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Analysis of the effects of cost-sharing on health status based on social health protection status in Morocco

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Abstract: In Morocco, socio-sanitary indicators suggest that the health status of the population, particularly low-income households, is relatively poor. To address this issue, the social health protection system is being developed. The objective of this article is to examine the impact of an individual's membership in a health insurance scheme on their health status. The main findings from our econometric analysis indicate that being a member of a health insurance scheme increases the likelihood of reporting good health by approximately 8.7%. This empirical analysis challenges the conclusions of certain studies. The uniqueness of this article lies in its quantitative analysis of the effect of health insurance on population health in Morocco. Consequently, the results of our study suggest that policies aimed at promoting and expanding the social health protection system in Morocco could reduce financial barriers to healthcare access and, consequently, improve individuals' health status.

Keywords: social health protection; health insurance; health status; Morocco.

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1. Introduction

It's reasonable to assume that insurance improves access to and utilization of health services, leading to improved health status. Economic theory suggests that people opt for health insurance not only to mitigate the risk of financial loss but also as a means of accessing healthcare that would otherwise be unaffordable (Arrow, 1963; Pauly, 1968). Indeed, contemporary work on risk and decision-making (O'Brien, 1990) is largely rooted in von Neumann-Morgenstern's expected utility theory (Biswas, 1997). Theories of decision making under uncertainty (Ruger, 2007), in particular expected utility theory, provide a foundation for the demand for health insurance. According to von Neumann-Morgenstern's expected utility theory, individuals maximize their utility by minimizing the financial

uncertainty and risk associated with potential illnesses and the resulting expenditure. The theory suggests that if the expected utility of taking out insurance is higher than that of not taking it out, an individual will choose to join (Cutler & Zeckhauser, 2000) based on his or her risk preferences. Risk-averse individuals are more likely to affiliate than those who enjoy taking risks (Arrow, 1963).

Approaches to health insurance generally adopt a neoclassical perspective of economic welfare theory, assuming that individuals act rationally to maximize their utility, and that firms, such as insurance companies, act rationally to maximize their profits (Pauly et al., 2006). The theory postulates that individuals make choices to optimize their preferences over time, while society aims to maximize social well-being or global preferences. It assumes that individuals make rational decisions, taking into account cost-benefit calculations under different circumstances, and that the free market represents the most efficient way to allocate resources, prioritizing efficiency over equity (Culyer & Newhouse, 2000). However, in the real world, individuals are not always rational, and accurately assessing their health risks and determining the appropriate amount of insurance needed can be challenging.

Folland et al. (2013) consider that individuals invest in their health not only by using medical care but also by paying particular attention to their diet, exercise, and time management. These investments contribute to maintaining and improving their health, which translates into an overall improvement in their well-being. Although healthcare is considered a normal good, it differs from traditional assumptions about consumer behavior due to various factors such as the lack of comprehensive information, the inability to predict the onset of disease, future healthcare needs, and the financial implications associated with illness. In this context, health insurance plays a key role in mitigating these uncertainties by protecting individuals against unforeseen financial risks and illness-related losses (Folland et al., 2013).

Grossman (1972) formulated the theory of human capital to elucidate the motives driving the demand for healthcare. According to this theory, the desire for good health serves as the foundation for seeking healthcare services. It posits that health functions as both an investment and a consumption good. Individuals invest in their well-being through healthcare by adopting healthy behaviors and pursuing education to promote good health. Consequently, good health leads to increased productivity, lifelong earnings, and engagement in activities that contribute to overall life satisfaction (Aboutayeb et al., 2023).

Grossman (1972) further argues that health must be nurtured before it can be fully enjoyed. In this context, health insurance is recognized as a crucial facilitator of both the production and consumption of healthcare services, thus contributing to improved well-being. The issue of health insurance is of paramount importance on the political agenda in low-income countries, particularly during the transition from free health services to the implementation of user fees (Jowett, 2004). Concerns have been raised about the potential income-based disparities in accessing healthcare services that may arise from the introduction of these user fees (Kazungu & Barasa, 2017).

Ruger's (2007) study proposes an alternative perspective on health insurance that challenges the idea that equitable access to healthcare is solely a matter of medical ethics. Instead, Ruger presents a framework focused on universal health insurance coverage, drawing on Amartya Sen's capability approach (Sen, 1999). The aim of this framework is to improve both health well-being and social security by offering protection against health problems and their associated economic consequences. The question of whether health insurance improves health is key to assessing the value of initiatives to extend coverage. Culyer & Newhouse (2000) point out that individuals seek health insurance because they are concerned about their well-being. Proponents of this view assert that health insurance certainly leads to increased healthcare utilization, and that many medical interventions have proven highly beneficial, particularly for specific population groups (Levy & Meltzer, 2008; Rand, 2006).

However, arguments to the contrary suggest that more medical care does not necessarily mean better outcomes and may even have negative consequences, leaving the question of the benefits of health insurance without a clear answer. These arguments point to other approaches likely to improve health, such as immunization programs or direct investment in medical care and improved health systems. Consequently, the effectiveness, efficiency, and overall impact of extending insurance coverage as a policy instrument for improving population health are open to question.

Difficulties in the health insurance market stem from its unfree nature, with distorting factors such as adverse selection, moral hazard, and asymmetric information (Arrow, 1963; Folland et al., 2013). This gives insurance companies an advantage in terms of selection, thus distorting the market (Arrow, 1963; Cutler & Zeckhauser, 2000). In 1982, the Rand study examined health insurance cost-sharing in the United States and its impact on health service utilization, quality of care, and overall health (Brook et al., 1984; Rand, 2006). The results of the Rand study are considered a benchmark for assessing the potential impact of health insurance reforms on medical spending, healthcare utilization, and health indicators (Aron-Dine et al., 2013).

Numerous studies have explored the relationship between health insurance and health outcomes or health status, with the majority focusing on healthcare utilization as an outcome measure. As for Were et al. (2017), they assessed the impact of health insurance on access to and use of services among pregnant women and found significant differences between insured and uninsured groups. They observed that health insurance significantly benefits women from lower socio-economic backgrounds. Wang et al. (2016) and Comfort et al. (2013) also provide evidence of a positive correlation between health insurance and maternal healthcare utilization, using a variety of outcome indicators. Alkenbrack (2011) found a positive association and impacts between community health insurance membership and financial protection and service utilization. On the other hand, Ataguba & Goudge (2012) found that insurance coverage led to an increase in the use of private health services but had no significant impact on the use of public services. In fact, insurance coverage has not translated into reduced direct payments for plan members compared to non-members, raising concerns about the effectiveness of insurance in protecting against financial risk and catastrophic expenditure.

The introduction of cost-sharing measures has not had a significant impact on the quality of healthcare. However, research suggests that economically disadvantaged people with serious health problems have better outcomes when insurance plans offer more comprehensive coverage (Brook et al., 1984). In addition, one study demonstrated a 10% reduction in mortality among people with hypertension (Rand, 2006). These results underline the importance of minimizing, if not eliminating, cost-sharing for vulnerable populations, particularly those suffering from chronic illnesses. The lack of health insurance has a considerable impact, particularly among adults with significant healthcare needs, leading to delays in accessing necessary care and long-term escalation of medical expenses (Folland et al., 2013).

Numerous studies have shown that extending public insurance coverage to pregnant women and children is associated with lower infant mortality rates and increased use of preventive care for children (Culyer & Newhouse, 2000). Private health insurance has significantly improved the health status of the elderly (Dor et al., 2006). The favorable and lasting effects of health insurance extend to different disease categories, making a strong case for the implementation of comprehensive health insurance strategies targeting the entire uninsured population.

As part of the drive to strengthen its healthcare policy and improve access to healthcare for the entire population, Morocco is striving to consolidate its healthcare financing mechanisms by introducing a basic medical coverage program. Law 65-00, known as the Basic Medical Coverage Code, laid the foundations for medical coverage by introducing a compulsory health insurance scheme (AMO) based on the principles of mutualization and solidarity. In addition, a medical assistance scheme (AMO-

Tadamoun) (formerly RAMED) was set up, operating on the principles of national solidarity and social assistance.

In Morocco, health insurance plays an essential role as the second-largest contributor to the healthcare system. In 2018, it provided medical coverage for 40.6% of the Moroccan population, mobilizing around 17.9 billion dirhams, equivalent to 29.3% of total healthcare expenditure for that year. This proportion represents an increase of 6.9 percentage points compared to 2013. However, the government's share of healthcare funding, from national and local tax resources, remained relatively stable between 2013 and 2018, holding steady at around 24% in 2018 (Ministry of Health (MOH), 2018). For the year 2021, access to medical coverage will be available to 74.2% of the Moroccan population, compared to 70.2% in 2020 and 69.9% in 2019, an increase of 6.8% for this period. However, 25.8% of the population will have no coverage at all (ANAM, 2021).

As a result, the impact of this spending can be seen in the infant mortality rate and life expectancy at birth. As far as the infant mortality rate is concerned, Morocco has seen a significant drop. It fell from 31.4 in 1992 to 13.6 in 2018, representing a reduction of 56.7%. Similarly, the infant mortality rate fell from 57.3 to 18.0 deaths per 1,000 live births between 1992 and 2018, a reduction of 69%. Life expectancy at birth has risen considerably since the 1970s. Whereas it was estimated at 47 years before the 1960s, it now exceeds 75 years, representing an increase of around 29 years (HCP, 2022).

However, despite the extension of this medical coverage, observers stress the importance of the more or less forced exclusion of disadvantaged populations. The aim of this article is to shed light on the effective contribution of mutual health insurance to access to care and, consequently, to health status. It also aims to study the effect of an individual's membership in a social health protection scheme (health insurance) on his or her health status. In particular, by analyzing membership profiles, social dynamics, and the functioning of basic health coverage, the article seeks to identify the factors that lead to the exclusion of certain segments of the population from these social protection systems against the risk of illness. To our knowledge, few empirical studies have been carried out to date on this subject in Africa in general, and in Morocco in particular. This research, therefore, represents a significant empirical contribution.

To evaluate the efficacy of Morocco's pay-as-you-go social health protection system and its influence on individual health status, we employed the ordered probit model. This analytical approach allows us to investigate the association between an individual's health insurance enrollment and their health status. Data were gathered through a questionnaire administered directly to participants, utilizing a two-stage random sampling method. The survey was conducted in 2023, encompassing a sample size of 1,048 individuals, with or without health coverage. The reference period for data collection was set at the previous 25 days to reduce the probability of individuals forgetting pertinent information.

The remainder of this article is organized as follows: Section 2 examines the factors influencing health insurance uptake. Section 3 presents the data used to estimate this effect and the method used to estimate the econometric model. Section 4 presents the results of the descriptive analysis of the data and the complementary econometric analyses investigating the relationship between health insurance membership and health status. Section 5 concludes.

2. Determinants Influencing Health Insurance Uptake

Understanding the factors that influence the uptake of health insurance is essential for developing and extending coverage. Although research into the determinants of insurance uptake produces context-specific results, this knowledge is crucial for designing effective strategies to improve and target coverage. Our selection of these variables is based on previous studies (Lindeboom, Portrait, & Van den Berg, 2002), economic theory (Grossman, 1972), and the specific Moroccan context.

Grossman's seminal economic model (1972) is an essential pillar in the field of health economics, providing a theoretical framework for numerous empirical studies. According to this model, health is seen as a durable capital acquired at birth and managed throughout life. This health capital diminishes over time but can be increased by investments that largely depend on the individual's socioeconomic situation. In our study, the dependent variable is individual health status. We explore several independent variables, including sociodemographic factors such as age, gender, marital status, and place of residence, as well as socioeconomic factors such as membership of a health mutual, social category, and income. Taking these aspects into account, we identified the following variables:

- **The use of insurance** is influenced by multiple factors, as several researchers have pointed out. Age plays an important role, as indicated by Grossman's (1972) model, which suggests that the rate of decline in health is closely related to age, with health deteriorating as individuals age beyond a certain threshold in their life cycle.
- **Gender** is another important factor, with studies such as Franco et al. (2008) suggesting that men experience a higher rate of health decline than women, who generally have a longer life expectancy.
- **Place of residence** is also a key consideration, as different communities, including urban, semi-urban, and rural areas, reflect different levels of regional development. Studies by Aregbeshola & Khan (2018) and Were et al. (2017) show that people living in rural areas are less likely to enroll in health insurance programs.
- **Marital status** is an additional variable that can have an impact on health status, with Ataguba & Goudge (2012) suggesting a positive correlation between marital status and overall health. Furthermore, the decision to take out health insurance is influenced by the uncertainty that individuals face in their economic environment. Risk-averse individuals, as proposed by Arrow (1963), seek insurance coverage to mitigate this uncertainty. In this context, we assume that membership of a mutual health insurance company promotes better access to quality health services, in line with the findings of Platteau & Ontiveros (2013)
- **Social category** has a significant impact on an individual's health, as research suggests that economically disadvantaged people are more likely to contract illnesses due to inadequate hygiene conditions, precariousness, and limited financial resources. In this context, professional status plays a crucial role. Workers in the formal sector are more likely to opt for health insurance than those in the informal sector (Aregbeshola & Khan, 2018).
- **Income:** we believe that people with higher incomes are more willing to allocate funds to their healthcare needs. Studies indicate that people with higher incomes are more likely to enroll in health insurance plans (Duku, 2018). In addition, wealthier households, including assets such as land and livestock, increase the likelihood that their members will seek insurance coverage (Ataguba & Goudge, 2012; Duku, 2018).

This review highlights several determinants that have been investigated, with mixed results for some factors, highlighting the need for context-specific studies. In addition, the selection of determinants appears to be theory-driven and largely dependent on the type of insurance scheme examined. In the case of Morocco, the predominant coverage scheme is compulsory health insurance, which includes both compulsory and complementary components. Consequently, it is essential to understand the factors influencing insurance uptake, particularly for the complementary component, while recognizing that employment plays a crucial role in the compulsory component.

3. Data and Estimation Method for the Econometric Model

This cross-sectional study was carried out during the summer of 2023 at health facilities in the coordinated care network. Due to limited resources and difficult access to households, the study focused on patients who had received care in these health centers, whether or not they had health

insurance coverage. The qualitative approach adopted, involving direct interviews with patients in the health facilities, was intended to compensate for the lack of data available from mutual organizations in previous empirical studies. All patients aged 18 and over who voluntarily participated and answered the survey questions were included in the study. Patients with serious pathologies requiring intensive care hospitalization were excluded from the study to take into account their unavailability or inability to complete the questionnaire.

Cluster sampling was used to randomly select two health centers from the five operational teaching hospitals making up the coordinated care network. Data were collected using a questionnaire administered directly to participants, who were selected from the health centers according to their odd order of arrival (n = 1048). Questions were asked in the language best understood by each participant, either French or Arabic. Data were entered and analyzed using SPSS software, and chi-square statistical tests were performed for comparisons, with a significant p-value set at $p < 0.05$. To examine the relationship between health insurance membership and health status, we use the ordered probit model.

As the measurement scale of the self-rated health variable is "ordered," we use the ordered probit model to estimate the impact of an individual's enrollment in medical coverage on his or her health status (Ndongo, Mahieu, & Nanfosso, 2014). The main feature of ordered qualitative response models is that all choices depend on a single index function. This approach is appropriate when responses possess a natural order. Consequently, we postulate a linear relationship between an unobserved continuous latent variable, denoted hi, and the independent variables, Xi, such that:

$h_i = \beta X_i + \mu_i$ $\mu(i) \rightarrow N(0,1)$ (1)

This "hi" variable defines an observed variable corresponding to the different categories of self-assessed health status. The method used to estimate the model parameters is maximum likelihood.

Our approach involves asking participants directly about their health status and is based on their self-assessment. The advantage of this approach is that it uses simple questions to measure health. However, its main limitation is that it relies on the subjective judgment of respondents, which is influenced by their individual personalities and other factors that are difficult to observe and control in a survey setting (Clark & Vicard, 2007). In our study, we adopt this approach. We use responses to a multiple-choice question: "How would you rate your current state of health?". Responses are coded into three levels: "poor = 1", "average = 2", and "good = 3". We chose to focus on a neutral adjective to minimize bias.

In addition, the independent variables, Xi, are coded as follows in our study. For membership of a health insurance scheme, we use the value 1 if the individual is affiliated with a mutual insurance company and 0 otherwise. For gender, we assign a value of 1 if the individual is male and 0 otherwise. Age is measured in completed years. For place of residence, we assign a value of 1 if the individual lives in an urban area and 0 if he or she lives in a rural area. Marital status is coded as follows: 1 for married individuals and 0 for singles. Social category is represented by the following numbers: 1 for executives, 2 for employees, 3 for self-employed, 4 for unemployed, and 5 for others. Finally, income is measured as the logarithm of the individual's monthly income.

4. Results

4.1.1 Results of Descriptive Data Analysis

The distribution of the individuals in our sample reveals that 40.5% consider their health to be average, 38.2% rate it as good, and the remaining 21.4% perceive it as poor (see Table 1).

Table 1: Distribution of Individuals in the Sample by Health Status

Health status	Frequency	Percentage	Valid percentage	Cumulative percentage
poor	224	14,7	21,4	21,4
average	424	27,8	40,5	61,8
good	400	26,2	38,2	100,0
Total	1048	68,8	100,0	

Source: Authors

Table 2 shows that 16.4% of people with medical coverage rate their health as poor, 32.4% as average, and 24.4% as good. Conversely, among those without medical coverage, 5% consider their health to be poor, 8.00% average, and 13.7% good. We can, therefore, observe that a higher proportion of mutualists (16.4%) than non-mutualists (5%) declare themselves to be in poor health. This difference can be attributed to the improved access to healthcare enjoyed by mutualists.

Table 2: Health status of individuals according to their health coverage

		Medical coverage (%)		Total
		No	Yes	
Health status	poor	5,00	16,40	21,40
	average	8,00	32,40	40,50
	good	13,70	24,40	38,20
Total		26,70	73,30	100,00

Source: Authors

Table 3 shows that women with medical coverage rate their health as worse (17.60%) than men with medical coverage (14.60%). This disparity is also found among non-mutualists, where 6.80% of women and 2.60% of men declare their health to be poor. This difference can be explained by the fact that women are generally more health-conscious than men (Franco et al., 2008). In addition, they face specific risks associated with motherhood (Brunet et al., 2005), as well as increased exposure to physical and sexual violence and precarious socio-economic conditions (Berchet & Jusot, 2012).

Table 3: Individual health status by health coverage status and gender (%)

Gender	Health status	Medical coverage (%)		Total
		No	Yes	
Female	poor	6,80	17,60	24,30
	average	8,10	33,10	41,20
	good	14,90	19,60	34,50
Male	poor	2,60	14,90	17,50
	average	7,90	31,60	39,50
	good	12,30	30,70	43,00
Number of observations		280	768	1048

Source: Authors

Table 4 reveals that female members of AMO Tadamon (formerly RAMED), AMO, and the complementary insurance scheme perceive their health status as worse (25.50%) than male members of AMO Tadamon (formerly RAMED), AMO, and the complementary insurance scheme (19.10%). This result confirms the idea that health insurance programs differ in terms of membership options (voluntary, compulsory), contribution mechanisms (risk-based, community-based, income-based), and administrative structures (for-profit, non-profit, public) (Sekhri & Savedoff, 2005). Consequently, examining the determinants of enrollment must take into account the specific context and type of insurance scheme. For example, women may be more motivated to protect themselves against health risks due to greater risk aversion and more regular use of the healthcare system. Men, on the other hand, are more likely to enroll because of their employment and greater financial capacity.

Table 4: Individual health status by health insurance plan type and gender (%)

		Type of health insurance		
Gender	Health status	AMO Tadamon (ex-Ramed)	AMO and complementary insurance	Total
	poor	15,10	10,40	25,50
	average	17,00	30,20	47,20
	good	1,90	25,50	27,40
		144	280	424
Female	Total	34,00	66,00	100,00
	poor	6,70	12,40	19,10
	average	3,40	37,10	40,40
	good	6,70	33,70	40,40
		60	296	356
Male	Total	16,90	83,10	100,00
		204	576	780
Total		26,20	73,80	100,00

Source: Authors

Table 5 presents the results of the bivariate analysis. It shows that among individuals living in urban areas, 8.80% perceived their health as poor, 23.30% as average, and 27.90% as good. In contrast, among rural residents, 12.60% report their health as poor, 17.20% as average, and 10.30% as good. This suggests that rural residents are more likely to report poor health (12.60%) than urban residents (8.80%). In other words, urban residents tend to have a significantly better perception of their health than their rural counterparts. It's important to note that self-assessment of health status is a subjective judgment influenced by a variety of physical and psychological factors, as previous studies have highlighted (Aregbeshola & Khan, 2018; Were et al., 2017). This disparity may be explained by farmers' limited awareness of their own health status and the relatively easier access to health services for urban residents compared with rural residents. As a result, people living in rural areas are less likely to take out health insurance.

Table 5: Bivariate analysis results

Variables		Health status *			P-value**
		poor	average	good	
Residence	Rural	12,60	17,20	10,30	0,000
	Urban	8,80	23,30	27,90	
Sexe	Female	13,70	23,30	19,50	0,005
	Male	7,60	17,20	18,70	
Level of education	No diploma	5,00	5,70	0,40	0,000
	Primary school	5,30	4,20	6,90	
	High school	4,60	8,80	7,30	
	Higher education	6,50	21,80	23,70	
Marital status	Single	6,90	22,10	26,00	0,000
	Married	14,50	18,30	12,20	
Medical coverage	No	5,00	8,00	13,70	0,000
	Yes	16,40	32,40	24,40	
Income	Less than 2 500	11,10	14,10	9,50	0,000
	Between 2,501 and 4,166	3,40	5,00	3,10	
	Between 4,167 and 5,000	2,70	7,60	5,30	
	Between 5,001 and 6,666	3,10	5,30	7,30	
	Between 6 667 and 15 000	0,80	7,30	9,90	
	More than 15,001	0,40	1,10	3,10	
Number of observations		224	424	400	

*The numbers represent frequencies as percentages, and **P-Value indicates the independence test of variables (chi-square test). **Source** : Authors

Grossman (1972) postulates that wage level and education influence the demand for health insurance, although the direction of these effects is not definitive. Furthermore, 5.00% of individuals with no qualifications perceive themselves to be in poor health, 5.70% on average, and 0.40% in good health. Similarly, 5.30% of individuals with primary education consider themselves to be in poor health, 4.20% on average, and 6.90% in good health. Conversely, 4.60% of people with secondary education consider themselves to be in poor health, 8.80% on average, and 7.30% in good health. Conversely, 6.50% of people with a higher level of education declared themselves to be in poor health, 21.80% on average, and 23.70% in good health. As a result, individuals with a high level of education perceive their health as relatively worse (17.3%) compared to those with a secondary (21.8%) or primary

(33.5%) level of education. These findings are consistent with those of Amu et al. (2018) and suggest that health insurance uptake rates increase with education level, particularly among individuals with secondary and higher education. This could indicate that individuals with higher levels of education adopt healthier lifestyles than others. In addition, individuals with an income of over 15,001 DH consider their health to be less poor than those with an income of less than 2,500 DH. This highlights the facilitation of access to quality health services for individuals with a substantial income (Duku, 2018).

Descriptive analysis of the data revealed the emergence of a link between having adequate social health protection (health insurance) and an individual's health status. However, this approach is limited by the multitude of factors involved and therefore does not allow definitive conclusions to be drawn on the existence and magnitude of the relationship. To overcome this limitation, additional econometric analyses are required.

4.1.2 Econometric analysis results

The aim here is to present the information that supports the robustness of the model and its implementation. However, the implementation of the ordered probit model requires checking the stability of the coefficients before interpreting the estimation results. Since ordered regression provides only one coefficient per explanatory variable, it is necessary to test the hypothesis that the coefficients are globally stable, regardless of the pairwise comparison of the modalities. This hypothesis is tested using the ordered probit regression procedure in SPSS, which can be accessed through the generalized linear model drop-down menu.

According to Table 6, there is a positive correlation between income and health insurance coverage. This correlation is statistically significant at the 1% level (p-value = 0.000), although it is relatively modest (0.325). The findings indicate that individuals with higher incomes are more likely to have health insurance coverage. The positive correlation suggests that as income increases, the likelihood of having health insurance also increases. However, it is important to note that the strength of the correlation is moderate, indicating that income is just one of several factors influencing health insurance coverage.

Table 6: Correlation test between Health status membership and income

	Health status	**Income**
Health status	1	
Income	0,325***	1
Significance	0,000	

***The correlation is significant at the 0.01 level. **Source :** Authors

The fit statistic (information on model fit) indicates a significant value below 0.05 ($p < 0.05$). This suggests a significant improvement in fit over the null model and supports the hypothesis that the model is well fitted. Additionally, the model summary shows the pseudo R-squared value. In the case of ordered probit regression, the McFadden value of the R-squared is used. Based on this, we can conclude that there was a 14.8% improvement in predicting outcomes based on the predictors compared to the null model.

The model exhibits overall significance at the 1% level (see Table 7). However, it is important to note that our results may be affected by bias. There could be a positive correlation between income and health insurance coverage, which might lead to an underestimation of the impact of income and an overestimation of the role of health insurance coverage. As a result, the role of income could be underestimated and the uptake of health insurance coverage overestimated.

Table 7: Results of ordered probit model estimation

Parameter	Estimate	Standard error	Wald	Significance	95% confidence interval	
					Lower terminal	Upper terminal
Medical coverage	0,087 (***)	0,085	32,639	**0,000**	0,320	0,654
Age	-0,336 (***)	0,032	111,632	**0,000**	-0,399	-0,274
Gender	0,118	0,076	2,438	0,118	-0,030	0,266
Marital status	-0,015	0,092	0,027	0,869	-0,194	0,164
Place of residence	0,112	0,084	1,755	0,185	-0,054	0,277
Income	0,726 (***)	0,209	12,032	**0,001**	0,316	1,136
Social category						
Executive	0,595 (***)	0,165	13,036	**0,000**	0,272	0,918
Employee	-0,010	0,128	0,006	0,937	-0,260	0,240
Self-employed	0,209	0,136	2,363	0,124	-0,058	0,476
Unemployed	0,264 (**)	0,133	3,909	**0,048**	0,002	0,525
Other	0,506 (***)	0,144	12,349	**0,000**	0,224	0,788

Notes: Significance at 1% (***), 5% (**), & 10% (*). **Source** : Authors

Membership of a health insurance scheme has a positive impact on an individual's state of health. For example, people who are members of a health insurance scheme are 8.7% more likely to be in better health than those who are not. This improvement can be explained by better access to healthcare services and the higher quality of care provided in contracted healthcare establishments. These results confirm the idea that health insurance has a beneficial effect on individual health (Wang et al., 2016). These findings support the research conducted by Alkenbrack (2011), which established a positive association between community health insurance membership and enhanced financial protection and service utilization. Accordingly, Ruger (2007) argues that the absence of health insurance amplifies vulnerability and insecurity, compelling individuals and households to resort to self-insurance or informal risk-sharing arrangements. Consequently, this leads to depleting savings, selling assets, borrowing, or accumulating debt to cover healthcare expenses, placing people's health and even their lives at risk. Conversely, good health contributes to heightened productivity and income, benefiting both individuals and the overall economy. Ruger emphasizes that universal health insurance plays a fundamental role in human development as it enhances economic and overall security, underscoring the interconnection between health and economic well-being. Furthermore, data from the study conducted by Stone et al. (2014) indicates that insured individuals exhibit higher rates of healthcare utilization.

Age has a negative and highly significant impact on health status: as an individual's age increases, their health status deteriorates. Thus, for each additional year of age, the probability of being in good health decreases by around 3.2%. This result is in line with the theoretical analysis by Grossman (1972), according to which an individual's initial health capital depreciates rapidly with age. It also confirms the empirical results obtained by Allonier et al. (2009).

Regarding gender as a determinant of health insurance uptake, our results indicate that gender has a positive but insignificant impact on health status. This result is similar to those suggesting that women and female-headed households are more likely to enroll (Aregbeshola & Khan, 2018), while other

studies indicate the opposite (Kazungu & Barasa, 2017). These contradictory results suggest that the determinants of health insurance participation may vary according to the context.

Furthermore, our results indicate that place of residence has a positive but insignificant impact on health status. However, other empirical research confirms that perceptions of health status differ between urban and rural dwellers, with people living in rural areas less likely to obtain health insurance. Geographical location also plays a role, as observed by Aregbeshola & Khan (2018) in Nigeria. This can be attributed to the fact that individuals living in rural areas often have limited financial resources, and access to healthcare is also limited. In rural areas, the presence of health centers or dispensaries is not always guaranteed, and even when they do exist, the quality of care can be substandard (insufficient nursing staff, lack of medicines, inadequate infrastructure, etc.).

As far as marital status is concerned, our results indicate that married people are more inclined to join a health insurance scheme than single people. This could be due to greater financial vulnerability and relatively lower incomes among married individuals (Ataguba & Goudge, 2012). But, the impact of marital status on health status is negative but not significant, suggesting that it is not a significant determinant in terms of health outcomes.

Individuals' professional status can have a notable impact on their health status. Specifically, being an employee is linked to a decrease of approximately 1% in the likelihood of being in good health compared to being an executive. This distinction may be attributed to the fact that executives typically enjoy more comprehensive health coverage compared to employees. Income also plays a significant role in the decision-making process concerning health insurance enrollment. This finding aligns with the study conducted by Duku (2018), which suggests that individuals with higher incomes are more inclined to opt for health insurance. Other studies further support this positive correlation between income and health insurance enrollment.

5. Conclusion

The main objective of this article was to examine the impact of an individual's affiliation to medical coverage (health insurance) on their health status. The results of the ordered probit estimation indicate that individuals affiliated with a health insurance plan have approximately 8.7% higher chances of being in better health than those who are not. These results corroborate previous empirical studies that have also demonstrated the positive effects of health insurance on individual health (Wang et al., 2016; Alkenbrack, 2011). The role of the healthcare sector is fundamental in achieving this objective, as there can be no economic development without improving the health of the population. According to Arrow, a healthy person is considered a capital investment, leading to higher productivity and contributing to economic growth. In fact, an individual's level of health influences their productivity as a worker, which in turn affects overall economic development (Arrow, 1963).

Based on our results, it is clear that social health protection plays a significant role in improving the health status of the Moroccan population. As a result, health coverage will contribute to enhancing individual well-being, leading to an increase in the utilization of healthcare services in case of illness. Inequalities in healthcare access will be reduced, both socially and regionally, through the expansion of healthcare services geographically. By mitigating the cost burden of healthcare, health insurance will, in theory, provide equitable access to health-promoting medical services for both disadvantaged and affluent individuals. This implies that individuals with low incomes will have the opportunity to access the same level of care as those with higher incomes, thus contributing to their overall health status. But, it is important to note that the relationship between income and healthcare utilization is not always straightforward, as various social and cultural factors can also influence disparities in healthcare service utilization. In addition to income-related factors, a patient's decision to seek healthcare services is directly influenced by their income level.

With the transition of former beneficiaries of the Medical Assistance Scheme (RAMED) to Compulsory Health Insurance (AMO), Morocco has taken a significant stride towards realizing the royal project for universal social protection. The country has made substantial progress in its health coverage policy since gaining independence. From the inception of the first health policy in 1959 to the achievement of 100% universal health coverage on December 1, 2022, our nation has diligently worked to ensure equitable access to healthcare for all its citizens.

However, it is crucial to acknowledge that the concept of social protection policies in the healthcare sector predates the pandemic crisis. Consequently, the pandemic has shed light on the pressing need for a profound transformation at various levels of the public management chain. The health coverage system, being a part of the broader social protection framework, confronts several challenges. It is fragmented and complex, with notable regional and social disparities, and faces limitations in terms of human and financial resources. To combat inequality and poverty effectively, extending health coverage and implementing a pension scheme for the self-employed are pivotal steps. Moreover, these measures will promote sustainable and inclusive growth through a hybrid and diversified financing approach.

However, the mere presence of social protection schemes is not sufficient. On the one hand, there is a pressing need to simultaneously enhance the quality, quantity, and accessibility of healthcare and medicines in many low-income countries like Morocco. On the other hand, it is crucial to establish a robust legal and regulatory framework that empowers these social protection schemes to function effectively. Additionally, fostering public-private partnerships in the healthcare sector is essential, as certain healthcare providers and services may perceive medical coverage as too informal to engage in collaboration. More specifically, the objective is to bolster the capacities of the national health system to consistently improve the actual conditions of medical coverage, aligning with the resolutions adopted by the General Assembly.

To address the various limitations and assess the achieved outcomes, we propose several perspectives: in order to enhance the effectiveness of social protection schemes in low-income countries like Morocco, it is crucial to conduct a comprehensive analysis of the challenges and obstacles encountered in healthcare accessibility. These challenges may include geographical disparities, inadequate medical facilities, or infrastructural inadequacies. Such analyses would enable targeted interventions and relevant policy adjustments.

Moreover, the engagement of all relevant stakeholders is of paramount importance, including healthcare providers, policymakers, and local communities, to establish a well-balanced and sustainable healthcare system. Involving these stakeholders in the decision-making process could lead to more informed and practical solutions, ensuring that implemented social protection schemes cater to the needs and preferences of the population.

Finally, adopting a data-driven approach is essential for continuous monitoring and evaluation of the impact of social protection schemes. By collecting and analyzing pertinent data, policymakers can make informed decisions, track progress, and identify areas for improvement in terms of healthcare quality, coverage, and accessibility. Regular assessments will also aid in measuring the efficacy of public-private partnerships and identifying opportunities to enhance collaboration within the healthcare sector.

Reference

[1] Aboutayeb, MOUSSANE, Essaid, TARBALOUTI, & Abderrazak, OUALI. (2023). The Impact of Health Capital on Economic Growth: Empirical Evidence from Morocco. *African Scientific Journal*, *3*(16), 563-563.

[2] Alkenbrack, S. E. (2011). *Health insurance in Lao PDR: examining enrolment, impacts, and the prospects for expansion* (Doctoral dissertation, London School of Hygiene & Tropical Medicine).

[3] Allonier, C., Debrand, T., Lucas-Gabrielli, V., & PIERRE, A. (2009). Contexte géographique et état de santé de la population: de l'effet ZUS aux effets de voisinage. *Questions d'économie de la santé*, (139), 1-6.

[4] Amu, H., Dickson, K. S., Kumi-Kyereme, A., & Darteh, E. K. M. (2018). Understanding variations in health insurance coverage in Ghana, Kenya, Nigeria, and Tanzania: evidence from demographic and health surveys. *PloS one*, *13*(8), e0201833.

[5] ANAM. (2021). Rapport annuel global de l'assurance maladie obligatoire. Rapport annuel global 2021. https://anam.ma/anam/wp-content/uploads/2023/04/RAPPORT-ANNUELGLOBAL-2021.pdf

[6] Aregbeshola, B. S., & Khan, S. M. (2018). Predictors of enrolment in the National Health Insurance Scheme among women of reproductive age in Nigeria. *International journal of health policy and management*, *7*(11), 1015.

[7] Aron-Dine, A., Einav, L., & Finkelstein, A. (2013). The RAND health insurance experiment, three decades later. *Journal of Economic Perspectives*, *27*(1), 197-222.

[8] Ataguba, J. E. O., & Goudge, J. (2012). The impact of health insurance on health-care utilisation and out-of-pocket payments in South Africa. *The Geneva Papers on Risk and Insurance-Issues and Practice*, *37*, 633-654.

[9] Berchet, C., & Jusot, F. (2012). *État de santé et recours aux soins des immigrés: une synthèse des travaux français* (No. hal-01593737).

[10] Biswas, T. (1997). *Decision-Making Under Uncertainty*, Chapters 1 and 5. Macmillan Press Ltd. Hampshire and London, UK

[11] Brook, R.H., J.E. Ware, W.H. Rogers, E.B. Keeler, A.R. Davis, C.D. Sherbourne, G.A. Goldberg, K.N. Lohr, P. Camp and J.P. Newhouse. (1984). *The Effect of Coinsurance on the Health of Adults: Results from the Rand Health Insurance Experiment*. Santa Monica, California: The Rand Corporation.

[12] Brunet, L., Carpentier, S., Laporte, A., Le Méner, E., Pourette, D., & Guillon, B. F. (2005). Accès Aux Soins, Maternité et Risques Vécus Par Les Femmes En Grande Précarité. *Une Contribution à l'amélioration de Leur Santé Gynécologique*, 102.

[13] Clark, A. E., & Vicard, A. (2007). Conditions de collecte et santé subjective: une analyse sur données européennes. *Economie et statistique*, *403*(1), 143-163.

[14] Comfort, A. B., Peterson, L. A., & Hatt, L. E. (2013). Effect of health insurance on the use and provision of maternal health services and maternal and neonatal health outcomes: a systematic review. *Journal of health, population, and nutrition*, *31*(4 Suppl 2), S81.

[15] Cutler, D. M., & Zeckhauser, R. J. (2000). The anatomy of health insurance. In *Handbook of health economics* (Vol. 1, pp. 563-643). Elsevier.

[16] Dor, A., Sudano, J., & Baker, D. W. (2006). The effect of private insurance on the health of older, working age adults: evidence from the health and retirement study. *Health services research*, *41*(3p1), 759-787.

[17] Duku, S. K. O. (2018). Differences in the determinants of health insurance enrolment among working-age adults in two regions in Ghana. *BMC health services research*, *18*, 1-16.

[18] Folland, S., A.C. Goodman and M. Stano. (2013). The Economics of Health and Health Care, 7th Ed. *New Jersey, Upper Saddle River: Pearson Education, Inc*.

[19] Franco, L. M., Diop, F. P., Burgert, C. R., Kelley, A. G., Makinen, M., & Simpara, C. H. T. (2008). Effects of mutual health organizations on use of priority health-care services in urban and rural Mali: a case-control study. *Bulletin of the World Health Organization*, *86*, 830-838.

[20] Grossman, M. (1972). Health Capital and the Demand for Health. *Journal of Political Economy*, *80*(2), 223-255.

[21] Haut- commissariat au plan (HCP). (2022). La situation économique en 2022 Et ses perspectives en 2023 Janvier 2023 file:///C:/Users/one/Downloads/Budget%20%C3%A9conomique%20exploratoire%202023%20(version%20Fr).pdf

[22] Jowett, M. (2004). *Theoretical insights into the development of health insurance in low-income countries* (No. 188chedp).

[23] Kazungu, J. S., & Barasa, E. W. (2017). Examining levels, distribution and correlates of health insurance coverage in Kenya. *Tropical Medicine & International Health*, *22*(9), 1175-1185.

[24] Levy, H., & Meltzer, D. (2008). The impact of health insurance on health. *Annu. Rev. Public Health*, *29*, 399-409.

[25] Lindeboom, M., Portrait, F., & Van den Berg, G. J. (2002). An econometric analysis of the mental-health effects of major events in the life of older individuals. *Health economics*, *11*(6), 505-520.

[26] MS. (2018). Comptes nationaux de la santé (2018)". https://www.sante.gov.ma/Publications/Etudes_enquete/Documents/2021/CNS-2018.pdf

[27] Ndongo, J. C. A., Mahieu, P. A., & Nanfosso, R. T. (2014). Mutuelles de santé et État de santé des populations au Cameroun: une enquête conduite dans la région du Centre pour estimer l'effet de l'adhésion à une mutuelle sur l'état de santé déclaré. *Journal de gestion et d'économie médicale*, *32*(4), 263-279.

[28] Nguyen, H. T., Rajkotia, Y., et Wang, H. (2011). The financial protection effect of Ghana National Health Insurance Scheme: evidence from a study in two rural districts. *International journal for equity in health*, *10*(1), 1-12.

[29] O'Brien, B. J. (1990). *Economic approaches to the problem of acceptable clinical risks: the case of prescription drugs and chronic rheumatic disease* (Doctoral dissertation, Brunel University).

[30] Pauly, M. V. (1968). The economics of moral hazard: comment. *The american economic review*, *58*(3), 531-537.

[31] Pauly, M. V., Zweifel, P., Scheffler, R. M., Preker, A. S., & Bassett, M. (2006). Private health insurance in developing countries. *Health Affairs*, *25*(2), 369-379.

[32] Platteau, J. P., & Ontiveros, D. U. (2013). Understanding and information failures: lessons from a health microinsurance program in India. *Research Paper*, *29*.

[33] Platteau, J. P., De Bock, O., et Gelade, W. (2017). The demand for microinsurance: A literature review. *World Development*, *94*, 139-156.

[34] Rand. (2006). The Health Insurance Experiment: A Classic Rand Study Speaks to the Current Health Care Reform Debate. *Research Highlights, Health*. *Santa Monica, California: The Rand Corporation*.

[35] Ruger, J.P. (2007). "The moral foundations of health insurance". *Quarterly Journal of Medicine,* 100: 53–57.

[36] Sekhri, N., & Savedoff, W. (2005). Private health insurance: implications for developing countries. *Bulletin of the World Health Organization*, *83*(2), 127-134.

[37] Sen, A.K. (1999). Development as Freedom. Oxford, United Kingdom: Oxford University Press.

[38] Stone, G. S., Tarus, T., Shikanga, M., Biwott, B., Ngetich, T., Andale, T., ... & Aruasa, W. (2014). The association between insurance status and in-hospital mortality on the public medical wards of a Kenyan referral hospital. *Global Health Action*, *7*(1), 23137.

[39] Wang, W., Temsah, G., & Mallick, L. (2016). "The impact of health insurance on maternal health care utilization: Evidence from Ghana, Indonesia, Rwanda". *Health Policy and Planning*, 32(3): 366–75.

[40] Were, L. P., Were, E., Wamai, R., Hogan, J., & Galarraga, O. (2017). The Association of Health Insurance with institutional delivery and access to skilled birth attendants: evidence from the Kenya demographic and health survey 2008–09. *BMC health services research*, *17*(1), 1-10.