

# Examining Gender Differentials and Correlates of Private Health Insurance Subscription in Zambia

James Mulenga (✉ [nileshmulenga@gmail.com](mailto:nileshmulenga@gmail.com))

Mulungushi University

Mulenga C. Mulenga

Mulungushi University

Katongo M.C. Musonda

National Authorizing Office of the European Development Fund

Chilizani Phiri

Uludağ University

---

## Research Article

**Keywords:** Health insurance, coverage, gender, ZDHS, Zambia

**Posted Date:** March 10th, 2021

**DOI:** <https://doi.org/10.21203/rs.3.rs-257944/v1>

**License:** © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

---

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

# **Examining Gender Differentials and Correlates of Private Health Insurance Subscription in Zambia**

James Mulenga<sup>1\*</sup>, Mulenga C. Mulenga<sup>1</sup>, Katongo M.C. Musonda<sup>2</sup>, Chilizani Phiri<sup>3</sup>

\*Correspondence: [nileshmulenga@gmail.com](mailto:nileshmulenga@gmail.com)

## **Abstract**

**Background:** Health insurance is an essential aspect of health care. This is because it enables the insured to acquire timely and essential health care services, besides offering financial protection from catastrophic treatment costs. This paper seeks to establish gender differentials and correlates of health insurance subscription in Zambia.

26 **Methods:** The data used in this study was obtained from the 2018 Zambia Demographic and Health  
27 Survey. Data was analyzed using STATA 13.0 software and focused on descriptive and Probit  
28 regression analyses.

29 **Results:** The study finds that for women and men, age, wealth category, education and professional  
30 occupation are positively associated with health insurance. While, being self-employed in the  
31 agricultural sector, negatively influences health insurance coverage for both sexes. Other variables  
32 have gender specific effects. For instance, being in marital union and in a clerical occupation  
33 increases the probability of having health insurance for women. While, being in the services, skilled  
34 and unskilled manual occupations increase the probability of health insurance for men. Further,  
35 residing in rural areas reduces the probability of having health insurance for men.

36 **Conclusion:** The study concludes that there are differences in factors that influence health insurance  
37 between women and men. Hence, this study highlights the need to enhance health insurance coverage  
38 by addressing the different factors that influence health insurance coverage among men and women.  
39 These factors include, enhancing education, job creation, diversifying insurance schemes and gender  
40 consideration in the design of NHIS.

41

42 **Keywords:** *Health insurance, coverage, gender, ZDHS, Zambia*

### 43 **Background**

44 Health insurance is one of the mechanisms of financing health care systems in many countries.  
45 Health insurance pools risks and ensures that the insured are protected financially against  
46 unexpected catastrophic health treatment costs, which may arise from unpredictable illness or

47 injury [1]. Thus, risk and uncertainty regarding the timing and cost of treatment compels  
48 individuals to subscribe to health insurance schemes. Subscription to such health insurance  
49 schemes brings forth various advantages to the insured and society at large. Individuals can get  
50 financial protection and avoid being thrown into dire financial vulnerability and poverty in times  
51 of illness or injury, through health insurance [2]. Health insurance thus enables insured families  
52 to effectively manage their savings, which would be wiped out in case of sudden illness or  
53 injury. It also enables the insured to have access to timely and quality health care services which  
54 can help achieve Universal Health Coverage (UHC). Notwithstanding its importance to the  
55 insured and society, health insurance coverage is generally low in most developing countries [3].  
56 This poses a challenge to the realization of the Sustainable Development Goal (SDG) number 3,  
57 aimed at “ensuring healthy lives and promoting wellbeing for all at all ages”. Particularly, target  
58 3.8, which focuses on “achieving universal health coverage, including financial risk protection,  
59 access to quality essential health-care services and access to safe, effective, quality and  
60 affordable essential medicines and vaccines for all” [4]. Adequate provision of healthcare, as  
61 well as healthcare financing systems that ensure access to adequate care regardless of ability to  
62 pay, is significant in order to achieve target 3.8. Achieving this target requires strengthening  
63 health systems, as well as having a robust financing structure and reducing out-of- pocket  
64 expenditure.

65 Out-of-pocket expenditure per capita in most developing countries, (Sub-Saharan Africa in  
66 particular) has increased from US \$10.24 in 2000 to US \$28.87 in 2016 [5]. Out-of-pocket  
67 payments have the potential to throw individuals and households into poverty, worsening the  
68 already existing high poverty levels in developing countries. Moreover, most African countries  
69 have not met the target, set in the Abuja Declaration, of having 15% of total government

70 expenditure apportioned to the health care sector [6]. It is a widely acknowledged fact that an  
71 efficient health financing system is critical to the achievement of UHC [7, 8]. Studies by [3, 9]  
72 show that health insurance schemes enable insured individuals to increase their utilization of  
73 health care services. Globally, three common types of health insurance schemes can be  
74 identified: Social Health Insurance (SHI), Community Based Health Insurance (CBHI) and  
75 Private Health Insurance (PHI). These different schemes vary in their requirements and  
76 coverage.

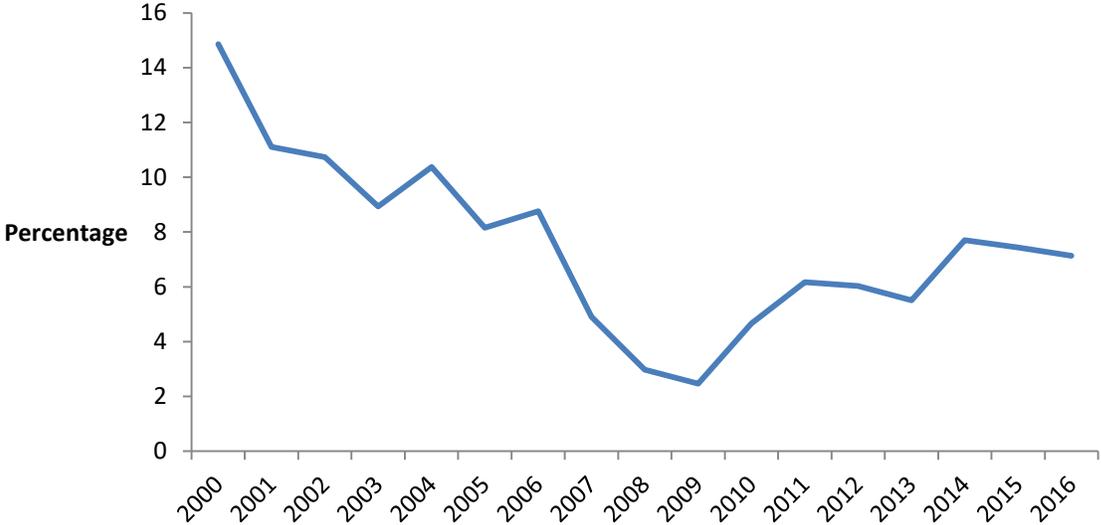
77 It should further be noted that, health insurance may not be equally distributed among men and  
78 women in a particular country. Women face greater challenges in the market for health insurance  
79 and are more likely to have higher direct health care expenses in comparison to men [10].  
80 Furthermore, women are inclined to higher private insurance premiums due to a myriad of  
81 factors such as lower labour force participation and higher use of health services than men [11].

## 82 **Health Financing in Zambia**

83 Before the implementation of the National Health Insurance Scheme (NHIS) in Zambia,  
84 financing of the health sector was mainly from general taxes, donor support, out of pocket  
85 payments and PHI [12]. Total health expenditure as a percentage of total government  
86 expenditure in Zambia is low, as is the case in many developing countries. Zambia has not met  
87 the target set by the Abuja Declaration of having 15% of government annual expenditure  
88 allocated to the health sector. In recent years, government expenditure towards the health sector  
89 has consistently been below 15% of the general government expenditure. Figure 1 below depicts  
90 government expenditure towards the health sector for the period 2000 to 2016. Zambia's health

91 expenditure is mainly dominated by external funding (42%), followed by general taxes (39%)  
92 and out-of-pocket payments (13%) [5].

93 **Figure 1: Trends in Domestic General Government Health Expenditure as a Percentage of**  
94 **General Government Expenditure.**

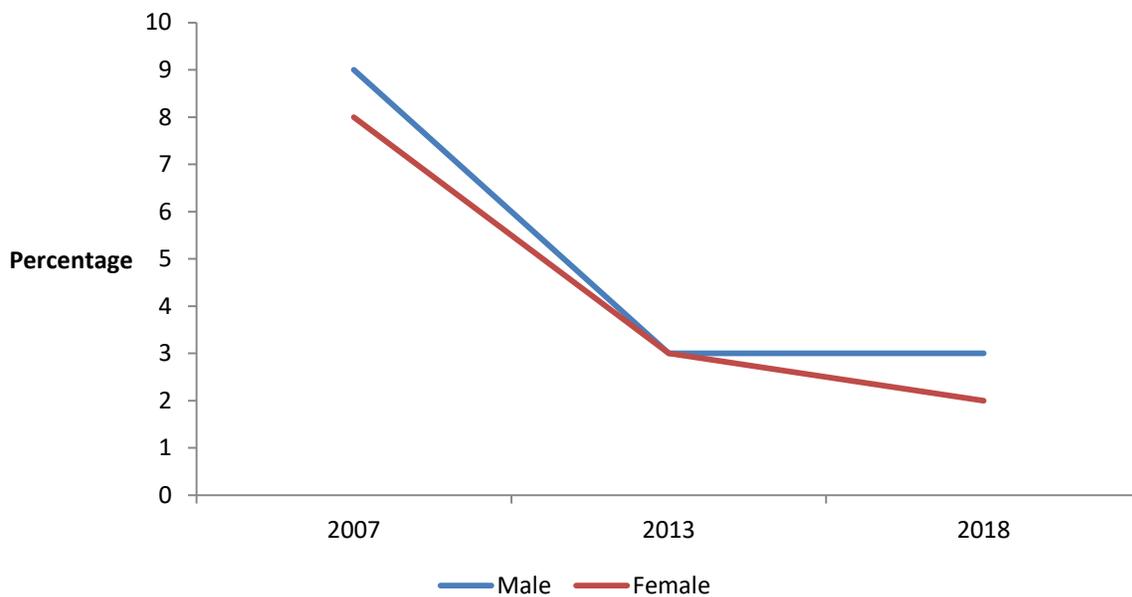


95  
96 Source: Constructed using the World Development Indicators [5]

97  
98 Over the past years, contribution of health insurance has generally been very low in Zambia. PHI  
99 has been very small in Zambia and generally employer-based (low-cost prepayment scheme),  
100 although other schemes like the social security and community-based schemes also exist [13,  
101 14]. Figure 2 below shows trends in health insurance for men and women in Zambia. The figure  
102 shows that, generally, health insurance coverage varies by sex in Zambia. Further, the figure  
103 shows a sharp decline in health insurance coverage among both sexes from 2009 to 2013. Yet,  
104 the trend is stable for men while showing a slight decline for women between 2013 and 2018.  
105 Hence, health insurance subscriptions were generally dominated by men between 2009 and 2018,  
106 despite insurance coverage being low among both sexes. For instance in 2018, 3% of men were

107 insured while only 2% of women had health insurance coverage. This represents a sharp decline  
108 in coverage, from 8% and 9% among women and men, respectively reported in the 2007 Zambia  
109 Demographic and Health Survey (ZDHS). The implication of low rates of health insurance  
110 subscription is that, most Zambian citizens have to make direct out-of-pocket payments when  
111 they seek health care services or be catered for under government taxes. This makes them  
112 vulnerable to catastrophic health treatment costs [15].

113 **Figure 2: Trends in Health Insurance Subscriptions for Women and Men in Zambia**



114  
115 Source: Constructed from [13, 14, 16]  
116 The government of Zambia implemented the NHIS in 2019, with a view at enhancing the  
117 contribution of health insurance to national health financing. The NHIS is based on the solidarity  
118 model [17], where the risk is redistributed from healthy individuals to sick ones, from the rich to  
119 the poor, from the young to the elderly and from small families to large families. The NHIS  
120 scheme is aimed at ensuring a sustainable, predictable and dedicated financing for the health  
121 sector and financial risk cover for Zambians [18].

122 **Study Objectives**

123 The study aims at analyzing gender differentials and determinants of health insurance coverage  
124 in Zambia. Specifically, the study intends to achieve the following objectives:

125 To establish the difference in levels of health insurance subscription between women and men in  
126 Zambia.

127 To compare factors influencing subscription to health insurance between men and women in  
128 Zambia.

129 **Literature Review**

130 There is abundant scholarly work on factors affecting subscription to health insurance in various  
131 countries around the world. However, few of these studies have focused on comparing the  
132 factors influencing subscription to health insurance between women and men. The majority of  
133 these studies have focused on the determinants of health insurance subscription among women.  
134 In Zambia, studies comparing the factors influencing subscription to health insurance between  
135 women and men are non-existent. It is the aim of this study to fill up this gap in knowledge.

136 A study by Wang and others [3] examined the levels of subscription to health insurance among  
137 30 low and middle income countries. The research found that subscription to health insurance  
138 was less than 5% in most of those countries with the exception of eight (8) that had a  
139 subscription higher than 10%. The study established that the gender gap in health insurance  
140 subscription favored men in 26 of the 30 countries studied. This was despite the gender gap  
141 being narrow, due to low insurance subscription among both sexes.

142 Furthermore, related studies have identified various socioeconomic factors that have had a  
143 positive influence on health insurance. These socioeconomic factors include older age [19, 20],  
144 higher education level [21, 20, 3], urban place of residence, wealth category [21, 3], type of  
145 occupation [21], being married [20, 21], media exposure [20], household size, and chronic  
146 disease.

147 Although a number of studies [19, 20] show that, older age, being male, belonging to a rich  
148 household and employment have positive effects on health insurance coverage, other studies [22-  
149 24] have contrasting results. For instance, studies by Duku [22] and Reshmi et al. [23] found that  
150 female headed households have a higher likelihood of enrolling for health insurance than male  
151 headed households. These studies also found that, the elderly, as well as literate, are less likely to  
152 enroll for health insurance. Similarly, in Ghana, the people who lived in the households  
153 classified as poorest had higher national health insurance enrolments than those who lived in  
154 households classified as richest [24].

155

## 156 **Data and Methods**

### 157 **Data**

158 This study utilized the latest Zambia Demographic and Health Survey (ZDHS) cross-sectional  
159 data which was collected under the sixth round of the ZDHS conducted between 18 July 2018  
160 and 24 January 2019. The cross-sectional survey was executed by the Zambia Statistical Agency  
161 (ZamStats) in partnership with the Ministry of Health (MOH). The ZDHS survey based its  
162 sampling on the 2010 national census which was updated to accommodate the changes that  
163 occurred between 2010 and 2017. A nationally representative sample of 12,831 households was  
164 selected for the survey using a two-stage stratified sample design. The sampling design included

165 a selection of Enumeration Areas (EAs) and then a sample of households using systematic  
166 sampling. Twenty five households were picked from each EA, with equal selection probability.  
167 According to International Coaching Federation International [25] the two-stage stratified sample  
168 design was appropriate because it ensures representativeness of the sample, provides sampling  
169 frame in cases where it is not available, enables best coverage of target population and reduces  
170 sampling errors arising from more than two stage sampling. Furthermore, this study used the  
171 Women's and Men's questionnaire as data collection instruments. This was inspired by the  
172 ZDHS of 2018 which included the two types of questionnaires among the four types used to  
173 collect data namely: Household, Women's, Men's and Biomarker questionnaires. The women's  
174 questionnaire was distributed to women aged 15 to 49 in sampled households, while the men's  
175 questionnaire was used to collect data from men aged 15 to 59. To ensure that accurate data was  
176 collected, the questionnaires were translated into seven major languages. A pretest was also  
177 undertaken to ensure that there were no issues with the survey instruments before full execution  
178 of the main survey.

179 The Institutional Review Board (IRB) of the ICF and the IRB in Zambia reviewed and approved  
180 all the questionnaires as well as Zambia's - specific survey protocols, in order to adhere to  
181 ethical issues. The secondary data used in this study was obtained from the DHS Program  
182 website and was made available to the researchers on request. .

183

## 184 **Methods**

### 185 **Model Specification and Data Analysis**

186 The Probit Regression Model was used to establish the factors that affect health insurance  
187 coverage. The model was estimated using the Maximum Likelihood method to generate marginal

188 effects. The marginal effects show a change in probability of the outcome variable when the  
 189 independent variable changes by one unit [26]. This model was motivated by the fact that the  
 190 dependent variable was binary or categorical. All the analyses were undertaken using STATA  
 191 13.0 software. The analysis was undertaken at 95% confidence level. Sampling weights were  
 192 used to adjust for oversampling in the ZDHS and avoid bias that would arise in the estimates,  
 193 during data analysis.

#### 194 **Variables**

195 Table 1 below presents the variables used for data analysis. The variables were chosen based on  
 196 existing empirical literature.

197 **Table 1: Independent and Dependent Variables**

<b>DEPENDENT VARIABLE</b>		
<b>Variable Name</b>	<b>Description</b>	<b>Recode</b>
Health Insurance coverage	Insured or not insured	Not insured = 0, insured = 1
<b>INDEPENDENT VARIABLES</b>		
<b>Variable Name</b>	<b>Description</b>	<b>Recode</b>
Age	Age of respondent in years (grouped)	15 – 24 = 0, 25 – 34 = 1, 35 – 44 = 2, 44 and above = 3
Marital Status	In marital union or not in marital union	Not in marital union = 0, in marital union = 1
Education	Education in single years	No recode
Occupation	Respondents type of occupation (grouped)	Not Working = 0, Professional = 1, Clerical = 2, Sales = 3, Sales = 4, Agricultural – Self employed = 5, Household and domestic = 6, Services = 7, Skilled manual =8, Unskilled Manual = 9
Type of place of residence	Residing either in rural or urban	Urban= 0, rural = 1
Wealth Category	Household characteristics: Poor, medium, rich	Poor = 0, medium = 1, rich = 2
Media Exposure	Exposure to TV, Radio,	Not exposed = 0, Exposed 1

	Newspaper and Magazines	
--	-------------------------	--

198

199

200 **Study Findings**

201 **Characteristics of the Sample**

202 Characteristics of the sampled individuals for this study are presented in Table 2. Table 2 shows  
 203 that 55.9% of the interviewed women are married while 53% of the men are married. The figure  
 204 also shows that the majority of the interviewed women (41.9%) and men (39.7%) are in the age  
 205 range of 15 to 24 years. In addition, 63.6% of the interviewed women and 79.8% of the  
 206 interviewed men had some exposure to some mass media. About 46.6% of the women are from  
 207 households classified as rich, while 45.7% of the men are from rich households. Majority of the  
 208 women have primary education (44.3%) while majority of the men (48.8%) have secondary  
 209 education. About 53.4% of the women and 55.9% of the men reside in rural areas. In terms of  
 210 occupation, a higher percentage (47.9%) of the interviewed women reported not to be employed,  
 211 while majority of the men (25.4%) are self-employed in the agricultural sector.

212

213

214

215

216

217 **Table 2: Characteristics of the Study Sample: Women versus Men**

VARIABLE	FEMALE (%)	Sample (N)	MALE (%)	Sample (N)
Marital Status				

Not in marital union	44.1	6,035	47	5,704
In marital union	55.9	7,648	53	6,428
<b>Age Group</b>				
15-24	41.9	5,733	39.7	4,813
25-34	30	4,100	25.6	3,104
35-44	21.6	2,950	19.6	2,377
45+	6.6	900	15.2	1,838
<b>Media Exposure</b>				
No Exposure	36.4	4,979	20.2	2,454
Exposed	63.6	8,704	79.8	9,678
<b>Wealth Category</b>				
Poor	35.3	4,828	34.3	4,164
Middle	18.1	2,477	20	2,422
Rich	46.6	6,377	45.7	5,546
<b>Educational level</b>				
No education	7.7	1,054	4.1	492
Primary	44.3	6,059	38.9	4,722
Secondary	42.5	5,816	48.8	5,918
Tertiary	5.5	755	8.2	1,000
<b>Type of place of residence</b>				
Urban	46.6	6,374	44.1	5,346
Rural	53.4	7,309	55.9	6,786
<b>Occupation Type</b>				
Not Working	47.9	6,547	20.6	2,493
Professional	4	550	7	843
Clerical	0.5	73	0.5	61
Sales	15.7	2,146	6.5	785
Agriculture - self employed	17.9	2,443	25.4	3,074
Household and domestic	4.4	600	4.9	596
Services	2.4	330	3.6	432
Skilled manual	1	137	15.9	1,927
Unskilled manual	6.2	844	15.8	1,911

218

219

220

221 **Health Insurance Coverage among Women and Men.**

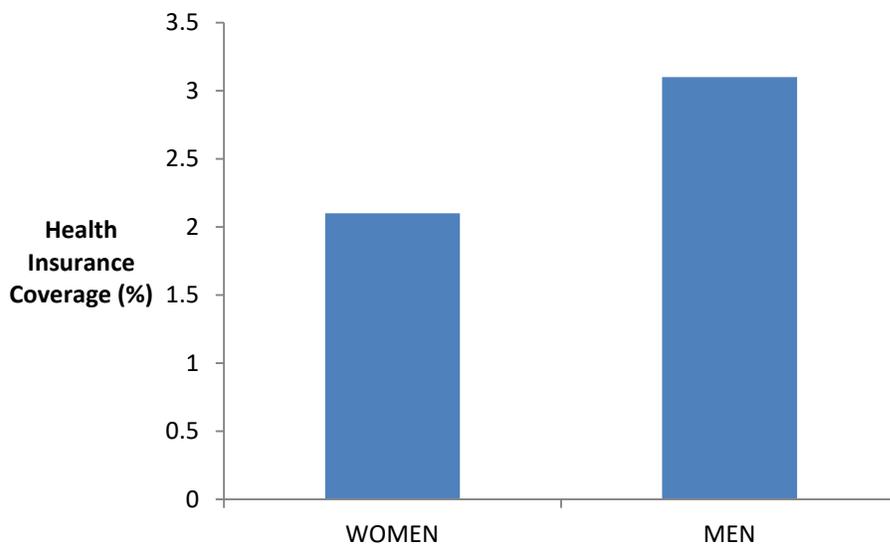
222 Figure 3 presents the percentage distribution of health insurance subscription in Zambia by sex.

223 The figure indicates that health insurance subscription for women and men is 3% and 2%,

224 respectively. Figures 3(a) to 3(c) further disaggregate health insurance subscription for women  
225 and men by wealth category, education level and occupation, respectively. Figure 3(a) shows that  
226 women and men who have the highest proportion (4.4% and 6.7% respectively) of health  
227 insurance belong to rich households. Women and men from poor households have no insurance  
228 coverage. Figure 3(b) shows that women and men with tertiary education have the highest  
229 proportion of health insurance coverage (21.8% and 24.5%, respectively) in comparison to those  
230 who have no education - primary and secondary education. Figure 3(c) shows that health  
231 insurance subscription is highest among women and men in the clerical occupation (29.9% and  
232 21.5%, respectively) followed by professional staff with 19.2% and 21.8%, respectively.

233

234 **Figure 3: Health Insurance Coverage: Women versus Men**

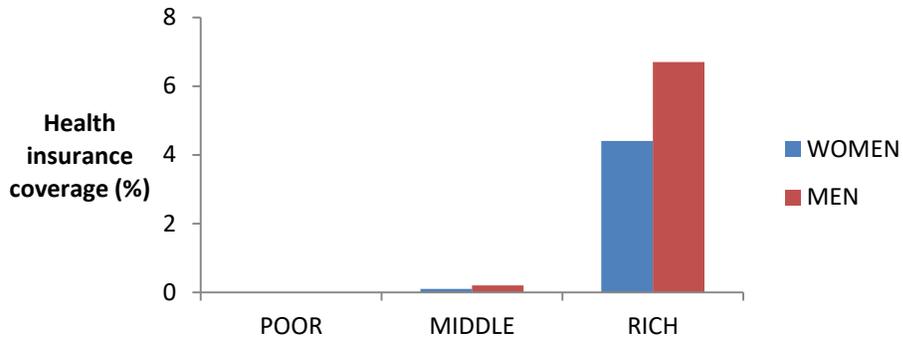


235

236

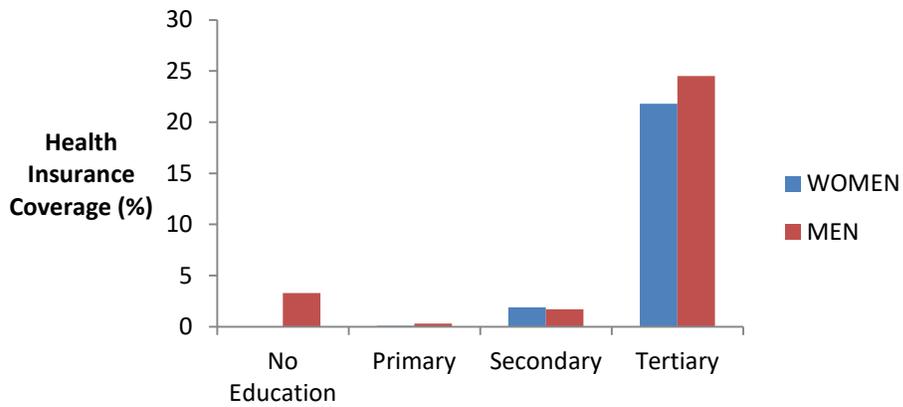
237

238 **Figure 3.1(a): Health Insurance Coverage by Wealth: Women versus Men**



239

240 **Figure 3.1(b): Health Insurance Coverage by Educational Level: Women versus Men**



241

242

243

244

245

246

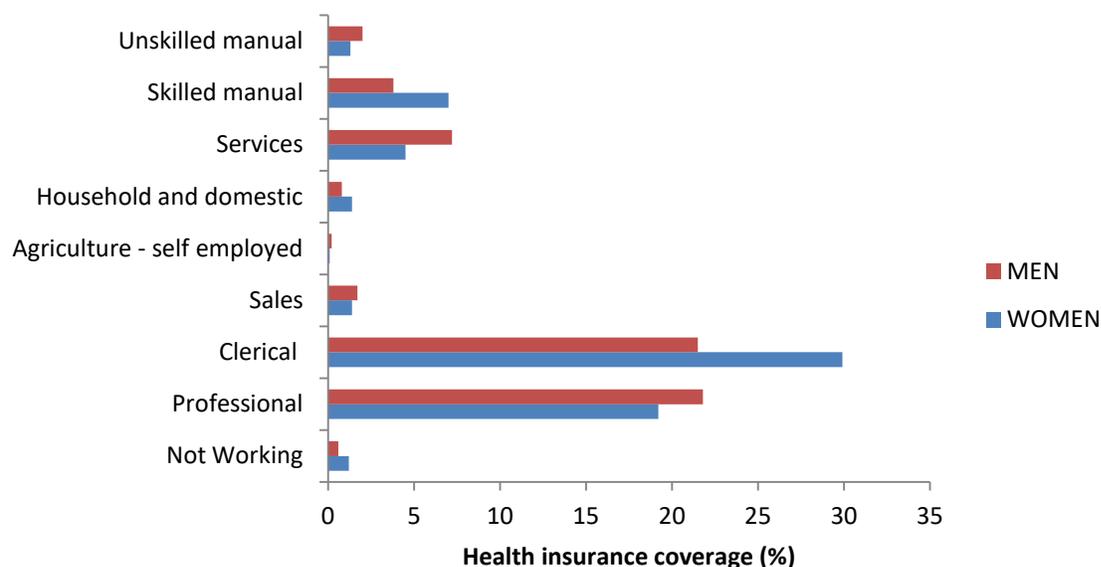
247

248

249

250

251 **Figure 3.1(c): Health Insurance Coverage by Occupation: Women versus Men**



252

253

#### 254 **4.2. Correlates of Health Insurance Coverage among Men and Women**

255 This section presents the results of the Probit regression analysis for correlates of health  
 256 insurance subscription among women and men in Zambia. These results are presented in table 3.

257 Table 3 shows the Probit marginal effects and their corresponding probability values (p-values).

258 The results show that being married, being in the 35 to 44 age category, a rich household, higher  
 259 education, professional, clerical or agriculture occupation are significantly associated with health  
 260 insurance among women. For men; age, being from a rich household, higher education, place of  
 261 residence, being in a profession, agriculture, services or skilled manual occupations significantly  
 262 influence health insurance.

263 The results show that there is an increase in the probability of having health insurance (about  
 264 1.15%) among women in marital union compared to women that are not in marital union.

265 Generally, the probability of having health insurance increases with age for both sexes. For  
 266 women in the age category 35-44, the probability of having health insurance increases by 0.83%

267 compared to women in the age group of 15 to 24. Men in higher age categories (25 to 34, 35 to  
268 40 and above 40) are more likely to be insured compared to those aged between 15-24 years,  
269 holding other variables constant. The probability of having health insurance for men in the age  
270 categories of 25 to 34, 35 to 44 and above 45 years is 0.91%, 0.99% and 2.13% higher than men  
271 aged between 15-24 years, respectively.

272 The results also show that men and women from households classified as rich, have higher  
273 probability of having health insurance (1.72% for women and 2.63% for men) compared to those  
274 from households classified as poor. Further, as the years of education increase by 1, the  
275 probability of having health insurance increases by 0.56% for women and 0.55% for men. The  
276 results show that men living in rural areas have lower probability (0.83%) of health insurance  
277 relative to their urban counterparts. Being in professional and clerical occupations enhances the  
278 probability of being insured by 0.95% and 3.87%, respectively for women. However, being self-  
279 employed in the agricultural sector reduces the probability of having health insurance for women  
280 by 1.1%. For men in the professional, services, skilled manual and unskilled manual the  
281 probabilities increases by 3.20%, 2.08%, 1.13% and 1.22%, respectively. Being self-employed in  
282 the agricultural sector reduces the probability of men having health insurance by 0.91%, similar  
283 to women.

284

285

286

287

288 **Table 3: Probit Regression Analysis of the Factors Influencing Health Insurance Coverage:**  
289 **Women versus Men**

VARIABLE	WOMEN		MEN	
	Marginal Effects(dy/dx)	P-values	Marginal Effects(dy/dx)	P-values
<b>Marital Status</b>				
Not in Marital Union	1			
In Marital Union	0.0115	0.000	0.0053	0.137
<b>Age Group</b>				
15 - 24	1			
25-34	0.0028	0.307	0.0091	0.019
35-44	0.0083	0.023	0.0099	0.033
45 and above	0.0096	0.114	0.0213	0.000
<b>Wealth Category</b>				
Poor	1			
Middle	0.0015	0.637	0.0042	0.254
Rich	0.0172	0.000	0.0263	0.000
<b>Education in single years</b>				
	0.0056	0.000	0.0055	0.000
<b>Type of Place of Residence</b>				
Urban	1			
Rural	-0.001	0.682	-0.0083	0.005
<b>Media Exposure</b>				
Not Exposed	1			
Exposed	0.0062	0.059	0.0074	0.238
<b>Occupation</b>				
Not in Employment	1			
Professionals	0.0095	0.024	0.0320	0.000
Clerical	0.0387	0.007	0.0207	0.120
Sales	-0.0039	0.153	-0.0038	0.383
Agricultural - self employed	-0.011	0.003	-0.0091	0.028
Household and domestic	0.0045	0.472	-0.0039	0.507
Services	0.0006	0.902	0.0208	0.004
Skilled manual	0.0226	0.080	0.0113	0.011
Unskilled manual	0.0051	0.324	0.0122	0.023

290

## 291 Discussion of Findings

292 This study has established that private health insurance coverage in Zambia has generally been  
293 low for both women and men. Similar patterns have been observed by other studies in other  
294 developing countries. The results also show that health insurance subscriptions in Zambia vary  
295 with sex, with coverage favoring the male. The results of this study are in tandem with the  
296 findings of Wang et al. [3] who observed that health insurance coverage in most developing  
297 countries was less than 5% and that the gender gap in health insurance subscriptions favored

298 men. The study further shows that education, wealth or occupation do not reduce the health  
299 insurance gender gaps.

300 Further analysis of data using the Probit regression model provides factors that significantly  
301 influence health insurance subscription of women and men in Zambia. According to the results,  
302 being in a marital union was found to increase the probability of health insurance subscription in  
303 comparison to not being in marital union for both sexes. This is possible because people in  
304 marital union can pool resources together and be able to afford health insurance. The finding is  
305 consistent with [21] who contended that people who are married have higher possibility of  
306 having health insurance than those who are not married in Ghana. Similar results were observed  
307 by Kazungu and Barasa [27] in Kenya and Mulenga et al. [20] in Zambia.

308 Age of the respondent is also another important factor which increases the probability of having  
309 health insurance subscription. It is believed that as individuals age, their health deteriorates at a  
310 faster rate than younger individuals .It is for this reason that the elderly are more likely to  
311 subscribe for health insurance to cover themselves against the heightened risk of illness [28].  
312 These finding are consistent with the findings of other studies [19, 21, 27] undertaken in other  
313 countries.

314 The results of this study further show that, men and women from households classified as rich  
315 have a higher probability of having health insurance compared to those who live in households  
316 classified as poor. A study by Wang et al. [3] in 30 low and middle-income countries and another  
317 study by Amu et al. [19] in Ghana, Kenya, Nigeria, and Tanzania had similar findings.

318 The number of years in education was found to increase the probability of health insurance  
319 coverage for both women and men. Education plays an important role in people's lives as it

320 enables individuals to understand their health needs and make informed choices. Education can  
321 also enhance health care information – seeking behavior and quality decision making [29].  
322 Education further enables individuals to get well-paying jobs which give them higher ability to  
323 purchase Health Insurance.

324 In terms of place of residence, the results show that men who reside in rural areas have lower  
325 probability of having health care insurance. This can be attributed to the high levels of poverty  
326 among the majority of rural dwellers. In Zambia 54.4% of the people live below the national  
327 poverty line with 76.6% in rural areas [30]. People in rural areas are also generally not well  
328 educated. Moreover, private insurance companies are located in urban areas [20].

329 The type of occupation one engages in can greatly influence the demand for and coverage of  
330 health insurance. The results indicate that some occupations are associated with increase in the  
331 probability of health insurance subscription while others decrease the probability of health  
332 insurance coverage. It has been established that on one hand, professional and clerical  
333 occupations increase the probability of subscribing for health insurance for both women and  
334 men. On the other hand, being self-employed in the agricultural sector reduces the probability of  
335 having health insurance for both sexes. The results of the study further show that men in  
336 services, skilled manual and unskilled manual occupations had increased probability of having  
337 health insurance coverage. Most of these occupations such as professional, clerical and skilled  
338 manual are found in the formal sector characterized by paid jobs. As a result, income generated  
339 from such jobs gives an individual greater ability to purchase health insurance. Moreover, in  
340 most formal jobs health insurance comes as part of the employment package [31]. In this case,  
341 employers fund their employees' medical expenses directly [32] or through joint employer –  
342 employee contributions to a scheme. The agricultural sector is generally a rural based sector and

343 most people engaged in the agricultural sector are usually subsistence self-employed farmers  
344 who do not generate enough revenue to afford health insurance.

345

### 346 **Policy Implications**

347 Based on the results presented, the study makes the following recommendations with a view to  
348 increase health insurance coverage:

349 The Ministry of General Education must enhance and encourage free primary education for all.  
350 Furthermore, introduction of subsidies on tertiary education for the poor would yield positive  
351 results, with regards to health insurance coverage. This is because, enhanced education  
352 enlightens individuals and enables them to make informed choices. As such, enhancing  
353 education can boost Health Insurance coverage. Hence, enhancing access to education would  
354 boost health insurance coverage for both men and women in Zambia, since education is  
355 positively associated with health insurance.

356 Introduction of community health insurance schemes to cover men and women in agriculture.  
357 Specifically, those who may not have cash to pay premiums under the SHI or private health  
358 insurance but may have the capacity to pay in kind.

359 Poverty reduction and employment programmes can also help to uplift the poor and give them  
360 the ability to pay premiums for health insurance.

361 Enhancing employment creation – particularly formal employment – can boost health insurance  
362 subscriptions. This is because cash payments give individuals the ability to pay premiums for  
363 health insurance.

364 Government should consider the findings of this study, taking note of gender differentials, when  
365 designing policies and strategies under the NHIS. Thus the design of health insurance policies  
366 should not be gender blind.

367

## 368 Conclusions and Policy Recommendations

369 The study has observed a drop in health insurance rates in the recent years in Zambia. Currently,  
370 health insurance subscription is generally very low, although coverage tends to favor the male.  
371 The study has also established that there are variations in the factors affecting health insurance  
372 coverage among women and men, although they share common factors too. For both men and  
373 women; age, wealth category, education and professional occupation are positively associated  
374 with health insurance. While being self-employed in the agricultural sector is negatively  
375 associated with health insurance coverage. It has been further established that marital union and  
376 clerical occupation only increase the probability of health insurance subscription for women. In  
377 the same vein, residing in the rural areas, being in the services, skilled manual and unskilled  
378 manual only increases the probability of health insurance subscription for women. Similarly,  
379 residing in rural areas reduces the probability of health insurance. Thus, all these factors point to  
380 the fact that there are differentials on the factors that influence health insurance coverage.

381

382

## 383 **Declarations**

## 384 **Acknowledgements**

385 The authors wish to acknowledge Dr Mwaka Siluonde for the English language Editing.

386

387 **Contributors**

388 JM and KMCM conceptualized and initiated the study. JM undertook the data analysis,  
389 interpretation and policy implications. MCM did the discussion of findings and reviewed the  
390 paper. CP wrote the abstract and conclusion.

391

392 **Competing interests**

393 The authors declare that they have no competing interests.

394

395 **Availability of data and materials**

396 The secondary data used in this study was obtained from the DHS Program website and was  
397 made available to the researchers on request. Data for this study is available at:

398 [https://dhsprogram.com/data/dataset/Zambia\\_Standard-DHS\\_2018.cfm?flag=0](https://dhsprogram.com/data/dataset/Zambia_Standard-DHS_2018.cfm?flag=0)

399

400

401 **Funding**

402 This study received no funding

403

404 **Consent for publication**

405 Not applicable.

406

407 **Ethics approval and consent to participate**

408 Ethical approval was not a requirement in this study since we used secondary data which is  
409 available in the public domain. However, before the data was collected by Zambia Statistical  
410 Agency, the Institutional Review Board (IRB) of the ICF and the IRB in Zambia reviewed and  
411 approved all the questionnaires as well as Zambia's - specific survey protocols, in order to  
412 adhere to ethical issues.

413

414 **Author details**

415

416 <sup>1</sup>Department of Economics, School of Social Science, Mulungushi University, Kabwe, Zambia;

417 <sup>1</sup>Department of Economics, School of Social Science, Mulungushi University, Kabwe, Zambia;

418 <sup>2</sup>National Authorizing Office of the European Development Fund, Ministry of Finance, Lusaka,

419 Zambia; <sup>3</sup>Department of Economics, Uludag University, Bursa, Turkey

420

421 **References**

422 1. Kusi A, Hansen KS, Asante FA, Enemark U. Does the National Health Insurance Scheme  
423 provide financial protection to households in Ghana? BMC Health Services Research.  
424 2011; 15(1):331. <https://doi.org/10.1186/s12913-015-0996-8>

425 2. Gottret PE, Schieber G. Health Financing Revisited: A Practitioner's Guide. Washington,  
426 DC: World Bank, 2006

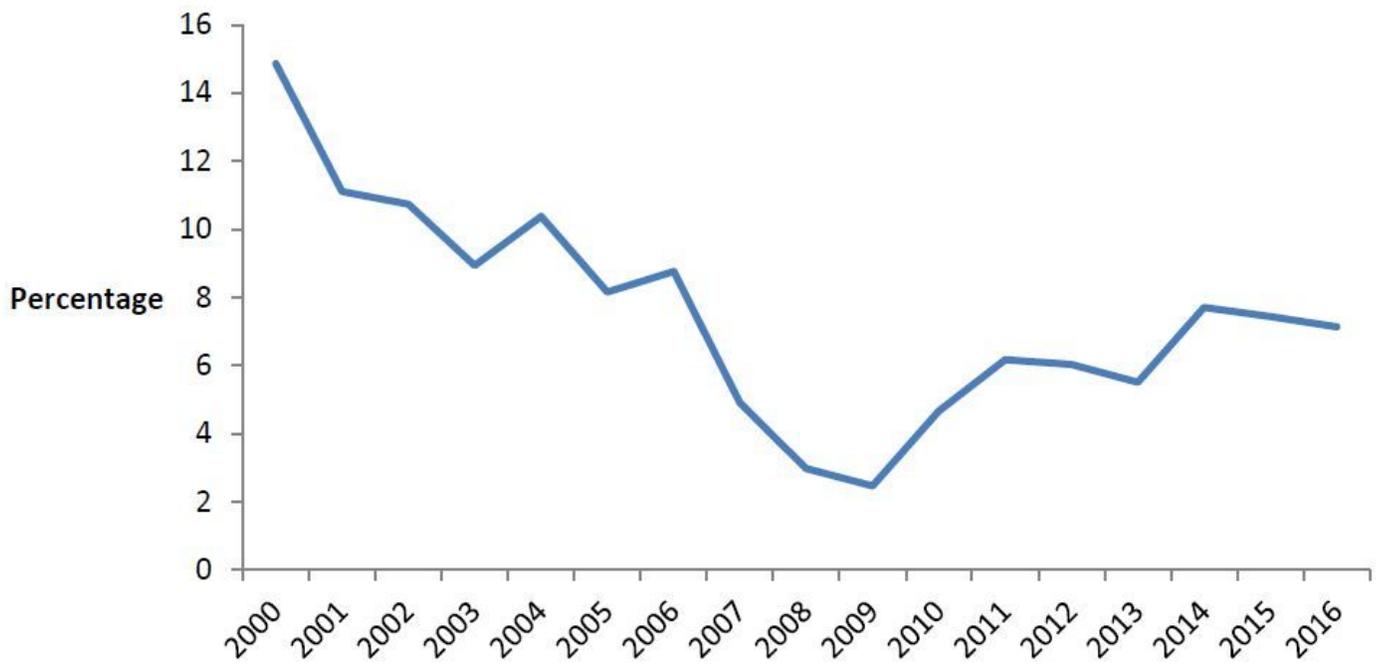
427 3. Wang W, Temsah G, Mallick L. Health Insurance Coverage and Its Impact on Maternal  
428 Health Care Utilization in Low- and Middle-Income Countries. DHS Analytical Studies  
429 No. 45. 2013; Rockville, Maryland, USA.

- 430 4. World Health Organization, World Bank. Tracking Universal Health Coverage. The  
431 World Bank, number 29042, 2017.
- 432 5. World Bank. World Development Indicators (WDI). Available from:  
433 <https://data.worldbank.org/indicator/SH.XPD.OOPC.PC.CD?locations=ZG>. Accessed 7  
434 February 2020.
- 435 6. Piatti-Fünfkirchen M., Lindelow M, Yoo K. What are governments spending on health in  
436 East and Southern Africa? *Health Systems & Reform*. 2008; 4(4), 284-299. [https://doi:](https://doi.org/10.1080/23288604.2018.1510287)  
437 [10.1080/23288604.2018.1510287](https://doi.org/10.1080/23288604.2018.1510287)
- 438 7. Amporfu, E. Equity of the premium of the Ghanaian national health insurance scheme  
439 and the implications for achieving universal coverage. *Int J Equity Health* **12**, 4 (2013).  
440 <https://doi.org/10.1186/1475-9276-12-4>
- 441 8. World Health Organization: World Health Report 2010 – Health Systems Financing: The  
442 Path to Universal Coverage. 2010, Geneva: World Health Organization
- 443 9. Erlangga D, Suhrcke M, Ali S, Bloor K. The impact of public health insurance on health  
444 care utilisation, financial protection and health status in low- and middle- income  
445 countries: a systematic review. *PLoS One*. 2019;14(11):1–20.
- 446 10. Arons J. Women and Obama care; what’s at stake for women if the Supreme Court  
447 strikes down the affordable care act? Center for American Progress, 2012.
- 448 11. Pan American Health Organization. Guide for analysis and monitoring of gender equity  
449 in health policies. 2009. Washington DC.  
450 [http://new.paho.org/hq/dmdocuments/2009/Guide\\_Gender\\_equity\\_.pdf](http://new.paho.org/hq/dmdocuments/2009/Guide_Gender_equity_.pdf)
- 451 12. Masiye F, Kaonga O. Determinants of healthcare utilisation and out-of-pocket payments  
452 in the context of free public primary healthcare in Zambia. *Int J Health Policy Manag*.  
453 2016. <https://doi.org/10.15171/IJHPM.2016.65>.
- 454 13. Zambia Statistics Agency, Ministry of Health (MOH) Zambia, and ICF. Zambia  
455 Demographic and Health Survey 2018. 2019. Lusaka, Zambia, and Rockville, Maryland,  
456 USA.
- 457 14. Central Statistical Office, Ministry of Health, and ICF International. Zambia  
458 Demographic and Health Survey 2013-14. 2014. Rockville, Maryland, USA: Central  
459 Statistical Office, Ministry of Health, and ICF International
- 460 15. Masiye F, Chansa C. Health Financing in Zambia. World Bank, Washington, DC. 2019.  
461 <https://openknowledge.worldbank.org/handle/10986/31786> License: CC BY 3.0 IGO
- 462 16. Central Statistical Office, Ministry of Health, Tropical Diseases Research Centre,  
463 University of Zambia, and Macro International Inc. Zambia Demographic and Health  
464 Survey 2007. 2009. Calverton, Maryland, USA: CSO and Macro International Inc.
- 465 17. Deka B. The Solidarity Model: Zambia Public Health Insurance Scheme. Policy  
466 Monitoring and Research Centre, 2018;2(4).  
467 <http://dspace.unza.zm/handle/123456789/5828>
- 468 18. Chilufya C. Zambia’s National Health Insurance Scheme. *Health Press Zambia Bull*,  
469 2018; 2(4), 5-16.
- 470 19. Amu H, Dickson KS, Kumi-Kyereme A, Darteh EKM. Understanding variations in  
471 health insurance coverage in Ghana, Kenya, Nigeria, and Tanzania: evidence from  
472 demographic and health surveys. *PLoS One*. 2018;13(8):e0201833.  
473 <https://doi.org/10.1371/journal.pone.0201833>

- 474 20. Mulenga JN, Bwalya BB, Gebremeskel Y. Demographic and Socio-economic  
475 determinants of maternal health insurance coverage in Zambia. *Epidemiol Biostat Public*  
476 *Health*. 2017;14(1):e12094–1. doi: 10.2427/12094.
- 477 21. Paola Salari, Patricia Akweongo, Moses Aikins, Fabrizio Tediosi, Determinants of health  
478 insurance enrolment in Ghana: evidence from three national household surveys, *Health*  
479 *Policy and Planning*, 2019; 34(8), 582–594, <https://doi.org/10.1093/heapoll/czz079>
- 480 22. Duku SKO. Differences in the determinants of health insurance enrolment among  
481 working-age adults in two regions in Ghana. *BMC Health Serv Res*. 2018;18(1):384.  
482 <https://doi.org/10.1186/s12913-018-3192-9>
- 483 23. Reshmi B, Unnikrishnan B, Nair NS, Guddattu V. Factors Determining the Enrolment in  
484 Community-based Health Insurance Schemes: A Cross-sectional Study from Coastal  
485 South India. *Indian J Community Med*. 2018;43(4):312-315.  
486 doi:10.4103/ijcm.IJCM\_118\_18
- 487 24. Nsiah-Boateng E, Prah RJ, Nonvignon J. Is enrolment in the national health insurance  
488 scheme in Ghana pro-poor? Evidence from the Ghana Living Standards Survey. *BMJ*  
489 *Open*, 2019; 9(e029419). <https://doi:10.1136/bmjopen-2019-029419>
- 490 25. ICF International. Demographic and Health Survey Sampling and Household Listing  
491 Manual. MEASURE DHS, 2012, Calverton, Maryland, U.S.A.
- 492 26. Torres-Reyna O. Predicted probabilities and marginal effects after (ordered) logit/probit  
493 using margins in Stata. 2014. <http://dss.princeton.edu/training/Panel101.dta>
- 494 27. Kazungu JS, Barasa EW. Examining levels, distribution and correlates of health  
495 insurance coverage in Kenya. *Trop Med Int Health*. 2017;22(9):1175-1185.  
496 doi:10.1111/tmi.12912
- 497 28. Kiplagat I, Muriithi M, Kioko U. Determinants of health insurance choice in kenya. *ESJ*.  
498 2013; 9(13). Available from: <https://eujournal.org/index.php/esj/article/view/1064>
- 499 29. Alesane A, Anang BT. Uptake of health insurance by the rural poor in Ghana:  
500 determinants and implications for policy. *Pan Afr Med J*. 2018;31:124. Published 2018  
501 Oct 19. doi:10.11604/pamj.2018.31.124.16265
- 502 30. CSO. 2015 Living Conditions Monitoring Survey Report. Government of the Republic of  
503 Zambia, 2016. Lusaka
- 504 31. Ibok, NI. Socio-Economic and Demographic Determinants of Health Insurance  
505 Consumption. *Canadian Social Science*, 2012: 8(5), 64-70. Available from  
506 <http://www.cscanada.net/index.php/css/article/view/j.css.1923669720120805.1836>  
507 DOI: <http://dx.doi.org/10.3968/j.css.1923669720120805.1836>.
- 508 32. Hougaard C, Chamberlain D, Aseffa Y. Towards a strategy for micro insurance market  
509 development in Zambia: A market and regulatory analysis. Centre for Financial  
510 Regulation and Inclusion (Cenfri) research for the ILO, UNCDF, FinMark Trust Zambia  
511 and FinMark Trust South Africa. 2009. Cape Town. Available from: [http://www.  
512 microinsurancecentre.org/resources/documents/towards-a-strategyfor-microinsurance-  
513 development-in-zambia/download.html](http://www.microinsurancecentre.org/resources/documents/towards-a-strategyfor-microinsurance-development-in-zambia/download.html).

514

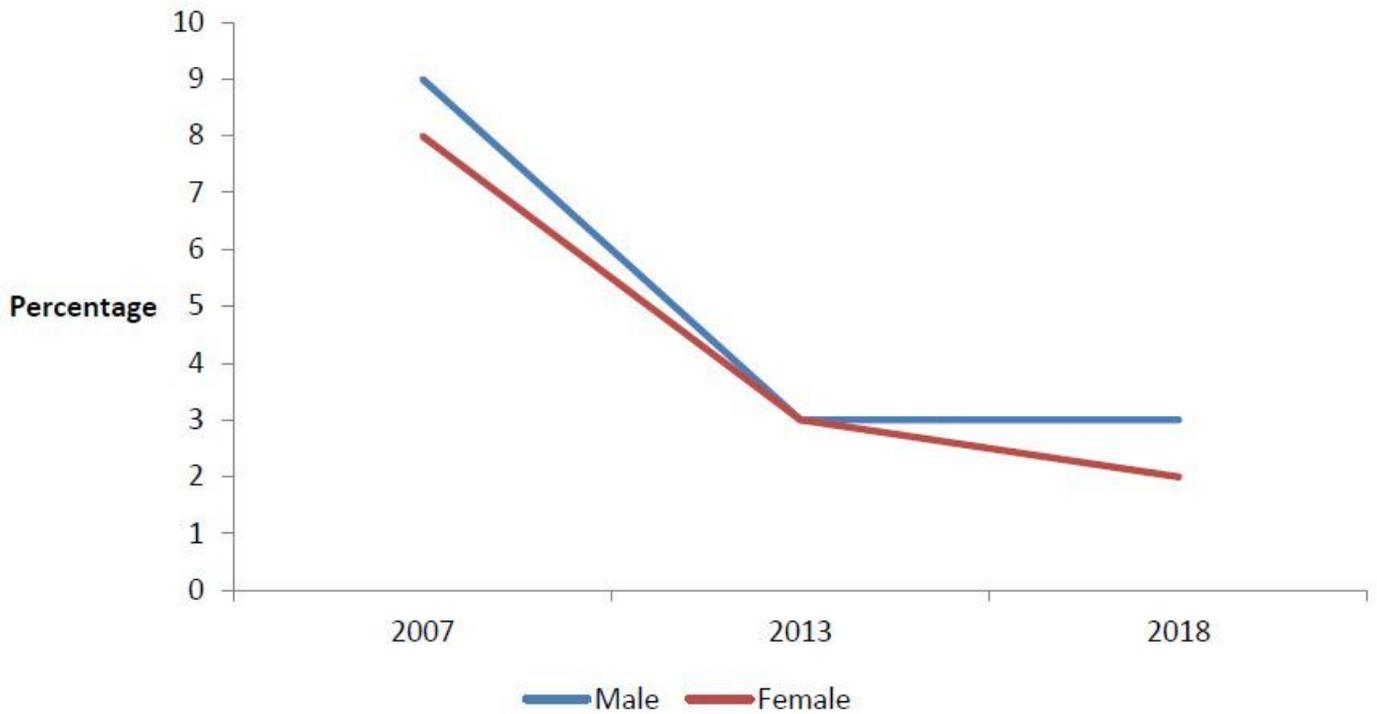
# Figures



Source: Constructed using the World Development Indicators [5]

## Figure 1

Trends in Domestic General Government Health Expenditure as a Percentage of General Government Expenditure.



Source: Constructed from [13, 14, 16]

Figure 2

Trends in Health Insurance Subscriptions for Women and Men in Zambia

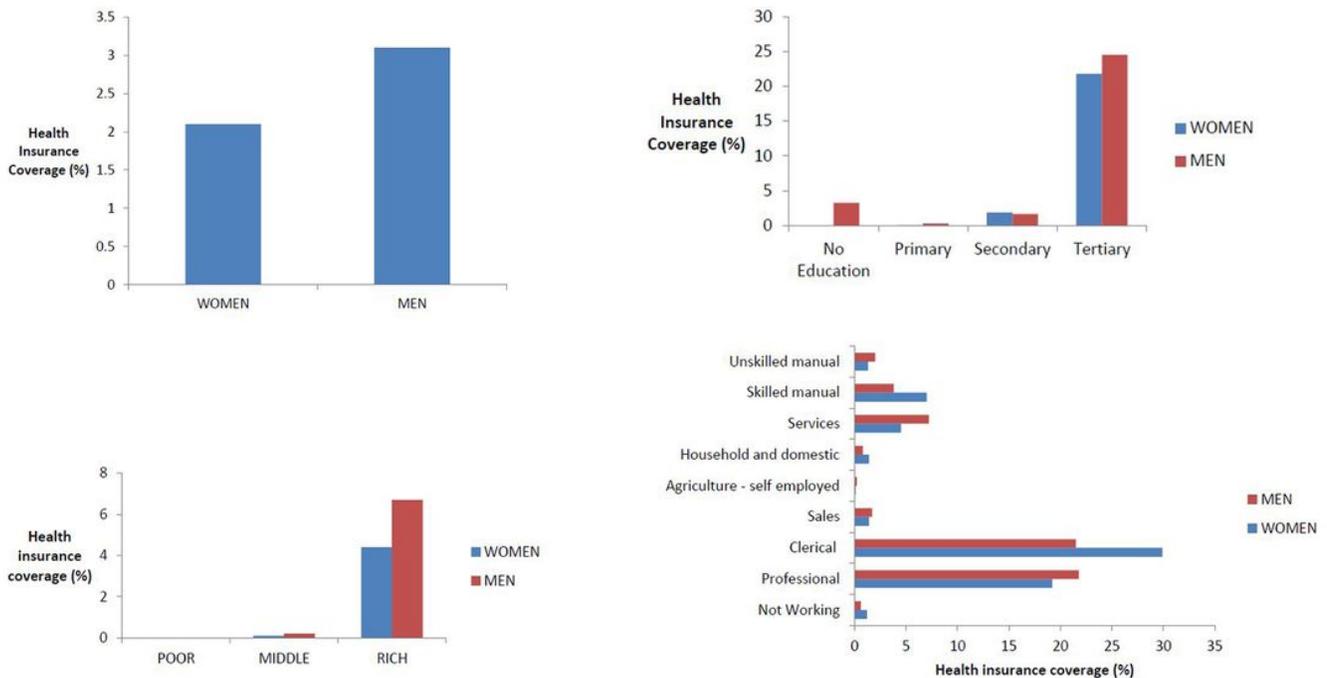


Figure 3

Health Insurance Coverage: Women versus Men 3.1(a): Health Insurance Coverage by Wealth: Women versus Men 3.1(b): Health Insurance Coverage by Educational Level: Women versus Men 3.1(c): Health Insurance Coverage by Occupation: Women versus Men