Assessing the Effectiveness of the Anambra State Health Insurance Scheme: Impacts on Healthcare Utilization and Health Outcomes

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Abstract: The Anambra State Health Insurance Scheme (ASHIS) is a pivotal initiative designed to enhance healthcare delivery and protect residents of Anambra State, Nigeria, from the financial risks associated with health emergencies. The scheme aims to promote early detection, preventive care, and effective management of diseases, thereby improving overall population well-being. This study investigates household adoption of ASHIS and its impact on health-seeking behavior, employing a logit model on data collected from 513 respondents, including both enrollees and non-enrollees. The study indicates that ASHIS enrollment significantly increases healthcare utilization, with enrollees accessing services more frequently than non-enrollees, likely due to reduced out-of-pocket expenditures. Key determinants of adoption include distance to healthcare facilities, awareness of the scheme, profession, income, household size, and spatial location. Despite the positive effects, overall adoption remains low, particularly among rural and semi-urban populations. These findings underscore the need for targeted strategies, including community-based schemes, mobile outreach programs, and public awareness campaigns, to expand coverage, improve accessibility, and enhance the effectiveness of ASHIS in achieving universal health coverage.

Keywords: Health insurance, Nigeria, Logit model, Anambra State Health Insurance Scheme

1. Introduction

Achieving universal health coverage (UHC) is a central target of the Sustainable Development Goals (SDGs), reflecting a global commitment to ensuring that all individuals have access to quality healthcare without financial hardship. Social health insurance systems are widely recognized as a key instrument for advancing this goal, as they pool financial risks, reduce catastrophic out-of-pocket expenditure (OOPE), and protect households from impoverishment due to health shocks (Darkwah, 2022). By improving affordability and accessibility, health insurance promotes poverty reduction and enhances overall population well-being (Ito et al. 2022). Several developing countries have experimented with innovative health financing models to enhance equity and service delivery (Kitole et al, 2023). Nonetheless, comprehensive coverage remains elusive in many developing economies, where OOPE continues to dominate health financing, often resulting in income volatility, asset depletion, and long-term welfare losses (Onyemaechi & Ezenwaka, 2022). Globally, around 800 million people allocate more than 10% of household income to healthcare, and nearly 100 million are pushed into extreme poverty each year due to catastrophic OOPE (WHO, 2017).

Nigeria exemplifies these challenges. Despite the introduction of the National Health Insurance Scheme (NHIS) in 2005, enrolment remains extremely low, covering only about 5% of the population (Adewole et al., 2023). The

persistence of OOPE as the primary health financing mechanism accounting for more than 75% of total health spending has left millions of households vulnerable to financial catastrophe and restricted access to essential health services (World Bank, 2022). The consequences are reflected in the country's poor health outcomes: maternal mortality stands at 576 per 100,000 live births, infant mortality at 69 per 1,000, and under-five mortality at 128 per 1,000 live births, while neonatal deaths exceed 262,000 annually (UNICEF, 2019). These indicators underscore the urgency of strengthening health financing mechanisms to advance UHC.

In response to the limited success of the NHIS, several Nigerian states have introduced decentralized health insurance schemes to expand coverage. Anambra State pioneered such efforts through the Anambra State Health Insurance Scheme (ASHIS), launched in 2016 to reduce inequities in access and address the financial burden of healthcare. OOPE in Anambra State is particularly high, constituting 91.1% of health expenditure, which severely constrains utilization (Anambra State Ministry of Health, 2019). ASHIS was designed as a social protection mechanism that entitles enrollees to a comprehensive package of preventive, promotive, and curative services across all levels of care, tailored to local morbidity and disease burden. In principle, this scheme represents a critical pathway to achieving UHC in the state.

Yet, despite its policy relevance, evidence on the determinants of ASHIS adoption and its impact on healthcare-seeking behaviour remains limited. Previous studies on health insurance in Nigeria have largely been descriptive, narrowly focused, or confined to small samples, thereby offering little in the way of robust econometric evidence. Moreover, findings from other countries are not easily generalizable to Nigeria, given its unique economic, social, political, and cultural contexts, as well as the heterogeneity across subnational schemes. Against this backdrop, rigorous evaluation of ASHIS is not only timely but also necessary to inform the scaling of subnational health insurance initiatives.

This study addresses this gap by examining two interrelated questions: (1) What are the factors that determine the adoption of the impact of ASHIS in Anambra State? (2) What impact does ASHIS have on healthcare-seeking behaviour in Anambra State? To answer these questions, we apply a logistic regression approach using data collected across the state's three senatorial districts, covering rural, semi-urban, and urban areas. This design enables a more comprehensive understanding of the scheme's effectiveness than prior studies. The study contributes to the literature in several ways: by providing context-specific evidence on health insurance adoption in Nigeria, by moving beyond descriptive analyses through robust econometric modelling, and by generating insights that can inform policy on subnational pathways to UHC.

The remainder of the paper is structured as follows: Section 2 reviews the relevant literature, Section 3 presents the methodology, Section 4 discusses the results, and Section 5 outlines the policy implications and conclusions.

2. Literature Review

Theories of health demand and health capital provide the foundation for understanding the role of health insurance in healthcare access and outcomes. The Grossman health capital model conceptualizes health as a form of capital in which individuals invest, while the theory of risk pooling emphasizes the role of insurance in spreading financial risks and reducing catastrophic expenditures (Chen, 2024). These perspectives suggest that health insurance should enhance healthcare utilization, reduce out-of-pocket costs, and improve health outcomes, though the extent of these effects depends on program design and socioeconomic context.

Empirical studies across different economies have provided mixed but generally positive evidence on the effectiveness of health insurance schemes. For example, Liu and Zhao (2014) found that the urban resident basic medical insurance in China increased healthcare utilization without reducing out-of-pocket spending, while Mahapatro et al (2018) showed that health insurance in India reduced financial burden but inequalities persisted. Evidence from Thailand (Suphanchaimat et al., 2019) revealed reduced out-of-pocket payments among migrants, and Kuwawenaruwa et al. (2019) demonstrated that a maternal and child insurance scheme improved affordability though awareness gaps limited its effectiveness. Further studies from Saudi Arabia (Al-Hanawi et al., 2020), China (Feng et al. 2020), Laos (Ito et al. 2022), Indonesia (Kosasih et al. 2022), and India (Prasad et al., 2023; Krishnamoorthy et al., 2023) highlight how insurance generally increases healthcare utilization, but its effectiveness varies by population group and institutional setting.

Focusing on African economies, Bagnoli (2019) reported that health insurance in Ghana improved children's health, although gains were uneven across regions. Stewart et al. (2021) showed that Ghana's national health insurance provided some financial protection but did not improve timeliness of care or prevent catastrophic health expenditure among injured children. Darkwah (2022) found that exempting the elderly from premiums increased their healthcare use, while Sekyi (2022) identified socioeconomic and demographic drivers of enrolment and utilization. Similarly, Kitole et al. (2023) demonstrated that insurance in Tanzania significantly shaped household healthcare behaviour, with education, income, and proximity to health facilities being key determinants. In Nigeria, studies underscore the potential of health insurance to improve health access, but also reveal persistent challenges. Gustafsson-Wright et al. (2017) and Bonfrer et al. (2018) showed that state-level insurance schemes increased healthcare utilization and reduced out-of-pocket spending in rural areas, although effects varied between insured and uninsured populations. Ugbor et al. (2021) reported that community health insurance enhanced maternal health-seeking behaviour, particularly antenatal care visits. Onyemaechi and Ezenwaka (2022) demonstrated that social health insurance schemes improved enrollee healthcare utilization, while Imo et al. (2022) established that maternal health insurance coverage was protective against under-five mortality. These findings point to the promise of health insurance in Nigeria, but also highlight gaps related to affordability, enrolment, and program awareness.

Against this backdrop, the present study evaluates the effectiveness of the Anambra State Health Insurance Scheme, contributing evidence from a subnational context that remains underexplored in the literature.

3. Methodology

3.1. Study Area and Data Collection

The study was conducted in Anambra State; one of the 36 Nigerian states located in the Southeast. The state hosts one of Africa's largest markets and two of Nigeria's five notable industrial clusters - the Nnewi Automotive and Onitsha Plastic clusters (Dimnwobi et al. 2018; Ekesiobi & Dimnwobi, 2020; Nwokoye et al., 2022; Dimnwobi et al., 2023). Industrial and commercial activities are reinforced by the traditional Igbo apprenticeship system, which has nurtured numerous Igbo-owned businesses locally and abroad (Igwe et al., 2018; Nwokoye et al., 2022). The National Population Commission estimated an annual growth rate of 2.8% and a projected population of 4.5 million in 2018 (NPC, 2018). Administratively, the state has three senatorial districts and 21 local government areas (LGAs). Its health system is coordinated by the State Ministry of Health (SMOH).

The study population comprised all residents of Anambra, both enrollees and non-enrollees of the Anambra State Health Insurance Scheme (ASHIS). A mixed sampling approach was applied. First, the three senatorial districts were purposively selected to ensure state-wide coverage. Then, nine LGAs (three per district) representing urban, semi-urban, and rural areas were randomly chosen to minimize spatial bias.

Kothari (2010) identifies two approaches to sample size determination: Bayesian statistics and precision-based estimation. The latter was adopted, using a 95% confidence level ($z = 1.96$), probability of selection ($p = 0.5$), and 5% margin of error (e). This yielded a minimum of 384 respondents, but 513 were surveyed. Verbal informed consent, anonymity, and confidentiality were ensured.

Data collection took place from May 10 to July 20, 2023, using a structured questionnaire administered by trained graduate enumerators fluent in the local language. The instrument contained dichotomous and multiple-choice questions. Content, criterion, and construct validity were ensured through expert review by health economists and practitioners, with the design also drawing from existing literature for convergent validity (Nwokoye et al. 2019). Reliability was confirmed through a pilot test in a different LGA, involving 40 respondents, using test-retest and Cronbach's alpha, which demonstrated consistency.

3.2. Theoretical Framework

The theoretical framework is anchored on the health belief model (HBM). This framework is preferred because of its flexibility and coherence in exploring the determinants of health insurance adoption and the impact of the scheme on health-seeking behavior. The model suggests that an individual's health-related actions are influenced

by their perception of the severity of a health condition (perceived severity, PS), their susceptibility to it (perceived susceptibility, PSS), the benefits of taking preventive measures (perceived benefits, PB), and the barriers they face (perceived barriers, PBa) (Shih and Fan, 2008; Carpenter and Yoon, 2011; Levesque et al. 2013). According to Shih and Fan (2008), the HBM can be represented as follows:

$$BI = \alpha_0 + \alpha_1 PS + \alpha_2 PSS + \alpha_3 PB + \alpha_4 PBA \quad 1$$

Where
Behavior Intention (BI) represents the individual's intention to adopt health insurance.

In the context of health-seeking behavior, the HBM also suggests that the presence of a health insurance scheme can influence individuals' attitudes (Attitudes, A), beliefs (Beliefs, B), and self-efficacy (Self-Efficacy, SE) related to seeking healthcare. As observed by Levesque et al. (2013), HBM suggests that individuals learn and adopt new behaviors through observation, modeling, and self-efficacy. Carpenter and Yoon (2011) suggest that health-seeking behavior could be represented as:

$$HSB = \beta_0 + \beta_1 A + \beta_2 B + \beta_3 SE \quad 2$$

Where:
Health-Seeking Behavior (HSB) represents the individual's actual behavior in seeking healthcare.
Combining 3.1 and 3.2 yields:

$$HSB = \Omega_0 + \Omega_1 BI + \Omega_2 A + \Omega_3 B + \Omega_4 SE$$

Where:
HSB represents the individual's actual behavior in seeking healthcare.
BI is the behavior intention variable derived from the HBM.

3.3. Model Specification

The model specification is discussed in line with the research objectives.

Objective 1: Determinants of ASHIS adoption

From equation 3.1, health insurance adoption behavior is contingent on perceived severity (PS), perceived susceptibility (PSS), perceived benefit (PB) and perceived barrier (PBA). Following Carpenter and Yoon (2011) and Levesque et al. (2013), the following variables are identified as proxies. Awareness (AWA) as proxy for PS, spatial location (SPL) and job status (JOS) as proxies for PSS, quality of service (QOS) as proxy for PB and distance (DIS) and income (INC) as proxies for PBA. The model is specified as:

$$HIA = \Omega_0 + \Omega_1 AWA + \Omega_2 SPL + \Omega_3 JOS + \Omega_4 QOS + \Omega_5 DIS + \Omega_6 INC \quad 3$$

Where HIA is health insurance adoption.

However, as observed by xxx, health adoption behavior could be affected by demographic attributes of the health-seekers. Some of the demographic attributes identified in the literature include age, marital status (MAR), household size (HHZ), education (EDU), and profession (PROF). Accounting for these covariates and adding the stochastic error terms, Equation 3 becomes:

$$HIA = \Omega_0 + \Omega_1 AWA + \Omega_2 SPL + \Omega_3 JOS + \Omega_4 QOS + \Omega_5 DIS + \Omega_6 INC + \Omega_7 MAR + \Omega_8 HHZ + \Omega_9 AGE + \Omega_{10} PROF + \Omega_{11} EDU + \varepsilon_1 \quad 4$$

Where HIA refers to health insurance adoption

Objective 2: impact of ASHIS on healthcare-seeking behaviour

Objective 2 seeks to evaluate the impact of adoption of health insurance on health-seeking behavior. From Equation 3.2. Using subscription to ASHIS as a proxy for adoption behavior, education (EDU) as proxy for belief, age (AGE) as proxy for attitude and marital status (MAR) as a proxy for self-efficacy, the model of health-seeking behavior is represented as:

$$HSB = \Psi_0 + \Psi_1 ASHIS + \Psi_2 AGE + \Psi_3 EDU + \Psi_4 MAR \quad 5$$

Adewole et al (2023) further argue that household size (HHZ) and state of employment (JOS) are critical for adjustment in health seeking behavior. Incorporating these covariates into Equation 5 yields:

$$HSB = \Psi_0 + \Psi_1 ASHIS + \Psi_2 AGE + \Psi_3 EDU + \Psi_4 MAR + \Psi_5 HHZ + \Psi_6 JOS + \varepsilon_2 \quad 6$$

Both equation 4 and 6 will be estimated using logit technique

The variable description is shown on Table 1

Table 1: Variable description

Variable	Description	Coding
Gender	Sex distribution of the respondents	male = 1, female =0
ASHIS	Respondent enrolls into the ASHIS	Enrolled = 1, otherwise = 0
Age	Age in years	Log
age_square	The square of age in years	Log
Marital status (MAR)	Whether a respondent is married, single, divorced and widowed	Married =1, single = 2, divorced = 3, widowed = 4
Spatial location (SPL)	Place of residence of respondent categorized as rural and urban	Urban = 1, rural =0
Household size (HHZ)	The number of persons per household	Log
Education (EDU)	The level education completed by the respondents	no education = 0, primary = 1, secondary 2, post-secondary = 3, others = 4
Job status (JOS)	Whether a respondent is employed or otherwise	employed =1, unemployed =0
Profession (PROF)	Whether a respondent is a civil servant or otherwise	civil servant = 1, non-civil servant = 0
Income (INC)	The monthly earnings of respondent from all income sources	Log
Distance (DIS)	The distance between a respondent's place of resident or work and healthcare facility	Log
Awareness (AWA)	Whether a respondent is aware of ASHIS or not	Yes=1, no =0
Quality of service (QOS)	A measure of the quality of service rendered by the ASHIS.	poor = 0, fair = 1, good = 2, very good = 3, excellent = 4

Source: Authors Computation

3.4. Estimation Techniques and Procedures

The model specified in equations 4 and 6 were estimated using binary logistic regression framework. Logistic regression measures the relationship between the categorical dependent variable and one or more independent variables by estimating probabilities using a logistic function (Woodridge, 1995). Logistic regression is considered apt given that the dependent variable is a binary choice. The values of the dependent variable are actually 1 or 0.

Coding the dependent variable in this fashion implies that expected value (E(y)) is simply the probability that y = 1:

$$E(y_i / x_i, \beta) = 1.\Pr(y_i = 1/ x_i, \beta) + 0.\Pr(y_i = 0/ x_i, \beta)$$
$$= \Pr(y_i = 1/ x_i, \beta)$$

Where y_i is the dependent variable x_i is a vector of explanatory variables and β is a vector of parameter estimates.

Logistic regression first takes the odds of the event happening for different levels of each independent variable, then takes the ratio of those odds (which is continuous but cannot be negative) and then takes the logarithm of that ratio (this is referred to as logit or log-odds) to create a continuous criterion as a transformed version of the dependent variable such that

$$y = \begin{cases} 1 \ if & y_i^* > 0 \\ 0 \ if & y_i^* \le 0 \end{cases} \text{ where } y_i^* \text{ is the predicted } y$$

4. Estimated Results and Discussions

In this section, the responses obtained from the survey are presented and analyzed. Out of the 513 copies of the questionnaire that were administered, only 505 copies were returned. This represents 98.4% of the respondents. The subsequent analysis of results is therefore based on the 505 returned questionnaires.

4.1. Demographic Profile of Respondents

Figure 1 shows that 289 respondents representing 57% are female while 216 respondents representing 43% are male. This suggests that the respondents are fairly distributed between male and female gender.

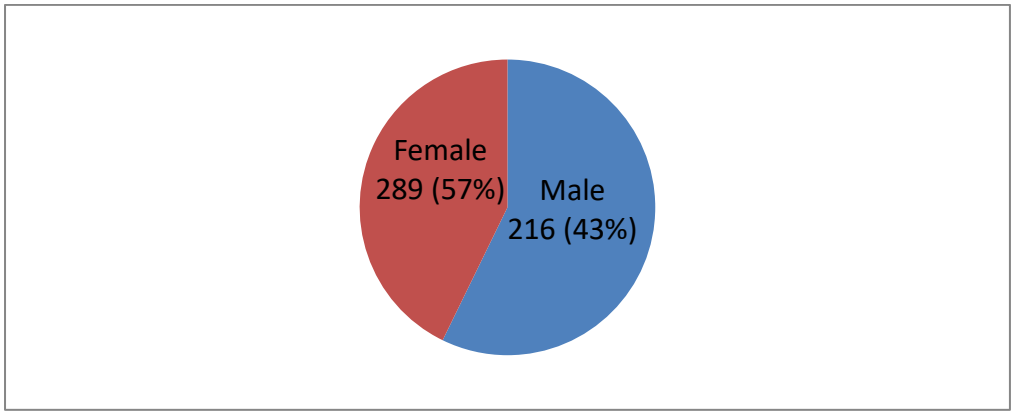

Figure 1: Gender distributions of the respondents
Source: Researchers Computation from the Survey data (2023)

Table 2 summarizes the age distribution of the respondents. The modal age bracket is 41-50 years with a total frequency of 137 respondents (27.1%). Also, the distribution shows that the median age is 50 years. 43 respondents (8.5%) are within the age bracket of 20-30 years while 78 respondents (15.4%) are within the age bracket of 31-40 years. In the same vein, 121 respondents (24.0%), 76 respondents (15.0%) and 50 respondents (9.9%) are within the age brackets of 51-60 years, 61-70 years and 71 year and above respectively.

Table 2: Age distribution of the respondents

Age	Frequency	%
20-30	43	8.514851

31-40	78	15.44554
41-50	137	27.12871
51-60	121	23.9604
61-70	76	15.0495
71 and above	50	9.90099
	505	100

Source: Researchers Computation from the Survey data (2023)

The survey report also shows that most of the respondents are Christians. A total of 457 respondents representing 90.5% of the total respondents surveyed is Christians. A total of 38 respondents are traditional worshippers. This represents 7.5% of the respondents. The population of Muslims that were surveyed amounts to 10 respondents, representing 1.98%. This is not unconnected with the demographic or the religious characterization of the residents of Anambra state. Anambra state is undisputedly a Christian state. According to Australian diplomatic mission (2010), Anambra is made up of approximately 85 percent Christians, 12 percent traditional believers and 3 per cent Muslim.

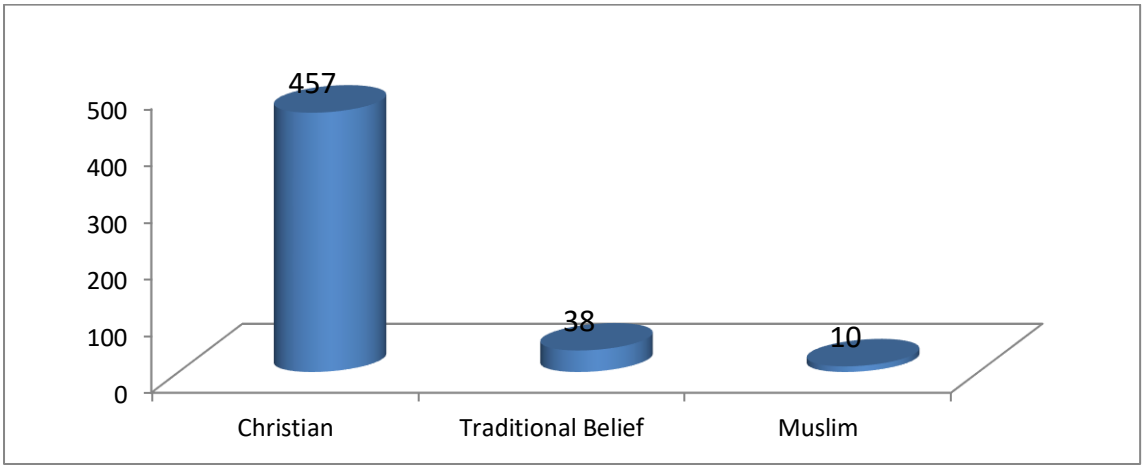

Figure 2: Religion of the respondents
Source: Researchers Computation from the Survey data (2023)

The marital status of the respondents shows that 253 respondents (50%) are married while 121 respondents (24.0%) are single. Also, 57 respondents are divorced (11.3%) while 74 respondents are widowed (14.65%).

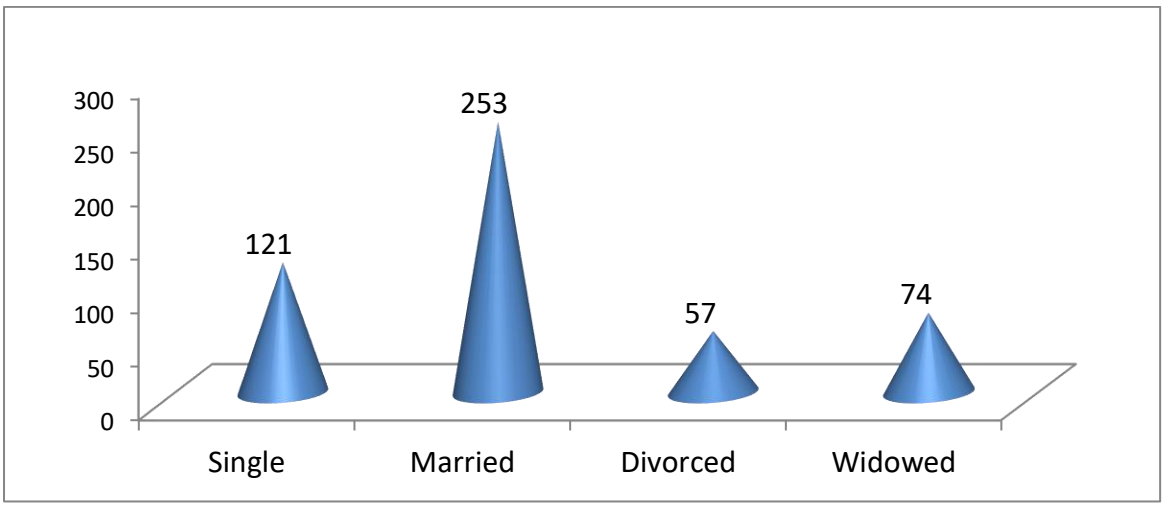

Figure 3: Marital status
Source: Researchers Computation from the Survey data (2023)

The spatial location of the respondents (See Table 3) spreads from urban to semi-urban and rural areas. 186 respondents (36.8%) live in the rural areas, another 221 respondents (43.8%) live in the semi-urban areas while 98 respondents (19.4%) live in the urban area.

Table 3: Spatial location of the respondents

Location	freq	%
Rural	186	36.83168
Urban	98	19.40594
Semi-Urban	221	43.76238
Total	505	100

Source: Researchers Computation from the Survey data (2023)

The educational achievements of the respondents are shown in Figure 4. The result obtained show that 35 respondents (6.9%) have no educational qualifications, 86 respondents (17.0%) have primary education, 211 respondents (41.8%) has secondary education, 138 respondents (27.3%) has post-secondary education (including NCE, BSc, HND, Msc, PhD) while 35 respondents (6.93%) has other qualifications (including vocational education). This shows that the modal educational attainment is secondary schools.

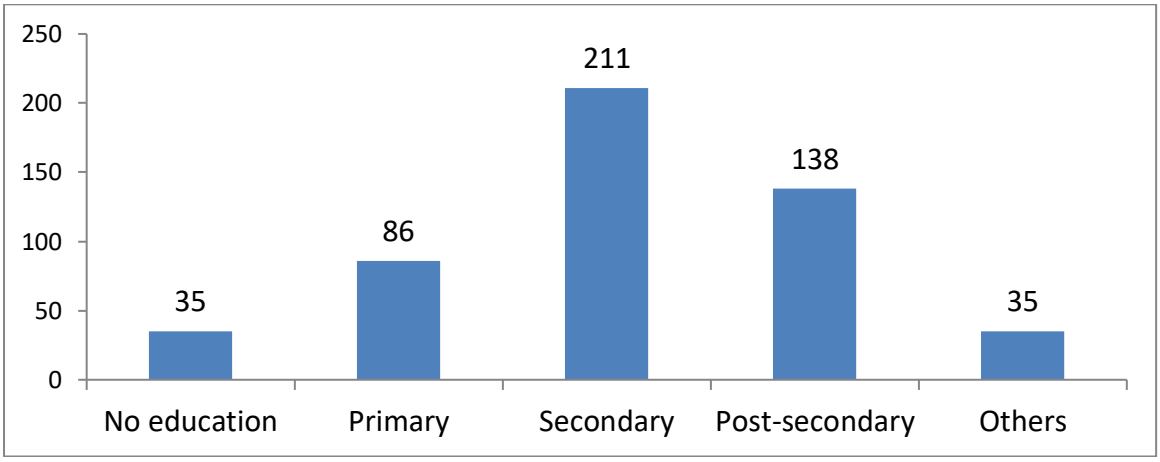

Figure 4: Educational attainments of the respondents
Source: Researchers Computation from the Survey data (2023)

Table 4 summarizes the job status of the respondents. it shows that 402 respondents (79.6%) are employed while 103 respondents (20.4%) are unemployed.

Table 4: Job status of respondents

Job	Frequency	%
Employed	402	79.60396
Unemployed	103	20.39604
Total	505	100

Source: Researchers Computation from the Survey data (2023)

Figure 5 is a pie chart showing the distance of the respondents from the healthcare facility that the respondent uses, whether the respondent is an enrollee or not. 236 respondents (46.7%) indicated that the distance between their healthcare facility and their place of residence or work is 3 km and above. Another 145 respondents (28.7%) are 1-2km away from their healthcare facility while only 124 respondents (24.5%) are within a distance that is less than 1km from their healthcare centre.

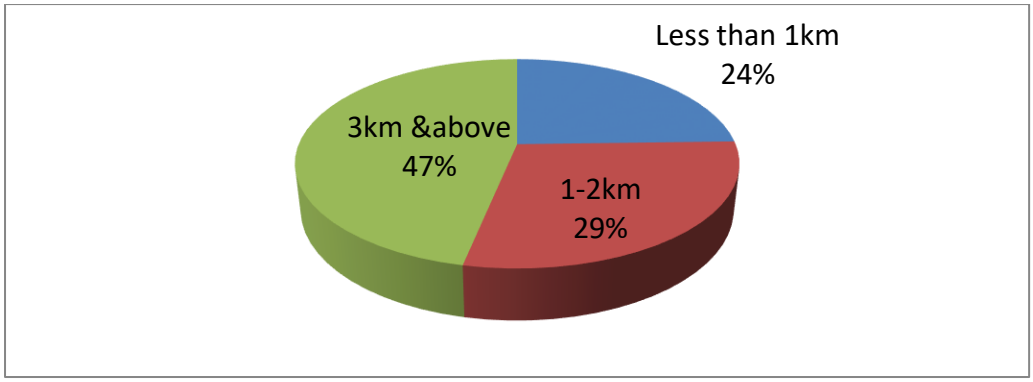

Figure 5: Distance between healthcare facility and respondents' resident or workplace
Source: Researchers Computation from the Survey data (2023)

Table 5 shows that 318 respondents (63.0%) are enrollees of the ASHIS, while 187 respondents (37%) are not enrolled or subscribed to the ASHIS. The advantage of including both enrollees and non-enrollees is that it helps to ensure a balance of view on the implementation of the ASHIS as well as the health-seeking of the respondents.
Table 5: Summary responses on enrolments and others

	Yes	%	No	%	Total
Are you subscribed to the membership of ASHIA	318	62.97	187	37.03	505
Do ASHIA scheme motivate you	140	44.03	178	55.97	318
Have you or members ill in the past six months?	339	67.13	166	32.87	505
Did your family members seek treatment?	287	84.66	52	15.34	339
Do you plan to cut your ASHIA membership?	116	36.48	202	63.52	318
Are you aware of the ASHIA?	365	72.28	140	27.72	505

Source: Researchers Computation from the Survey data (2023)

Out of the 318 enrollees, only 140 enrollees (44%) indicated that they are motivated by the scheme. 178 enrollees (56%) said that they are not motivated by the scheme. This may be unconnected with the level of satisfaction they got form the service of the scheme. Also, 229 respondents (67.1%) noted that their family members have fallen ill within the past 12 months. Out of this, 287 (84.7%) sought for medical attention through healthcare facilities. Also, 116 respondents (36.5%) indicated that they are planning to discontinue the scheme, while 202 (63.3%) of the enrollees said they will continue with the scheme. The survey result also shows that 365 respondents (72.3%) are aware of the scheme while 140 (27.7%) of the respondents are not aware of the scheme. Figure 6 show that 188 respondents out of the 318 enrollees are civil servants. This represents 59.1% of the enrollee population surveyed. Another 32 enrollees (10.0%) are private sector employees, 28 enrollees (8.8%) are self-employed, 14 enrollees (4.4%) are farmers and 56 enrollees (17.6%) are pensioners. This shows that the scheme is dominated by civil servants.

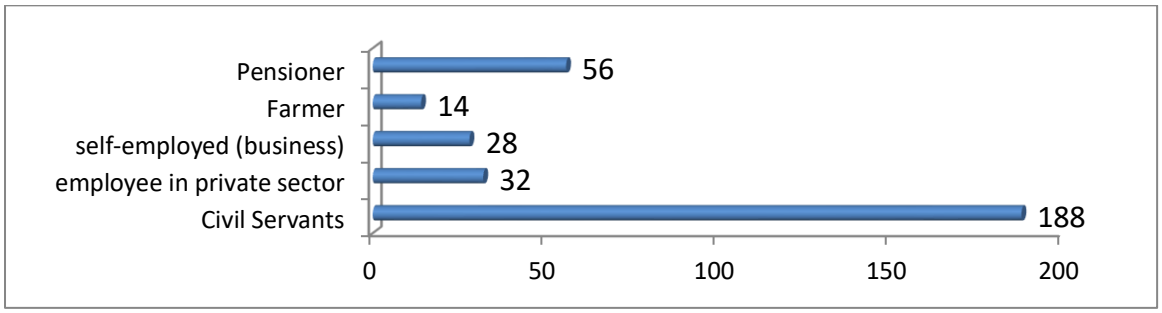

Figure 6: Employment Type
Source: Researchers Computation from the Survey data (2023)

The monthly income distribution (See Table 6) of the respondents shows that the modal income range is ₦50,000 and below while the mean income is ₦67,295. 243 respondents (48.1%) are within the income range of ₦50,000 and below, 178 respondents (35.2%) are within the bracket of ₦51,000-100,000. Another 84 respondents (16.6%) said that they earn above ₦100,000 monthly

Table 6: Monthly income distribution of the respondents

Monthly Income	freq	%
₦50,000 & Below	243	48.11881
₦51000 -₦100,000	178	35.24752
₦101,000 & above	84	16.63366
Total	505	100

Source: Researchers Computation from the Survey data (2023)

On the quality of service offered, Figure 7 shows that 175 respondents (34.7%) rated the services of the scheme as being poor, 201 (39.8%) rated it fair. On the other hand, 67 respondents (13.2%) rated it good, 56 respondents (11.1%) rated it very good while 6 respondents (1.2%) rated it excellence.

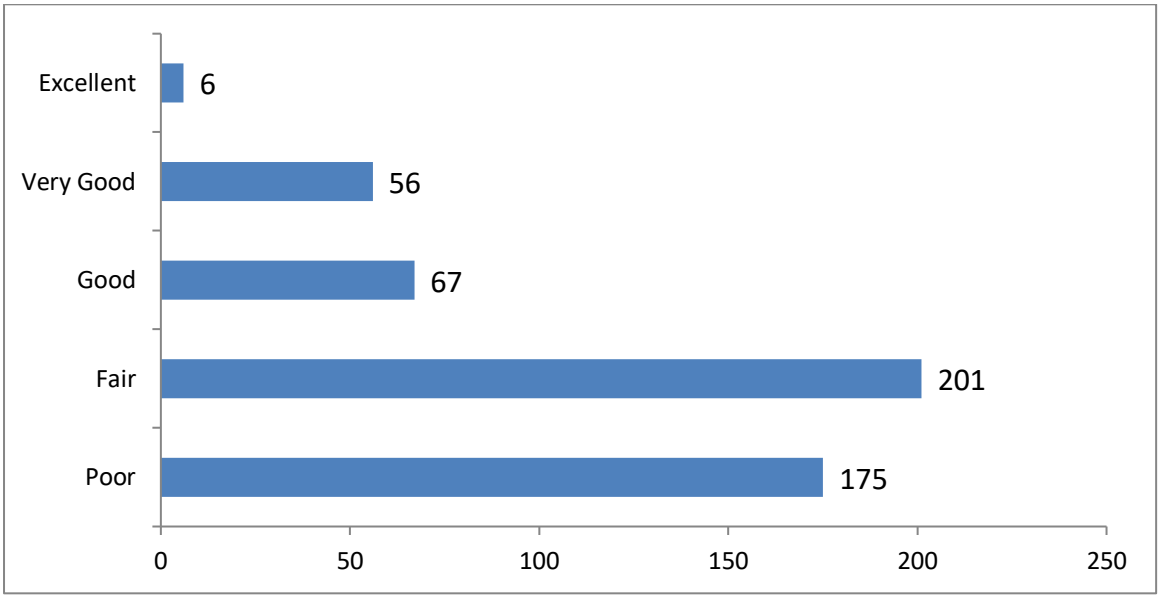

Figure 7: Quality of Service Delivery
Source: Researchers Computation from the Survey data (2023)

4.3. Logistic Model of Healthcare-seeking behavior and adoption of ASHIS

To evaluate the adoption of the ASHIS and the healthcare-seeking behavior in Anambra state, a logistic model was estimated using the survey responses. Two models were estimated, each addressing the research questions. Table 7 presents the summary of the logit estimates of the model of the adoption of ASHIS. The logit model was optimized using Berndt-Hall-Hall-Hausman algorithm.

4.3.1. Determinants of adoption of ASHIS

The result (See Table 7) shows that gender entered the model with negative log odds of 0.196. The log odd for age and marital status are 0.076 and 0.060 respectively. Also, the log odds of spatial location, household size, education and job status are 0.182, -0.067, 0.064, and 0.183 respectively. others include profession (0.304), income (0.054), distance (-0.177), awareness (0.074) and quality of service (0.060).

Table 7: Summary of estimates of the determinants of the adoption of ASHIS

	Coding	Coefficients	Standard errors	Marginal effects	Standard errrors
Gender	male = 1, female =0	-0.196***	0.023	-0.049***	0.006
Age	Log	0.076***	0.008	0.019***	0.002
age_square	Log	0.211	0.147	0.052	0.036
Mar_stat	Married =1, single = 2, divorced = 3, widowed = 4	0.060*	0.033	0.015*	0.008
Spat_loc	Urban = 1, rural =0	0.182***	0.036	0.045***	0.009
HHZ	Log	-0.067***	0.011	-0.017***	0.003
Edu	no education = 0, primary = 1, secoondary 2, post secondary = 3, others = 4	0.064***	0.012	0.016***	0.003
Job status	employed =1, unemployed =0	0.183***	0.035	0.045***	0.009
Prof	covol servant = 1, non-civil servant = 0	0.304***	0.059	0.074***	0.014
Income	Log	0.054***	0.014	0.014***	0.003
Distance	Log	-0.177***	0.043	-0.044***	0.011
Awareness	Yes=1, no =0	0.074***	0.009	0.018***	0.002
Quality_service	poor = 0, fair = 1, good = 2, very good = 3, excellent = 4	0.060***	0.012	0.015***	0.003
LR Statistic (Prob)		591.5629 (0.0000)		548.9087	
McFadden's pseudo-R2		0.6638		0.6902	
C		-0.061***	0.012	-0.015***	0.003

Source: Researchers Computation from the Survey data (2023)

Given that the mechanical interpretation of log odd is considered to convey limited information (Gujarati, 2004; Woldridge, 2005), we proceed to interpret the estimates based on marginal effects. Marginal effect refers to the change in the predicted probability of an event for a unit change in an independent variable, while holding all other independent variables constant. Thus, as shown in Table 7, the marginal effects of gender, age, household size and education are -0.049, 0.019, 0.017 and 0.003 respectively. This indicates that increasing age by one unit will increase the probability of enrolment in the ASHIS by 0.019. The estimates also suggest that if household size increases by one unit, the probability of enrolling into the scheme reduces by 0.017. The results also show that as education increases, the probability of enrolling into the scheme increases by 0.003. The result also shows that women are more likely to be enrolled into the scheme than men.

Also, the marginal effects of income and distance are 0.014 and 0.044, suggesting that one unit increase in income and distance will lead to 0.014 and 0.044 unit increase in the probability of enrolling into the scheme. The result also being aware increases the probability of enrolling by 0.018. in the same vein, the result shows that being employed increases the probability of enrolment by 0.045 while being a civil servant increases the probability by 0.074.

4.3.2. Impact of ASHIS on healthcare-seeking behavior

Table 8 is a summary of the estimates of the impact of ASHIS on healthcare-seeking behavior. The result obtained show that the log odd of ASHIS is 0.095 with a standard error of 0.034. The marginal effect is 0.024. This shows that enrolling for the ASHIS increasing the probability of seeking for healthcare by 0.024. In other words, those who are enrolled are more like to seek for healthcare than those who are not enrolled. The result also shows that the log odd for age is 0.065 while the marginal effect is 0.016. This suggests that increasing one's age by one unit increasing the probability of seeking for healthcare by 0.024. Similarly, being married, having higher education and being employed increases the probability of seeking for healthcare by 0.020, 0.021 and 0.060 respectively

Table 8: Summary of estimates for the impact of ASHIS on healthcare-seeking behaviour

Symbol	Coefficient	Std. Error		
ASHIS	0.095***	0.034	0.024***	0.008
Age	0.065**	0.029	0.016**	0.007
age_square	0.278*	0.156	0.068*	0.038
Mar_stat	0.091	0.103	0.020	0.022
HHZ	-0.089***	0.029	-0.022***	0.007
Edu	0.084**	0.034	0.021***	0.008
Job status	0.242***	0.057	0.060***	0.014
C	0.401	0.343	0.096	0.082
McFadden's pseudo-R2	389.0633 (prob = 0.0000)		376.0021 (0.0000)	
LR Statistic	0.62409		0.68022	

Source: Researchers Computation from the Survey data (2023)

4.4. Discussion of findings

The findings of this study show that there is awareness gap in the implementation of the ASHIS. Lack of awareness can significantly affect the adoption of health insurance schemes in several ways. According to Adibe et al. (2011), when people lack awareness about the benefits and coverage provided by health insurance schemes, they may not understand how it can protect them financially during medical emergencies. Without this knowledge, they may overlook or underestimate the importance of obtaining health insurance. Adibe et al (2011) also opined that a lack of awareness can create misconceptions about the cost of health insurance. People may falsely believe that insurance premiums are too expensive, which deters them from considering health insurance as a viable option. The perceived high costs can lead to a reluctance in adopting health insurance schemes. This lack of awareness can derive from limited access to information about available health insurance schemes, especially in rural or remote areas, where access to the internet, media, or government campaigns may be limited, individuals might not be aware of the existence or details of health insurance schemes. Also, Adewole et al (2016) further opined that a lack of awareness can contribute to a lack of trust in health insurance providers and their services. People might be skeptical about the benefits, coverage, or reimbursement processes, leading to hesitations in adopting health insurance schemes.

The study also found that enrollment into ASHIS has significant positively impact on healthcare-seeking behavior. This change in healthcare seeking behaviour can happen due to several factors. Health insurance provides individuals with financial protection against medical expenses. When people have health insurance coverage, they are more likely to seek timely and appropriate healthcare without worrying about the high costs involved. Dimnwobi et al (2022a); Onuoha et al (2023a); Onuoha et al (2023b); Samour et al (2024); Okere et al (2024) and Okere et al (2025) noted that financial security encourages individuals to proactively seek medical care, leading to better healthcare-seeking behavior and development outcomes. Adeniji (2017) observed that health insurance often comes with a network of healthcare providers, hospitals, and clinics. When individuals enroll in a health insurance scheme, they gain access to this network, which can expand their options for receiving healthcare services. With a wider range of providers to choose from, people are more likely to seek care when needed, resulting in improved healthcare-seeking behavior. This change of behavior may stem from the reduction in the out-of-pocket expenses' individuals have to bear when seeking healthcare services. With lesser financial burden, people are more likely to seek appropriate and timely care without delay. This can lead to better healthcare-seeking behavior as individuals are not deterred by the fear of high costs.

According to Adewole et al. (2016), health insurance partners provide some level education and sensitization to the enrollees. Health insurance schemes often provide educational resources and information about health-related topics to their enrollees. This increased health awareness and education can influence individuals to actively seek healthcare services, practice preventive measures, and make informed decisions about their health. Also,

individuals with health insurance are more likely to seek timely treatment for chronic conditions. Without the worry of financial burden, they can manage their conditions effectively, visit healthcare providers regularly, and seek necessary medications and treatments. This proactive approach to managing chronic conditions demonstrates positive healthcare-seeking behavior.

The results also show that having large household size reduces the probability of enrolling for into ASHIS. Larger household sizes often come with increased financial responsibilities, including expenses related to housing, education, transportation, and daily living. With limited financial resources, individuals may prioritize other essential needs over health insurance coverage. They might perceive health insurance premiums as an additional financial burden that they cannot afford, leading to a lower likelihood of enrollment. WHO (2010) also explained that the low enrolment of persons from a large household could be as a result of dependency factor. Individuals with larger household sizes may rely on employer-sponsored health insurance coverage. If one or more members of the household have access to employer-provided health insurance, they may assume that it sufficiently covers the entire family's healthcare needs. This perception can lead to a lower inclination to seek additional health insurance coverage.

The results obtained also showed that people with lower income are less likely to enroll for ASHIS. Low-income individuals often face tight budgets and have limited disposable income (Dimnwobi et al. 2021; Dimnwobi et al. 2022b; Dimnwobi et al., 2023a; Dimnwobi et al., 2023b; Aladejare & Dimnwobi, 2025a). They may prioritize basic needs such as food, housing, and utilities over health insurance coverage. The cost of health insurance premiums, deductibles, copays, and other out-of-pocket expenses can be perceived as unaffordable and a strain on their limited financial resources. The low enrolment may be caused by complex Enrollment Processes. Health insurance enrollment processes can be complicated and require navigating through a multitude of paperwork, online portals, and eligibility requirements. Low-income individuals who face challenges related to language barriers, limited literacy, or lack of access to the internet and technology may find it difficult to complete the enrollment process successfully (WHO, 2010; Nixon & Odeyemi, 2013; Eboh, Akpata & Akintoye, 2016; Nwokoye et al. 2024; Aladejare & Dimnwobi, 2025b).

5. Conclusion and policy implications

5.1. Conclusion

The Anambra State Health Insurance Scheme (ASHIS) was established as a social protection mechanism to reduce financial vulnerability from health shocks and to expand access to essential health services. This study examined its adoption and influence on healthcare-seeking behaviour using evidence from 513 households in the state. The analysis highlights three central findings. First, ASHIS enrolment remains concentrated among civil servants and pensioners, with limited participation from the private sector and widespread unawareness in rural and semi-urban areas. Second, structural and socioeconomic factors including distance to healthcare facilities, household size, employment type, and educational attainment significantly shape adoption behaviour. Third, despite these constraints, ASHIS demonstrates a clear psositive effect on healthcare-seeking behaviour by lowering out-of-pocket expenditure, encouraging timely care, and promoting preventive service use. Overall, the findings underscore both the potential and the limitations of state-level health insurance as a pathway toward universal health coverage.

5.3. Recommendations

The findings of this study show that the ASHIS positively influences the health-seeking behavior of residents. The study further reveals that factors such as distance to healthcare facilities, awareness of the scheme, profession, income, and spatial location critically affect adoption. Given that the current adoption rate remains low, enhancing ASHIS requires a comprehensive, multi-faceted approach.

To improve the adoption and effectiveness of the scheme, several strategic interventions are recommended. Mobile outreach programs should bring healthcare services directly to rural communities through mobile clinics or health personnel, reducing barriers of distance and accessibility. Community-based health insurance schemes tailored to the specific needs of local populations can be established in rural areas, with government support

through technical guidance and subsidies to ensure sustainability. Subsidized premiums for vulnerable groups, including low-income and unemployed residents, should be provided to make the scheme more affordable and inclusive. Comprehensive public awareness campaigns targeting both urban and rural populations are essential to educate residents about the benefits of health insurance, using radio, television, social media, and community gatherings to enhance understanding and dispel misconceptions.

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Strengthening healthcare infrastructure, particularly through well-staffed primary healthcare centers in rural areas, is crucial to encourage enrollment and utilization by ensuring accessible, quality services. Collaboration with employers, especially in the private sector and government agencies, should be deepened to expand coverage among formally employed residents and institutionalize participation. Expanding overall coverage to vulnerable populations such as low-income individuals, pregnant women, children, and the elderly will broaden access beyond the current dominance of civil servants. Developing a robust network of healthcare providers, including public and private facilities, will increase accessibility, competition, and choice for beneficiaries. Quality assurance mechanisms, including facility accreditation and regular monitoring, are necessary to maintain acceptable standards of care and patient safety. Finally, a comprehensive monitoring and evaluation framework should be established to assess scheme performance, utilization, and beneficiary satisfaction while continuously updating policy and regulatory frameworks to ensure transparency, accountability, financial sustainability, and alignment with international best practices.

5.4. Suggestion for Further Studies

The adoption of health insurance and the evolving patterns of household health-seeking behavior are dynamic phenomena influenced by both demand and supply factors in healthcare delivery. While this study focused primarily on the demand side, a comprehensive understanding of the scheme also requires examining the supply side, particularly the role and constraints of healthcare providers. Therefore, future studies should conduct an in-depth analysis of healthcare providers' perspectives and challenges in the implementation of the ASHIS.

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