





Research Article

# Contrasting User Benefit Baskets and Provider Payment Options Seeking National Social Health Insurance Choices in Selected Districts for Sierra Leone

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## Abstract

In this article, we examine the healthcare potential of the relationship between User/ Benefit Baskets (BB) and Provider/ Payment Options (PO) evolving in six (6) Regional Districts in Sierra Leone, an emerging country in West Africa, and detail how components of Benefit Baskets and Payment Options can impact the nature and scope of implementing a National Social Health Insurance Program in Sierra Leone. Identified and perceived relationships, as revealed by a cross-sectional study, are presented with contextual data from users and providers in the respective six districts. Quantitative data was collected (from August to December 2019) for this research study using a semi-structured questionnaire with a sample size of 1,503 respondents made up of 1,185 household heads and 318 healthcare providers. Data collection, which began during 2019, was analyzed into essential descriptive and inferential statistics. Statistical analysis was run at a significant 5% level using Stata vs 14.0 software. Our results reveal that factors such as marital status, religion, occupation, monthly income, and the district of residents in Sierra Leone were more likely to influence the magnitude of contributions for the content of a User/ Benefit Basket. In contrast, the selection of a Provider/ Payment Option by healthcare providers – such as Diagnostic-Related Grouping (DRG) and Fees-for-Service (FFS), were more likely to be influenced by the level of care provided by the healthcare providers and by the Regional District in which the service providers were situated and operated. Based on our findings, key contextual factors are most likely to influence the content of BBs and POs in Sierra Leone. Hence, we submit that it is appropriate for such contextual factors associated with BBs and POs to be adequately and rigorously considered upon the implementation of a National Social Health Insurance Program for the people of Sierra Leone.

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## Keywords

National Social Health Insurance Program, Sierra Leone, Benefit Baskets, Payment Options, Capitation, Diagnostic Related-Grouping, Fees-for-Service, Healthcare Providers

## 1. Introduction

Financing of healthcare in African countries has reached a level of questionable reputation and has gone through numerous phases with governments promising different procedures and mechanisms to attain equity and access. While many types of healthcare financing frameworks in Europe have been directed towards cost containment, such health care financing reforms have only begun in developing countries, especially in Sub-Saharan Africa. As a result of increased demand for change in the scope of healthcare, many African when governments are unable to provide free healthcare because of limited resources [1, 2]. Financing of healthcare is becoming so authoritative that several countries are predominantly using distinctive methodologies such as Social Health Insurance (SHI), Taxation, Voluntary Private Health Insurance, Out-of-Pocket Costs, and User Fees, and other contributions to finance their healthcare systems. These emerging modes of financing healthcare are being implemented to ensure that individuals have access to quality and affordable healthcare [3]. In contrast, a Social Health Insurance Scheme (SHIS) entails different provider payment methods [4]. Provider payment methods are mechanisms that are implemented to distribute funds to providers from healthcare service purchasers. A significant payment mechanism of providers can successfully be implemented based on a robust support system of health services [4, 5] using provider payment mechanism which includes; line-item budget, per-diem, global budget, fee-for-service, case-base, diagnostic-related group, and capitation. Dixon & Hertelendy (2014) stated that the SHI Scheme entails three (3) different common provider payment methods: Capitation, Fee-for-Service and Diagnostic-Related Grouping (DRG) [4].

Diverse payment mechanisms generate different financial motivations that can affect healthcare providers' performance, what services they provide, how they provide them and the combination of inputs they use. The correct incentives can direct healthcare providers' behaviour in a way that serves health system goals such as quality of care, extended access to the priority service area, countless responsiveness to patients and more efficient use of resources. There is "no golden" procedure or perfect payment mechanism, and every technique has its positives and negatives, and can yield unforeseen penalties. That notwithstanding, all payment mechanisms can be beneficial at a particular point in times and in precise situations. Countries need to find the mix of techniques that will build motivations that line up with their healthcare system

priorities and goals. Also the combination of healthcare provider payment mechanism that is best for a country, region or institution will change over periods as providers adapt and react to the motivations, and as goals and challenges also change [5]. Healthcare providers remain a mix of private and public healthcare facilities.

The National Health Insurance Scheme (NHIS) in Nigeria, for example, demands that they (providers) offer services specified in a defined Benefit Basket to the beneficiaries and follow an important drug list and serve as gatekeepers for the NHIS concerning referrals. However, health care providers accept capitation fees and fee-for-service (FFS) payments for hospital care and for primary health services [6]. Healthcare providers' characteristics are more often associated with indicators for accreditation to a Social Health Insurance Plan. Payments made in a Social Health Insurance Scheme (SHIS) for health insurance are distributed across subscribers upon an agreed frequent contribution. A health insurance scheme is supposed to accredit and registers a provider of healthcare for a probation period of 2 years and then reaccredit them. This accreditation is based on the provider's ability in the provision of primary, secondary or tertiary care services. Providers must meet the minimum requirements: such as facility level requirements, individual requirements (scope and skills), registration and equipment requirements with the proper human resource which are all tailored to primary, secondary and tertiary type of provider. In reality, NHIS rarely reaccredit healthcare providers after going through the period of probation due to the lack of financial and human resources [6].

The issue of identifying proper purchasing and formulating a Benefit Basket under the implementation of National Social Health Insurance in a low-income country (*e.g.* Sierra Leone) has been a cause of disagreement, especially in Sierra Leone. This is because fundraising and payment mechanisms for healthcare delivery remain unclear. As a result, Sierra Leone is constantly and rapidly going through reforms to attain a strategic purchasing, funding and payment mechanism for implementing a National Social Health Insurance Program.

Nonetheless, this study was undertaken with the purpose to contextually identify the essential factors influencing the content of Benefit Baskets and Payment Options (mechanisms) needed for long-term success in Sierra Leone, focusing on six (6) Regional Districts: Bo, Bombali, Koinadugu, Kono, Western Area Rural, and Western Area Urban.

## 2. Methodology

### 2.1. Study Design and Populations

This research study is cross-sectional by design, plus analytical by type. This study covered both healthcare providers and household heads in six (6) selected Regional Districts in Sierra Leone. The six selected Regional Districts (with Providers & Household Heads) were chosen randomly to have a representation from the four regions. The Population is shown in Table 1 below.

**Table 1.** Study Population Distribution by District.

District	Household Population (Hp)	Healthcare Facilities
Kono	505,491	78
Bombali	605,741	96
Koinadugu	408,687	53
Bo	574,026	105
Western Area Rural	443,068	60
Western Area Urban	1,050,711	42
Total	3,587,724	434

See Figure 1 for Map of the Republic of Sierra Leone and location of the population centers and areas.



**Figure 1.** Map of the Republic of Sierra Leone.

### 2.2. Study Unit

The sample size was estimated from the study population using a sample size calculator version 2.0.2 by Relief Applications

(<https://play.google.com/store/apps/details?id=calculate.sample.size>). A 95% confidence level and a precision rate of 0.03 give a sample size of 318 healthcare providers from the total population (434) and 1,185 household heads from the total Sierra Leone household population of 3,587,724. This is shown in Tables 2 and 3 below:

**Table 2.** Household Population Sample Size Distribution by District.

District	Household Population (Hp)	% Proportion By District (%Pd=Hp/Tp*100)	Sample Size for Each District (Szd=%Pd/100*1185)
Kono	505,491	$(505,491/3,587,724)100 = 14.09$	$(14.09/100)1,185 = 167$
Bombali	605,741	$(605,741/3,587,724)100 = 16.88$	$(16.88/100)1,185 = 200$
Koinadugu	408,687	$(408,687/3,587,724)100 = 11.39$	$(11.39/100)1,185 = 135$
Bo	574,026	$(574,026/3,587,724)100 = 16$	$(16/100)1,185 = 190$
Western Area Rural	443,068	$(443,068/3,587,724)100 = 12.35$	$(12.35/100)1,185 = 146$
Western Area Urban	1,050,711	$(1,050,711/3,587,724)100 = 29.27$	$(29.27/100)1,185 = 347$
Total	3,587,724		1,185
Total Sample Size For Household Heads = 1,185			

**Table 3.** Healthcare Providers Sample Size Distribution by District.

District	Health Services (Hs)	% Proportion Of Hs (%Phs=Hs/Ths*100)	Sample Size For Each District (Szd=%Ps/100*318)
	Total	Population / Proportion (2dp)	Total (to the nearest whole)
Kono	78	(78/434)100 = 17.97	(17.97/100)318 = 57
Bombali	96	(96/434)100 = 22.12	(22.12/100)318 = 70
Koinadugu	53	(53/434)100 = 12.21	(12.21/100)318 = 39
Bo	105	(105/434)100 = 24.19	(24.19/100)318 = 77
Western Area Urban	60	(60/434)100 = 13.82	(13.82/100)318 = 44
Western Area Rural	42	(42/434)100 = 9.68	(9.68/100)318 = 31
Total	434		318
Total Sample Size for Service Providers = 318			

### 2.3. Sampling Frame

Inclusion criteria for the household populations are that only the heads of households were considered. For service providers, only heads of healthcare facilities were considered in each of the selected facilities. A probability sampling type was adopted to ensure that every individual has an equal chance of getting selected. For this reason, the simple random sampling technique was used in selecting the respondents.

Healthcare providers were selected from the list of facilities reached by every District Health Management Team (DHMT) for all selected districts. Probability sampling was used to select the facilities as respondents. Balloting without replacement was conducted. At the district level, all the facilities were coded from one to the required number of facilities in the district based on the list provided by the DHMTs. Those codes were written on pieces of paper. The selection was done through balloting without replacement until the required sample size was attained in each of the selected districts. The codes were then matched to the facilities on the provided list.

For the Households, respondents were selected based on the systematic sampling technique. The researcher counted the households based on the data from the Sierra Leone Statistics Office. To have equal opportunities for household selection for the study using the constant term (Kth term), the study population was divided by the sample size ( $3,587,724/1,185 = 3,028$ ), out of every three thousand and twenty-eight (3,028) household the 3,028<sup>th</sup> was selected as a respondent. If, for any reason, the household heads were not around, the data collector automatically enrolled the immediate household.

### 2.4. Data Collection and Analysis

Data for this study were obtained from the head of service

providers of each selected facility through a set of two semi-structured questionnaires that were administered through interviews by research assistants (RAs). Following the systematic pre-testing of the tool. The statistical analysis was done using statistical packages such as STATA version 14.0 (Stata Corporation, College Station, TX). For this cross-sectional study, both inferential and descriptive analysis was done. The outcome of the findings was reported in tables and figures based on percentages, frequency, and proportion and also in another form such as graphs and charts. Odds ratios (ORs), coefficient (Coef) and 95% confidence interval (CIs) were calculated to assess the predictors and all statistical tests were conducted at the level of significance  $p < 0.05$ .

## 3. Results and Findings

The findings of this research study are presented under three related captions:

1. first part entails the Healthcare Providers' Characteristics. and Household head characteristics;
2. followed by the Preferred Choice of Payment Options by Healthcare Providers;
3. and concludes with the Factors Influencing the Content of Benefit Baskets and Payment Options.

Results of this research study are organized and displayed in [Tables 4 through 11](#). All data are available on written requests by interested parties via the Lead Author or Corresponding Author.

### 3.1. Healthcare Providers' Characteristics

Healthcare providers' characteristics are moreover considered indicators for accreditation to a social health insurance. The accreditation is based on the provider's characteristics: its

ability with the provision of primary, secondary or tertiary care services and other indicators which are assessed in this section. In this section, the qualities and associated characterization of various healthcare providers were rigorously assessed and presented in Table 1 which, we propose, can be used as a clear guide by policymakers in Sierra Leone to determine best accreditation for implementation of the proposed Sierra Leone/ National Social Health Insurance Program (SL/ NSHIP).

In Table 4, a majority of healthcare providers were from Bo district, more than half of the healthcare providers were from a rural area. The data reveals that, majority of the health care providers are within the age bracket of 40-49 years, which most of them were female. In addition, the findings in other provider characteristics (marital status, religion, level of care provided, type of care, level of awareness and willingness for accreditation) is shown below:

**Table 4.** Healthcare Providers Characteristics.

Variables	Frequency (n = 318)	Percentage (%)
District		
Kono	57	17.92
Bo	77	24.21
Bombali	70	22.01
Koinadugu	39	12.26
W.A Urban	44	13.84
W.A Rural	31	9.75
Location of service providers in each district		
Rural Area	200	62.89
Urban area	118	37.11
Age category of service providers		
20-29	21	6.6
30-39	100	31.45
40-49	121	38.05
50+	76	23.9
Gender of healthcare providers		
Female	263	82.7
Male	55	17.3
Marital status of healthcare providers head		
Single	108	33.96
Married	177	55.66
Divorced	17	5.35
Widow	16	5.03
Healthcare providers partner status		

Variables	Frequency (n = 318)	Percentage (%)
No Partner	141	44.34
Has Partner	177	55.66
The religion of healthcare providers head		
Islam	190	59.75
Christianity	128	40.25
Type of facility		
Public Facilities	288	90.57
Private Facilities	25	7.86
Mission Facilities	5	1.57
Level Of Care Providers (multiple responses)		
primary care providers		
No	10	3.14
Yes	308	96.86
Secondary care providers		
No	294	92.45
Yes	24	7.55
Tertiary care providers		
No	264	83.02
Yes	54	16.98
Type of Care Provided by Facilities (multiple responses)		
Outpatient care providers		
No	10	3.14
Yes	308	96.86
Inpatient care providers		
No	238	74.84
Yes	80	25.16
Awareness of the SL/ NSHIP implementation		
No	186	58.49
Yes	132	41.51
Willingness for facility accreditation		
No	0	0
Yes	318	100
Level of confidence of healthcare providers in government for the sustainability of the SL/ NSHIP		
Not Confident	57	17.92
Somehow Confident	61	19.18
Confident	96	30.19
Very Confident	58	18.24
Highly Confident	46	14.47

### 3.2. Characteristic of Household Heads

Table 5 below shows the study findings based on the socio-demographic characteristics of household heads, which were that most of the respondents were from the Western urban area, which was unsurprising because it holds a larger population in the country. The age group ranging from 30 to 39 and 40 to 49 years represented the highest proportion of the sample in the study. The implication is that significant portions of recent reproduction are within these groups of childbearing and employment, but not the largest groups of the Sierra Leone population. Male gender accounted for the largest proportion, which implies that females are less considered when managing the homes financially. Most of the respondents from the findings were married. The result shows that most of the household heads are informal workers, and a significant portion earn less than Le 500,000. The implication is that financial hardship on these individuals may affect their healthcare-seeking pattern and their premium contribution towards the proposed scheme.

**Table 5.** Characteristics of Household Heads.

Variables	Frequency	Percentage (%)
District of household heads		
Kono	167	14.09
Bo	190	16.03
Bombali	200	16.88
Koinadugu	135	11.39
Western Area Urban	347	29.28
Western Area Rural	146	12.32
Total	1,185	100
Location of household heads		
Rural area	364	30.72
Urban area	821	69.28
Total	1,185	100
Age categories of household heads		
20-29	105	8.86
30-39	517	43.63
40-49	354	29.87
50-59	177	14.94
60+	32	2.7
Total	1,185	100
Female	382	32.24
Male	803	67.76
Total	1,185	100

Variables	Frequency	Percentage (%)
Marital status of household heads		
Single	161	13.59
Married	856	72.24
Divorced	101	8.52
Widow	67	5.65
Total	1,185	100
The religion of household heads		
Islam	561	47.34
Christianity	624	52.66
Total	1,185	100
Occupation of household heads		
Informal	746	62.95
Formal	439	37.05
Total	1,185	100
Categories of household head Monthly income		
<Le 500,000	444	37.47
Le 500,000 - 1,000,000	418	35.27
> Le 1,000,000	323	27.26
Total	1,185	100
Educational Qualification of household heads		
No formal education	306	25.82
Primary school education	158	13.33
Secondary school education	248	20.93
Tertiary education	473	39.92
Total	1,185	100

Source: Field data (2019)

### 3.3. Preferred Choice of Payment Options by Healthcare Providers

We found that with a sound National Health Insurance Scheme (NHIS), an acceptable payment option for providers can be successfully implemented with robust support (public and private) of health services. The NSHI Scheme entails different provider payment methods [4]. Upon this note, the researcher believes that, for appropriate formulation of a payment mechanism that will benefit both the providers and purchaser, it is important to involve the healthcare providers from the onset of planning by identifying and assessing them on their preferred payment options under a NSHIP which can provide base line information for policymakers in terms of payment mechanism for the implementation of the proposed SL/ NSHIP. The find-



ings in this section are reported in Table 6.

The results from our research study show that almost all respondents are aware of salary as the existing payment mechanism for the government, less than 1% are aware of both Line Item and Stipend as existing payment mechanisms. On the challenges related to the existing payment options, insufficient funds accounted for the highest. On the preferred payment options by heads of healthcare provider under the proposed SL/ NSHIP, 21.7% preferred capitation payment mechanism, 41.51% of them preferred DRG payment mechanism, and 63.84% preferred FFS payment mechanism. For the preferred mode of payment, the majority of them preferred to be paid after delivery of the service and the rest preferred to be paid before delivery of the service.

**Table 6.** Preferred Payment Mechanism by Healthcare Providers.

Variables	Frequency (n = 318)	Percentage (%)
Existing payment mechanism		
Salary	316	99.37
Item line budget	1	0.31
Stipend	1	0.31
Challenges with existing payment mechanisms		
Delay	127	39.94
High Administrative cost	41	12.89
Insufficient funding	146	45.91
Others (such as distance to assess banking facilities)	4	1.26
Preferred Payment Mechanism by Facilities		
Capitation		
No	249	78.3
Yes	69	21.7
Diagnostic Related Grouping (DRG)		
No	186	58.49
Yes	132	41.51
Fees-for-Service (FFS)		
No	115	36.16
Yes	203	63.84
Preferred mode of payment by facilities		
After delivery of Service	269	84.59
Before delivery of Service	49	15.41
Healthcare providers that prefer SL/ NSHIP payment mechanism		
No	27	8.49

Variables	Frequency (n = 318)	Percentage (%)
Yes	291	91.51

#### *Test of Proportion for Choice of Preferred Payment Option (Mechanism)*

We now submit that to be able to generalize the findings of our research study for the entire population of healthcare providers in Sierra Leone, it is relevant to conduct a prompt Test of Proportion. On this regard, Table 3 presents the results from a Test of Proportion, which will help us to assess whether a sample from the study population of healthcare providers does indeed represent a true proportion from the entire population of Sierra Leone.

From the results in Table 7, the study does not provide enough evidence to reject the null hypothesis ( $H_0$ : 78% of healthcare providers say no to capitation payment mechanism) which means that, it might be true that 78% of healthcare providers does not preferred a capitation payment mechanism in Sierra Leone (95% CI = 0.1716776 - 0.2622846, P-value = 0.001). It might further be true that 58% of health care providers does not prefer DRG payment mechanism (95% CI = 0.3609378 - 0.4692509, P-value = 0.001). Lastly, it may be also true that, the minority (36%) of healthcare providers in Sierra Leone does not prefer the FFS payment mechanism (95% CI = 0.5855562 - 0.46911733, P-value = 0.001).

### **3.4. Contextual Factors Influencing the Content of Benefit Basket (BB) and Payment Options (PO)**

#### **3.4.1. Contextual Factors Influencing Content of Benefit Basket**

From a regression analysis in Table 8 using the STATA analytical tool, the population characteristic such as marital status, religion, occupation and monthly income are more likely to influence the content of the BB for the SL/ NSHIP. For instance, a change in marital status from single to married (Coef = 2354.55, 95%CI = 521.50 - 4187.60) can lead to an increase in contribution for the BB for about Le 2,000.

Also, a change in occupation from informal to formal worker (Coef = 4254.61, 95%CI = 721.20 - 7788.01) can lead to an increase in contribution for BB for about Le 4,000. Furthermore, a positive change in monthly income (Coef = 2626.01, 95%CI = 674.53 - 4577.50) can contribute to a significant increase in contribution for BB for about Le 2,000.

Statistically, a change in religion from Islam to Christianity (Coef = 2368.37, 95%CI = 67.30 - 4669.44) can also lead to an increase in contribution for BB for about Le 2,000 as well.

### 3.4.2. Contextual Factors Influencing Content of Payment Options

A univariate logistic regression analysis shows that; the healthcare providers' characteristics were less likely to decide the choice of capitation payment mechanism as shown in Table 7. In the immediate Table 10, the healthcare providers' characteristic such as tertiary level of care providers is more likely to determine for the choice of DRG payment mechanism. For instance, healthcare providers that offer tertiary level of care were 63.7% less likely (OR = 0.3627429, 95%CI = 0.1580283 – 0.8326511) to choose DRG payment

mechanism as compared to those that do not offer tertiary level of care. Furthermore, the healthcare providers' characteristic such as the district in which the health provider is situated is more likely to influence the choice of FFS payment mechanism as illustrated in Table 11. Healthcare providers in W.A Urban district are 63.2% less likely (OR = 0.3682854, 95%CI = 0.1386548 - 0.9782146) to choose FFS payment mechanism as compared to those in Kono district. Also, healthcare providers in W.A Rural district are 69% less likely (OR = 0.3100091, 95%CI = 0.1178516 - 0.8154802) to choose FFS payment mechanism as compared to those in Kono district.

**Table 7.** Test of Proportion: for Choice of Payment Mechanism by Healthcare Providers.

Variable	Obs	Mean	[95% Conf. Interval]	Null Hypothesis (Ho)	P-value
Capitation	318	0.21698	(0.1716776 - 0.2622846)	p = 0.78	0.001
DRG	318	0.41509	(0.3609378 - 0.4692509)	p = 0.58	0.001
FFS	318	0.63836	(0.5855562 - 0.6911733)	p = 0.36	0.001

**Table 8.** Contextual Factors Influencing the Content of Benefit Baskets.

Premium Contribution	Coef.	Std. Err.	T	P-value	[95% Conf. Interval]
District	-249.6119	360.5675	-0.69	0.489	(-957.0841 - 457.8602)
Location	-150.6172	1215.777	-0.12	0.901	(-2536.103 - 2234.869)
Age	-568.5682	667.6297	-0.85	0.395	(-1878.529 - 741.393)
Gender	619.7191	1248.3	0.5	0.62	(-1829.579 - 3069.017)
Marital status	2354.553	934.2249	2.52	0.012*	(521.5038 - 4187.603)
Religion	2368.372	1172.754	2.02	0.044*	(67.30226 - 4669.441)
Occupation	4254.608	1800.822	2.36	0.018*	(721.2017 - 7788.014)
Monthly Income	2626.013	994.5848	2.64	0.008*	(674.5312 - 4577.496)
Educational Qualification	-86.70056	683.6302	-0.13	0.899	(-1428.056 - 1254.655)
Constant	1256.98	3587.421	0.35	0.726	(-5781.925 - 8295.884)
Source	SS	Df	MS	Number of obs	=1,118
				F (9, 1108)	=6.9
Model	2.07E+10	9	2.30E+09	Prob > F	=0
Residual	3.69E+11	1,108	333467296	R-squared	=0.0531
				Adj R-squared	=0.0454
Total	3.90E+11	1,117	349331294	Root MSE	=18261



**Table 9.** Factors Influencing the Choice of Capitation Payment Mechanism.

Variables	Logistic Regression		
	Odds Ratio	P-value	[95% Conf. Interval]
District of service providers		[0.921]	
Kono	Ref		
Bo	1.285656	0.606	(0.4944886 - 3.342671)
Bombali	1.222022	0.656	(0.5051425 - 2.956269)
Koinadugu	0.9942836	0.991	(0.3587998 - 2.755297)
W.A Urban	1.943079	0.254	(0.6208253 - 6.081509)
W.A Rural	0.7368918	0.599	(0.2359417 - 2.301456)
Location of service provider		[0.331]	
Rural Areas	Ref		
Urban Areas	0.5518605	0.123	(0.2592145 - 1.174896)
Type of facility		[0.709]	
Public facility	Ref		
Private facility	0.7639772	0.663	(0.2279296 - 2.560708)
Mission Facility	3.134143	0.251	(0.4453277 - 22.05758)
Primary level of care providers		[0.94]	
No	Ref		
Yes	1.147204	0.886	(0.1757816 - 7.486998)
Secondary level of care providers		[0.444]	
No	Ref		
Yes	1.570583	0.445	(0.4936168 - 4.997258)
Tertiary level of care providers		[0.867]	
No	Ref		
Yes	1.013994	0.975	(0.4214988 - 2.439351)
In-patient type of care providers		[0.072]	
No	Ref		
Yes	0.4857326	0.061	(0.2282467 - 1.033689)
Out-patient type of care providers		[0.682]	
No	Ref		
Yes	0.5491588	0.544	(0.0790455 - 3.815211)
Constant	0.5044432	0.466	(0.0800705 - 3.177988)
	Number of obs	=	318
	LR chi2(13)	=	9.09
	Prob > chi2	=	0.7662
Log likelihood = -161.78906	Pseudo R2	=	0.0273

**Table 10.** Factors Influencing the Choice of DRG Payment Mechanism.

Variables	Logistic Regression		
	Odds Ratio	P-value	[95% Conf. Interval]
District of service providers		[0.568]	
Kono	Ref		
Bo	0.9788765	0.958	(0.4444398 - 2.15597)
Bombali	0.5026861	0.078	(0.233989 - 1.079937)
Koinadugu	1.185926	0.686	(0.5193771 - 2.707898)
W.A Urban	1.026891	0.955	(0.4077885 - 2.58591)
W.A Rural	0.6626224	0.386	(0.2611609 - 1.681218)
Location of service provider		[0.252]	
Rural Areas	Ref		
Urban Areas	1.151408	0.64	(0.6375149 - 2.079545)
Type of facility		[0.209]	
Public facility	Ref		
Private facility	2.145768	0.109	(0.8430757 - 5.461338)
Mission Facility	1.232203	0.834	(0.1748335 - 8.684398)
Primary level of care providers		[0.163]	
No	Ref		
Yes	0.2191485	0.12	(0.0323012 - 1.48682)
Secondary level of care providers		[0.806]	
No	Ref		
Yes	0.8215168	0.712	(0.2897068 - 2.329562)
Tertiary level of care providers		[0.009*]	
No			
Yes	0.3627429	0.017*	(0.1580283 - 0.8326511)
In-patient type of care providers		[0.54]	
No	Ref		
Yes	0.889099	0.694	(0.4949125 - 1.597246)
Out-patient type of care providers		[0.296]	
No	Ref		
Yes	3.730863	0.253	(0.3897574 - 35.71284)
Constant	1.090435	[0.93]	(0.1587249 - 7.491259)
	Number of obs	=	318
	LR chi2(13)	=	20.98
	Prob > chi2	=	0.0733
Log likelihood = -205.32362	Pseudo R2	=	0.0486

**Table 11.** Factors Influencing the Choice of Fees-for-Service Payment Mechanism.

Variables	Logistic Regression		
	Odds Ratio	P-value	[95% Conf. Interval]
District of service providers		[0.005*]	
Kono	Ref		
Bo	0.7458587	0.506	(0.3143512 - 1.769693)
Bombali	0.5235876	0.113	(0.2352934 - 1.165115)
Koinadugu	0.5656218	0.214	(0.2303578 - 1.388831)
W.A Urban	0.3682854	0.045*	(0.1386548 - 0.9782146)
W.A Rural	0.3100091	0.018*	(0.1178516 - 0.8154802)
Location of service provider		[0.787]	
Rural Areas	Ref		
Urban Areas	0.957369	0.888	(0.523425 - 1.751073)
Type of Facility		[0.404]	
Public facility	Ref		
Private facility	1.080329	0.873	(0.4183841 - 2.78957)
Mission Facility	3.344099	0.300	(0.3415977 - 32.73734)
Primary level of care providers		[0.701]	
No	Ref		
Yes	0.6871094	0.671	(0.1215856 - 3.883021)
Secondary level of care providers		[0.811]	
No	Ref		
Yes	1.121938	0.828	(0.3977756 - 3.164457)
Tertiary level of care providers		[0.160]	
No	Ref		
Yes	0.6386174	0.240	(0.3023336 - 1.348947)
In-patient type of care providers		[0.560]	
No	Ref		
Yes	1.226655	0.503	(0.6744722 - 2.230903)
Out-patient type of care providers		[0.457]	
No	Ref		
Yes	1.920201	0.459	(0.3416064 - 10.79363)
Constant	2.382632	0.309	(0.446648 - 12.71009)
	Number of obs	=318	
	LR chi2(13)	=12.77	
	Prob > chi2	=0.4657	
Log likelihood = -201.69926	Pseudo R2	=0.0307	

## 4. Discussion and Observation

### 4.1. Healthcare Providers' Characteristics

A critical area in any sustainable and quality provision of healthcare under a SHI Scheme is the choice and accreditation or contracting of healthcare providers (from whom to buy services). A health insurance scheme is supposed to accredit and register a provider of healthcare for a probation period of 2 years and then reaccredit. The accreditation is based on the provider's ability in the provision of primary, secondary or tertiary care services. Providers are required to meet the minimum requirements set such as facility-level requirements, individual requirements (scope and skills), registration and equipment requirement with the appropriate human resource which are all tailored to the primary, secondary and tertiary type of provider [6].

For this consideration, our study assessed provider's characteristics to aid in the accreditation of providers for the implementation of the proposed SL/ NSHIP. This study found out that majority of the service providers are public own, majority of them provide only primary level of care services with less than 10% in the provision of secondary level of care, and 17% are providers at the tertiary level of care. This further emphasises the fact that most health facilities are in the urban areas due to economies of scale and that primary health care services should be made to assume its role as the basic level of care. This will enhance access to secondary and tertiary care services which can help the attainment of UHC in Sierra Leone.

The study also showed that the majority service providers take part in the provision of out-patient care services with a few of them providing both out-patient and in-patient care. Studies have shown that performance of health insurance schemes is significantly linked with evidence that benefits basket is comprehensive and in line with society's preference to ensure best utilization of resources [7, 8]. The level of awareness of service providers about the implementation of the SL/ NSHIP is significantly low despite the fact that they are willing to be accredited.

### 4.2. Preferred Choice of Payment Options by Healthcare Providers

Several countries have introduced reforms in allocation of incentive for healthcare providers to improve efficiency and quality in service delivery in both public and private providers. This reform has been gravitating towards strategic purchasing [5]. For service providers to deliver agreed healthcare service, the NHISP is required to transfer funds to healthcare provider through different payment mechanisms such as capitation, fee-for-services, and DRG which can drive provider's attitude to satisfy the goals of health system which entails quality of care, access to service, responsiveness and efficiency [5].

Therefore, it is necessary to assess the preferred choice of payment mechanism by healthcare providers for sustainable

implementation of the SL/ NSHIP, since according to [9, 10] providers' dissatisfaction with payments in the NSHIP can result in low enrollment. Our study found that, a sizeable proportion of providers in Sierra Leone preferred usual fee-for-services as their first choice, followed by DRG and lastly capitation.

In general, a majority preferred to be paid after delivery of service. According to Ellis and Miller (2007), all payment mechanism provides conflicting incentives for healthcare delivery activities and expenditure control. payment systems by FFS generate weak incentives to manage costs. It provides doctors with more money for providing more services, whether such services enhance the patient's health or well-being. Under FFS reimbursement, programs that have little or no benefit to the customer may be offered as they raise net profits for the provider [11, 12].

Over-supply is likely to be a concern if the cost for a specific service is greater than the incremental cost to the supplier of that service. Additionally, DRGs create incentives to play the system for their own benefit; providers can 'upcode' or assign patients into a higher DRG category for a higher payment. Under DRGs, hospitals have a financial incentive to discharge a patient early, because they would not be reimbursed on behalf of the patient for the added expenses they incur. If rates are competitive, hospitals will compete for more patients. Hospitals, however, can discourage patients with less generous payments.

Capitation payments offer a fixed amount of money per patient to doctors, which provide a financial incentive to lower costs per patient. Instead of automatically managing treatment, capitation can lead providers to compete to attract or pick low-risk patients, use referrals or provide preventive care. Capitation offers an opportunity to use low-cost providers theoretically, increase outpatient care, decrease hospital admissions, and decrease days per admission. In addition, its create incentives for the capitated payment to maximize the use of alternative lower-cost providers, such as nurse practitioners and physician assistants, instead of physicians [11, 13]. The findings of this study are in contrast to those of [7, 14, 15], who stated that providers preferred capitation payment mechanism options over the rest.

### 4.3. Contextual Factors Influencing the Content of Benefit Baskets and Choices of Payment Options

The findings of in this study reveal that factors, such as marital status, religion, occupation and monthly income, are more likely to influence the magnitude of contribution towards the BB for the SL/ NSHIP. As such, a change in occupation from informal to formal, an increase in monthly income, and a change in marital status from single to married, can lead to an increase in the amount willing to contribute for the BB. This result is in line with some other studies [16-18], which stated that the magnitude of contribution will increase with an in-

crease in income level and a change in occupation.

In addition, as to factors influencing the choices of payment mechanism by healthcare providers, it was shown that the level of care provided is a determinant for the choices of DRG payment mechanism. Also, the district in which the health provider is situated was identified as a factor for the choice of FFS payment mechanism among providers in Sierra Leone. This might imply that, payment mechanism across providers in different districts may vary, which may be difficult for the country/government in terms of monitoring.

## 5. Conclusion and Expectation

Most of the healthcare facilities in Sierra Leone, a developing nation in West Africa, are public with an outsize proportion providing only primary care services, plus only a few providing primary and secondary care services, and all others providing the three levels of care. This supports the fact that most of the facilities provide only out-patient care services, while just a few of them provide both out-patient and in-patient services. All providers, we learned, are quite willing to accredit their facilities to be a participant with the National Social Health Insurance Program evolving for Sierra Leone.

The purpose of our study was to determine the preferred Payment Option (mechanism) for healthcare providers to support the implementation of the proposed Sierra Leone/National Social Health Insurance Program (SL/ NSHIP). Our study revealed that Fee-for-Services (FFS), Diagnostic-Related Grouping (DRG) and Capitation were much preferred among healthcare providers surveyed in our study. Hence the majority preferred their payment to be done immediately after delivery of services. This position, which follows, is in line with the highest expectation for the most favourable payment mechanism.

Our consideration of the factors influencing the magnitude of premium contributions revealed favourable odds, with factors such as marital status, religion, occupation, monthly income and district of residents in Sierra Leone. These factors were more likely to influence the magnitude of premium contribution towards the proposed SL/ NSHIP.

In parallel, the choice of a payment option or mechanism by healthcare providers, such as FFS and DRG, were more likely to be influenced by the level of care provided by service providers and by the Regional District in which the healthcare providers were situated. Our research findings reveal and confirm a high probability of success for a National Social Health Insurance Program for the people of Sierra Leone.

## Abbreviations

BB	Benefit Basket
DRG	Diagnostic-Related Grouping
DHMT	District Health Management Team
FFS	Fee-for-Service

NHIS	National Health Insurance Scheme
OOP	Out-of-Pocket
PO	Payment Options
SHI	Social Health Insurance
UNIMAK	University of Makeni
VPHI	Voluntary Private Health Insurance
WHO	World Health Organization
SL/ NSHIP	Sierra Leone / National Social Health Insurance Program

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## Author Contributions

**Abraham Isiaka Jimmy:** Co-Conceptualization, Funding Acquisition, Project Administration, Writing – Original Draft, Formal Analysis, and Draft Reviewing & Editing

**Magdalene Philip Umoh:** Supervision, Data Curation, Validation, Formal Analysis, and Draft Reviewing & Editing

**Tenneh Millicent Conteh:** Supervision, Data Curation, Investigation, Validation, and Methodology

**Hassan Milton Conteh:** Data Curation, Investigation, Validation, and Methodology

**Abdul Bangura:** Data Curation, Investigation, Validation, and Methodology

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**Peter Agyei-Baffour:** Co-Conceptualization, Supervision, Investigation, Validation, Methodology, and Reviewing & Editing

**Lee Presley Gary Jr.:** Resources, Visualization, and Manuscript Review & Editing

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## Availability of Data and Materials

Data for this research study are openly available from the Lead Author or Corresponding Author upon a written request from any interested correspondent.

## Ethics Approval and Consent to Participate

Ethical approval was sought and received from the Ethical Review Board of the Sierra Leone Ethics and Scientific Review Committee. An informed consent form was issued to each respondent to seek their knowledge and to assure them that their contribution to the study will be confidential and the data provided can only be used for the purpose of the study. The respondents were also informed that no form of financial incentive will be given to them for being part of the study -- and that their choice of not being part of the study cannot stop them from getting any benefit that may come because of the study.

## Consent for Publication

All researchers hereby acknowledge, agree, and join *in toto* for the publication of this research project.

## Transparency

The authors volunteer that *chat* GPT or any equivalent AI program was not a source of data or information and was not used to draft or embellish this manuscript.

## Conflicts of Interest

The authors declare no conflicts of interest.

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## Biography

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**Lee Presley Gary Jr.** is a Visiting Research Scholar at the University of Makeni, located in the City of Makeni in Sierra Leone, and he is Owner/CEO of Strategic Management Services – USA, a global consultancy specializing in mitigating public health threats and hazards associated with dirty water and human waste, and served as a Fulbright Specialist at the University of Makeni teaching public health courses during 2024. He is an active member of the Water Environment Federation and is an adjunct instructor for the National Disaster & Emergency Management University (Emmitsburg, MD). He was named a Fulbright Scholar at the University of Malta for 2025-2026.

## Research Field

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