated with marital status, education, and diseases. Contrary to the findings by Wang et al. (2022), this study did not find any association between age or gender and the quality of life or wellbeing of the elderly. Khaje-Bishak et al. (2014) also carried out a cross-sectional study consisting of 184 elderly people in Iran using the Pearson

correlation and independent T tests in order to assess the quality of life of the elderly people. The findings were that there was no correlation between population aging and wellbeing, as the relationship was not significant. Findings by both Eliasi et al. (2017) and Khaje-Bishak et al. (2014) confirm that there is no significant relationship between population aging and economic wellbeing.

Mafini (2017) also examined the impact of education, health, income, and household size on wellbeing in a township in South Africa. This study used a sample of 985 individuals taken from three townships in Gauteng province in order to run the regression analysis. Wellbeing was found to be determined by education, health, and household size. The findings showed that income was not significant in explaining the variation in wellbeing. Rojpaisarnkit (2016) also examined the factors affecting the wellbeing of aged individuals by using data from the Survey of Health, Aging, and Retirement (SHARE) to run regression models for 27 European countries. They found that wellbeing was negatively affected by the level of education, contrary to what Mafini (2017) found.

Martini and Hill (2015) examined how individual savings are related to financial or economic wellbeing by using data from at least 50 000 customers across 38 countries. They found that savings positively impact wellbeing in high poverty societies or areas. Another factor through which population aging may affect economic wellbeing is health care expenditure. Chen et al. (2022) examined the impact that population aging has on health care expenditure using the data of 31 provinces in China for the 2008-2019 period and found that population aging has a positive effect on health care expenditure.

## 3. Research Methodology

### 3.1 Data description

The data consists of a cross-section collected between October and November 2021. The data

was collected from the five local municipalities under the King Cetshwayo District Municipality. The Ntambanana municipality was excluded from this study, since the municipality was split between two districts. The cross-sectional data was collected with the use of questionnaires, which were distributed to 30 older people in each municipality under King Cetshwayo District Municipality, making the total number of questionnaires 150. Thirty questionnaires were distributed to each municipality (Umhlathuze, Umlalazi, Umfolozi, Mthonjaneni as well as the Nkandla local municipality), thus making the total number of observations 150. The questionnaires are equally distributed to ensure that the data represents each local municipality well.

### 3.2 Regression Model

A logistic regression model analyses the relationship between different independent variables and a categorical dependent variable, by calculating the probability of an event occurring over the probability of the event not happening. A logistics regression model is a binary outcome, which is a variable that has two possible values (Adanlawo, Nkomo, and Vezi-Magigaba, 2023). Respondents in this study were asked whether they could afford their basic needs, and they had to answer yes or no. The logit model based on the economic wellbeing of the elderly is specified as follows:

$$\begin{aligned} \text{logoddsEW} = & \beta_0 + \beta_1\text{age} + \beta_2\text{prices} + \\ & \beta_3\text{healthexpenses} + \beta_4\text{savings} + \\ & \beta_5\text{educ} + \beta_6\text{income} + \beta_7\text{dependents} + \\ & \beta_8\text{assets} + \beta_9\text{hospitals} + \beta_{10}\text{facilities} + \end{aligned}$$

$$\beta_{11}\text{marit} + \beta_{12}\text{gender} + \mu \quad (1)$$

Where the binary dependent variable is regressed against variables such as age, prices, health care expenditure, savings, education, income, number of dependents, assets, hospitals, facilities, marital status, and the gender of the participant.

The majority of the samples observed was receiving pension grants from the government, as shown by the 81.3% of the total respondents who reported that their means of survival was the pension grant. Only 11.3% of the participants reported that they were still working, and only 4.7% were receiving a retirement pension. With regards to the dependent variable of the study (the affordability of basic needs), 90.7% of the observed elderly people reported that they could not afford their basic needs, while only 9.3% of the sample said they were able to afford these needs.

#### 3.2.1 Model summary

The model summary is used to indicate whether the model fits the data, or not. Table 1 below shows the model summary of our regression model. The 2log likelihood value is smaller and shows that the model was improved after adding the independent variables. The Cox and Snell R squares, as well as the Nagelkerke R square values, provide an indication of the amount of variation in the dependent variable that is explained by the model. The Nagelkerke R Square of 44.4% shows that 44% of the variation in our dependent variable could be explained by our model.

**Table 1: Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
2	58.639 <sup>a</sup>	0,205	0,444

## 4. Results

### 4.1 Logistic regression model results

The results of our logistic regression model are shown in Table 2 below. The table shows the different coefficients and whether they affected

the economic wellbeing of the elderly, or not. The interpretations will focus mostly on the statistically significant coefficients, as these

coefficients are proven to affect the economic wellbeing of the elderly.

**Table 2: Logistic Regression Model**

Variables in the equation

	B	S.E.	Wald	Df	Significance (p value)	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>								
Age	0,113	0,494	0,052	1	0,819	1,119	0,425	2,947
VAT and price increases	-0,831	0,473	3,089	1	0,079	0,436	0,173	1,100
Health care expenditure	-0,591	0,346	2,917	1	0,088	0,554	0,281	1,091
Savings	2,349	1,036	5,140	1	0,023	10,479	1,375	79,877
Level of education	-0,857	0,429	3,990	1	0,046	0,424	0,183	0,984
Source of income	-0,543	0,485	1,251	1	0,263	0,581	0,225	1,504
No of dependent	0,221	0,152	2,096	1	0,148	1,247	0,925	1,681
Ownership of assets	-1,642	1,060	2,401	1	0,121	0,194	0,024	1,545
Usefulness of hospitals	-0,388	0,457	0,723	1	0,395	0,678	0,277	1,660
Access to facilities	0,212	0,753	0,079	1	0,779	1,236	0,282	5,408
Marital status	0,392	0,417	0,880	1	0,348	1,479	0,653	3,353
Gender (1)	-1,379	0,836	2,723	1	0,099	0,252	0,049	1,296
Constant	6,949	4,316	2,592	1	0,107	1041,814		

The P value shows the level of significance for each independent variable, the 95% CI column shows the 95% confidence interval for the odds ratio of having a unit increase or decrease in the dependent variable. The  $\beta$  column shows the unstandardized beta(B) for each independent variable.

The results from the regression model show that only savings, education, prices, health care expenditure, and gender variables are statistically significant and can significantly affect the economic wellbeing of the elderly in

the King Cetshwayo District Municipality. Age, as an important independent variable in our study, was not found to be statistically significant, which means that it does not significantly determine the economic wellbeing of the elderly. This result is aligned with findings by Eliasi et al. (2017) and Habibi et al. (2012), who found that there was no correlation between age and wellbeing. Independent variables like income, number of dependents, asset ownership, usefulness of hospitals, access to facilities, and marital status were not

statistically significant when evaluating the economic wellbeing of the elderly, and, as a result, they were not interpreted.

A 1% increase in the level of education decreases the probability of the elderly achieving economic wellbeing by 42.4%. Contrary to what most authors found, this result confirms findings by Le Roux and Kagee (2008), who found a significant negative correlation between education and wellbeing. The health care expenditure coefficient is negative and statistically significant at the 10% level of significance; a 1% increase in health care expenditure decreases the probability of an elderly individual achieving higher economic wellbeing by 55.4%.

The savings coefficient is positive and statistically significant at the 5% level of significance. The positive coefficient shows that higher savings lead to an increase in the log odds of the elderly achieving economic wellbeing. A 1% increase in individual savings increases the log odds of an aged individual achieving higher economic wellbeing by 2.34 units. A 1% increase in savings increases the probability of an older individual achieving economic wellbeing. These findings confirm the findings by Martin and Hill (2015), who found that individual savings behaviour and financial satisfaction significantly or positively relate to individual wellbeing.

The prices and increases in the Value Added Tax (VAT) coefficient are negative and statistically significant at the 10% level of

significance. An increase in prices and VAT decreases the log odds of the elderly having economic wellbeing by 0.83 units. This result is not surprising because VAT and price increases affect consumers negatively as they increase their cost of living, thereby reducing their consumption. Of our sample, 81.3% reported that their sole source of income was the social grant they received from the government, which caused them to be most affected by the increase in the prices of the goods they normally consumed.

The gender variable is negative and statistically significant at the 10% level of significance. Our results show that being a female reduces the log odds of achieving economic wellbeing by 1.37 units, which means that being a female reduces the probability of achieving economic wellbeing by 25%. This result is contrary to findings by Chaka and Adanlawo (2023), who found that women have higher levels of reported wellbeing than men worldwide.

#### 4.2. Goodness-of-fit model

The Hosmer-Lemeshow test in Table 3 below shows the goodness of fit of our model. This test calculates whether the predicted probabilities are the same as the observed probabilities. The goodness-of-fit of the model in this test is shown by p-values greater than 0.05 (Hosmer and Lemeshow, 2000). The results from Table 3 below show that our data best fit the model, and this is shown by a significance value of 0.817, which is greater than 0.05.

**Table 3: Hosmer and Lemeshow test**

Step	Chi-square	Df	Sig.
2	4,421	8	0,817

#### Hypothesis testing

Based on the logistic regression results in Table 2 above, population aging, or age, was not

found to be statistically significant in explaining the variation in the economic wellbeing of the elderly.

### First hypothesis testing

H0: Population aging does not have a negative impact on the economic wellbeing of the elderly.

H1: Population aging has a negative impact on the economic wellbeing of the elderly.

Based on the logistic regression result, we accept the null hypothesis that population aging does not have a negative impact on the economic wellbeing of the elderly. This answers our second research question, namely, ‘What impact does population aging have on the economic wellbeing of the elderly?’

**Table 4: Chi-square test results**

	Value	Df	Asymptotic significance (2 sided)
Pesaran Chi-square	14.456	16	0.565
Likelihood ratio	15.339	16	0.500
Linear by linear association	0.673	2	0.412
N of valid cases	150		

The Pesaran Chi-square test results in Table 4 above show that the P-value of 0.5 is greater than a significance level of 5%. Based on this test, we fail to reject the null hypothesis and, therefore, conclude that there is no association between population aging and the health care expenditure of the elderly. This result confirms findings by Howdon and Rice (2018), who found that proximity to death rather than age is what determines health care expenditure.

This result is also aligned with the Red Herring Hypothesis (RHH) used to determine health care expenditure. This hypothesis claims that, apart from income (which is viewed as the ability to pay for health care expenditure) and medical technology, proximity to death rather than age constitutes the main determinant of health care expenditure. This result answers our last research question, "What is the impact of population aging on the health care expenditure of the aged?" as we found population aging to

### Second hypothesis testing

This study uses the chi-square test of correlation in order to examine the relationship between population aging and health care expenditure, as specified in our hypothesis below. The hypothesis for the chi-square test is as follows:

H0: Population aging is not associated with the health care expenditure of the aged.

H1: Population aging is associated with the health care expenditure of the aged.

have no significant impact on health care expenditure. Factors like age, marital status, and suffering from at least one disease were not found to impact the economic wellbeing of the elderly, contrary to what is stated in the existing literature.

### 5. Conclusion and Recommendations

This study reveals that population aging (share of population aged 60+) does not affect either the economic growth (in the long run) or the economic wellbeing of the elderly in the King Cetshwayo District Municipality. The level of education was found to positively affect GDP per capita while negatively affecting the economic wellbeing of the elderly. Furthermore, the level of savings was also found to positively affect both GDP per capita and the economic wellbeing of the elderly in the district under observation. It is highly important that education and savings by the elderly be prioritized, as their lower levels of education

were found to negatively affect their economic wellbeing. The findings indicate that 42% of the respondents had no formal education. It is thereby recommended that awareness programs be implemented in the districts to teach the elderly citizens about health care, the use of advanced technology to better their lives, and other important aspects that would improve their economic wellbeing.

Based on the objective of this study, which examined how population aging affects the cost of elderly healthcare, this study recommends that public health facilities be better equipped to cater for the elderly, as most of the older people are suffering from at least one disease or another. This is evident from the cross-sectional findings: 60% of the respondents were unable to access basic facilities like hospitals, social services, and home affairs facilities easily. This is because basic facilities can only be found in towns, and the elderly citizens must travel far to reach them, while their health status does not allow them to travel with ease. Therefore, the recommendation is for the district municipality to implement facilities that would make such services easily accessible to older people, e.g., creating mobile home affairs, mobile clinics, and social development service centres, or creating local community service centres where all basic facilities can be assessed.

The findings of this study will enable the local municipalities to apply to work towards improving the wellbeing of the elderly in their municipal areas by educating the elderly on the challenges associated with population aging. The study has its limitations; it was a cross-sectional study in which only 150 participants were surveyed, and the Ntambanana Local Municipality was excluded from the analysis, so the results of this study cannot be generalized. Future research could expand on the scope of the study by looking at the wellbeing of the aging population at a national level.

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