

Toward a Health Insurance Literacy Model: What Do Young Consumers Know about Insurance?

by Alexander McLeod, PhD, and Omolola Adepoju, PhD

Abstract

In this study, we developed and tested a health insurance literacy model. Using a previously validated health insurance literacy measure, we crafted a predictive model and tested the effects of its constructs among young consumers. Data were collected using an online survey of college students at a major public university in the southern United States. A structural path model was formulated to test the predictive model using Partial Least Squares Path Modeling (PLS-PM) in RStudio. Although students' ability to choose health insurance did not predict healthcare utilization, their ability to compare and manage health insurance strongly predicted utilization. Knowing how to compare, choose, and manage health insurance predicted a substantial proportion of variance in the structural model ($R^2 = 0.64$). Improving young consumers' ability to choose health insurance policies will have a strong impact in efforts to improve health insurance utilization.

Keywords: health insurance literacy model; health insurance literacy survey; young insurance consumers

Introduction

Since the enactment of the Patient Protection and Affordable Care Act (ACA), consumers of all ages are increasingly becoming responsible for finding, comparing, choosing, and using health insurance. Previously insured consumers need to understand plan changes that might influence their healthcare utilization patterns, while younger enrollees need to understand how to search for a plan that fits their needs, choose coverage that provides access to desired healthcare providers, manage claims processes, and use health insurance effectively to control costs.¹ For insurance companies, these younger adults are crucial for shared cost coverage because they provide premium revenues with relatively low payout costs.²

Because of the significant provisions required by the ACA, public understanding of basic health insurance concepts remains unclear and may affect utilization.³ For example, nearly nine out of ten adults have difficulty using health information to make informed decisions about their health. Prior health insurance literacy research shows that more than half of US adults could not accurately identify one of three terms commonly used in healthcare: *premiums*, *copays*, and *deductibles*.^{4,5} Policy makers, practitioners, and healthcare researchers agree that successful healthcare reform hinges on significant local, state, and national efforts to improve low health literacy in diverse populations.⁶

Health literacy is defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.”⁷ Health

insurance literacy, on the other hand, reflects “the degree to which individuals have the knowledge, ability, and confidence to find and evaluate information about health insurance plans, select the best plan for their own (or their family’s) financial and health circumstances, and use the plan once enrolled.”⁸ In other words, consumers need the ability to compare, choose, manage, and utilize their plans.

For those who have never been primary health insurance policyholders, particularly college-age students, health insurance can be complex and confusing.⁹ Of the 8 million Americans who signed up for insurance through the new health insurance marketplaces, 2.2 million (28 percent) were between the ages of 18 and 34.¹⁰ A recent study¹¹ reported that almost half of the young respondents were unaware of subsidies intended to improve health insurance affordability, or that they can stay on their parents’ policies until age 26. The expansion of health insurance coverage for dependent children to age 26 provides health insurance for most college students; however, as these students “age into” their own plans, they will need to compare, choose, manage, and utilize their own plans. Another study found that individuals age 18 to 30 struggled to understand key health insurance concepts.¹² This population was targeted by the health insurance marketplaces, but enrollment lagged behind that of people age 50 to 64 by about 20 percentage points, raising concerns about young people’s ability to evaluate coverage trade-offs when comparing, choosing, and managing insurance plans.

Others have examined health literacy among young adults;^{13–15} however, few studies have investigated the predictors of health insurance literacy among college students. This study addresses this crucial information gap by developing a predictive model for health insurance utilization based on college students’ responses to the Health Insurance Literacy Measure (HILM) developed by Paez et al.¹⁶

The measurement of knowledge and skill concerning health insurance is important to improve our understanding of young consumers’ abilities. Information from this study may enlighten healthcare policy makers and researchers regarding college students’ proficiency in finding, selecting, and making appropriate decisions about the use of health insurance. In the remainder of this paper, we discuss the development of the research model and present the research questions and methods. We then analyze and discuss the results of the model and offer some concluding thoughts.

Research Model

For the purposes of this study, we refocused the HILM research questions, based on the work of Paez et al.,¹⁷ to examine college students’ perceptions of comparing, choosing, managing, and using health insurance, as follows.

1. Are young consumers confident in comparing health insurance plans?
2. Can they compare, contrast, and choose between various options?
3. Do young health insurance consumers feel self-assured when accessing and managing plans?
4. Is health insurance literacy affecting healthcare utilization by young consumers?

To address these research questions, we applied the HILM survey, which analyzes the respondents’ knowledge and skills in choosing, comparing, managing, and using health insurance. The HILM scale proposes that people’s health insurance knowledge and skills are reflected in their “confidence choosing and comparing plans” and their “confidence using and being proactive.”¹⁸ *Choosing* health insurance encompasses an individual’s confidence in knowing where to go for help to afford health insurance, knowing how to estimate healthcare needs in the next year, asking the right questions to select an appropriate health insurance plan, understanding health insurance terms, and knowing where to find information to choose a health plan. We used six items from the HILM regarding choosing health insurance. *Comparing* health insurance comprises finding out whether one’s health insurance plan covers unexpected costs, such as hospital stays; understanding expected payments for emergency department visits, specialist visits, and prescription drugs; finding out whether one’s deductible has been met; and being able to determine which hospitals and providers are covered in one’s plan. Five questions drawn from the HILM were used to measure how people compare health insurance plans. *Managing* health insurance examines whether individuals know what to do if their health plan refuses to pay for a service,

whether they know how to figure out their share of costs after the health plan pays its share, and whether they know what questions to ask regarding coverage for before receiving healthcare service. The HILM included six validated items concerning an individual's management of health insurance. *Utilizing* health insurance refers to the likelihood that individuals would use member services to tell them what medical services their health plan covers; use a system to look into what their health plan will and will not cover before they get healthcare services; use a system to review the statements they get from their health plan showing what they owe and what they paid for a service; and use services to find out whether a doctor is in network before they see the doctor. We used the four items related to health insurance use in our survey. Respondents reporting a greater likelihood of using health insurance would score higher on the Likert scale and would therefore be considered more effective consumers of health plans.

We crafted a predictive model based on our research questions to assess the impact of comparing, choosing, and managing on utilization of health insurance via a validated instrument, the HILM measure (see Appendix A). Although researchers have conceptualized and measured consumers' ability to choose, compare, manage, and use private health insurance,^{19, 20} we found no predictive models incorporating these constructs. Of particular interest in this area was the work of McCormack et al.,²¹ who validated a health literacy instrument containing two scales: choosing health insurance and using health insurance. This work decomposes these scales into four constructs to model young consumers' health insurance literacy. Employing this structure and the associated validated survey instrument, we propose the health insurance literacy model shown in Figure 1.

Methods

To test the predictive model of health insurance literacy, we created a survey that organized the previously validated items into our prescribed constructs. Because we wanted to evaluate young consumers' health insurance perceptions, we surveyed college students at a major public university in the southern United States. Participants completed an online survey (shown in Appendix A) that was available over a two-week period. The survey included two sections. The first section requested demographic information, such as age, gender, classification, and major, and the second section included the HILM survey questions. This project was approved by the Institutional Review Board (IRB), and respondents were invited to participate in the online survey.

Analysis

We used the Partial Least Squares Path Modeling (PLS-PM) function in RStudio to analyze the data, following the predictive modeling techniques described by Sanchez.²² PLS-PM analysis is commonly used in conducting latent variable research and provides a robust way of analyzing survey data.²³⁻²⁶ Even though we used the previously validated HILM, we sought to reexamine its reliability and validity in this applied model. To validate the psychometric properties of the measures, we calculated the average variance extracted, Dillon-Goldstein rho (DG ρ), Cronbach's alpha, and cross loadings for this model's constructs (see Table 1). Although no standard method for calculating statistically acceptable composites has been established, the generally accepted rule is for composite reliability to be greater than 0.7.²⁷ In this study, the construct with the lowest composite reliability was utilization, at 0.92, followed by choosing, at 0.94. Composite reliability for all latent variables was greater than 0.9, indicating sufficient reliability as demonstrated by Dillon-Goldstein's rho.

The latent variable factor loadings were derived and are provided in Appendix B. Reliabilities of individual items were examined by verifying loadings greater than 0.7. All items loaded at values greater than 0.7, with seven indicators loading greater than 0.9, thirteen loading greater than 0.8, and one item loading greater than 0.7. All items loaded at a greater "on-factor" than "off-factor" value, demonstrating good convergent and discriminant validity. The structural path model was employed to test the health insurance literacy model. Using a bootstrap resampling method, 500 samples were generated to obtain the path coefficients, and statistical significance was then calculated for each path after *t*-tests were evaluated.

Results

The descriptive characteristics of the surveyed subjects were calculated and are provided in Table 2. Two-hundred ten students from the College of Health Professions completed the survey. Approximately 67 percent of respondents were undergraduates. More than half of all respondents were non-Hispanic whites, 84 percent were female, and the mean age was 24.5 years. Eighty-eight percent of respondents reported having health insurance, of which more than 36 percent indicated that they were covered by their own insurance. The number of visits to healthcare providers ranged from zero visits to five or more visits, with the largest proportion of respondents (28 percent) reporting two visits in the past year. Healthcare service utilization varied, but prevention visits represented the most occurrences (56 percent) of healthcare provider visits in the past year. Figure 2 shows the β coefficients and p values calculated using PLS-PM.

In Figure 2, in which the relationships between the constructs are analyzed, the path values (β) show the unit change, R^2 reports the amount of variance the model explains, and the asterisks indicate significance at $p < .01$. Choosing was not significant in predicting utilization ($p = .89$), but the abilities to compare and manage insurance were both significant in the health insurance literacy model. The coefficient for the relationship of comparing with utilization was $\beta = 0.41$ with $p < .01$, suggesting that a unit increase in students' ability to compare health plans predicts a 41 percent change in utilization. Managing was also significant, with $\beta = 0.48$ and $p < .01$, suggesting that a unit increase in students' ability to manage health insurance predicts a 48 percent change in utilization. The model accounted for a significant portion of variance in utilization ($R^2 = 0.64$). Table 3 reports the total effects of choosing, comparing, and managing on healthcare utilization.

Discussion

This study sought to propose and assess a health insurance literacy model using the previously validated HILM survey among college students. We found the HILM to be very reliable and valid within this sample. Although a college student's ability to choose an appropriate health insurance plan did not predict health insurance utilization, the ability to compare plans and effectively manage one's health insurance were strong predictors of healthcare utilization. Our findings are unique and timely, considering the recent focus on enticing the young population to acquire health insurance coverage and thereby offset higher healthcare costs of the general population.

In this study, choosing health insurance was not a strong predictor of effective healthcare utilization, but this finding did not surprise us. If young consumers perceive a lack of confidence in choosing health insurance plans, their healthcare utilization will suffer. Prior research has reported that consumers in the broader population are also overwhelmed by complicated health insurance plans and lack confidence in choosing health insurance.^{28, 29} Health insurance literacy and enrollment among the young adult population is crucial because it stabilizes the risk pool and can help to bolster the success of health insurance marketplaces.

We also found that students' abilities to compare and manage their health insurance significantly predicted healthcare utilization. This finding is in line with those of other studies that suggest that low health insurance literacy levels lead to suboptimal utilization³⁰ and that a lack of basic understanding of important health insurance terminology and features is related to ineffective healthcare use.³¹⁻³⁹ A recent analysis reported that inexperienced consumers, such as young adults newly enrolling in health insurance, felt less confident in their health insurance decision-making abilities than other "non-elderly adults."⁴⁰ In one survey, most young adults acknowledged that they were unaware how the ACA would affect them and also voiced particular confusion regarding the purpose of health insurance, how to obtain health insurance coverage, and premiums and other types of cost-sharing.⁴¹

One area in which consumers have shown considerable incompetence is financial literacy and calculation of costs. Studies show that when individuals are asked to accurately estimate costs associated with their medical care their health insurance literacy declines.^{42, 43} Low health insurance literacy may result in decreased access to care, delayed care, difficulty finding a provider, and not having a usual

source of care.⁴⁴ These findings culminate in suboptimal and ineffective healthcare use, which stalls health policy efforts to bend the healthcare cost curve (i.e., slow the long-term growth of healthcare costs). Our findings suggest that specifically addressing young consumers' ability to compare and manage health insurance policies will have a strong impact on improving effective health insurance utilization.

Limitations

This study is not without limitations. Although the sample size meant that the study had adequate power, this work only focuses on college students at one major southern university. These students may have different health literacy levels than students from other schools. For this reason, the findings in this study may not be generalizable to the entire college population.

Another concern is that the large percentage of female versus male participants could have biased the results. Examination of gender-balanced groups or male-dominated groups may reveal different findings. In addition, because the sample was entirely made up of college students, the results may not be generalizable to other groups.

Conclusion

How people choose, compare, manage, and utilize healthcare resources is important to individuals, families, and healthcare organizations. Health insurance literacy has been identified as a key element in reducing disparities in healthcare in the post-ACA era.⁴⁵ Although these concepts are generally not expected to pose a challenge among college-educated individuals, our findings suggest that the understanding of health insurance terminology is limited among college students, strongly predicting ineffective utilization. Improving young consumers' ability to compare and manage health insurance policies will have a strong impact in efforts to improve health insurance utilization.

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Table 1

Reliability of the Health Insurance Literacy Measure in the Applied Model

Construct	Average Variance Extracted	Dillon-Goldstein Rho	Cronbach's Alpha
Choosing	0.73	0.94	0.92
Comparing	0.81	0.96	0.95
Managing	0.84	0.96	0.95
Utilization	0.74	0.92	0.88

Table 2
Sample Characteristics of Survey Respondents ($n = 210$)

Characteristics	Values ^a
Age	24.5 (7.75)
Female	176 (84%)
Race/ethnicity	
Hispanic	80 (38%)
Non-Hispanic white	107 (51%)
Non-Hispanic black	15 (7%)
Other	8 (4%)
Education level	
Freshman/sophomore	49 (23%)
Junior/senior	92 (44%)
Graduate	69 (33%)
Have health insurance?	185 (88%)
Have insurance through parent?	118 (56%)
Type of insurance	
Any private	91 (43%)
Any public	33 (16%)
Unsure/no insurance	55 (26%)
Other	31 (15%)
Visits to primary care provider in past year	
None	39 (19%)
Once	38 (18%)
Twice	59 (28%)
Three or four	55 (26%)
Five or more	19 (9%)
Services received in the last year ^b	
Prevention	118 (56%)
Emergency room/urgent care facility	83 (40%)
Specialist	64 (30%)
Inpatient	28 (13%)
Rehabilitation	11 (5%)
None	10 (5%)

^a Values are given as frequency (percentage), except for age, which is given as mean (standard deviation).

^b Total exceeds 100 percent because respondents had the ability to select multiple responses.

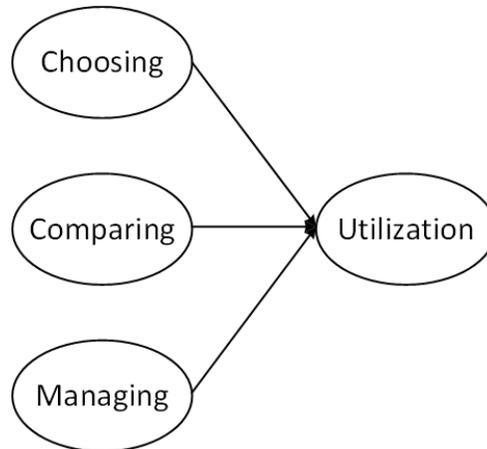
Table 3

Total Structural Effects

Relationship	Sample Mean	Standard Deviation	T Statistic	p
Choosing→Utilization	-0.02	0.13	0.13	.89
Comparing→Utilization	0.41	0.10	4.09	.01
Managing→Utilization	0.48	0.13	3.59	.01

Figure 1

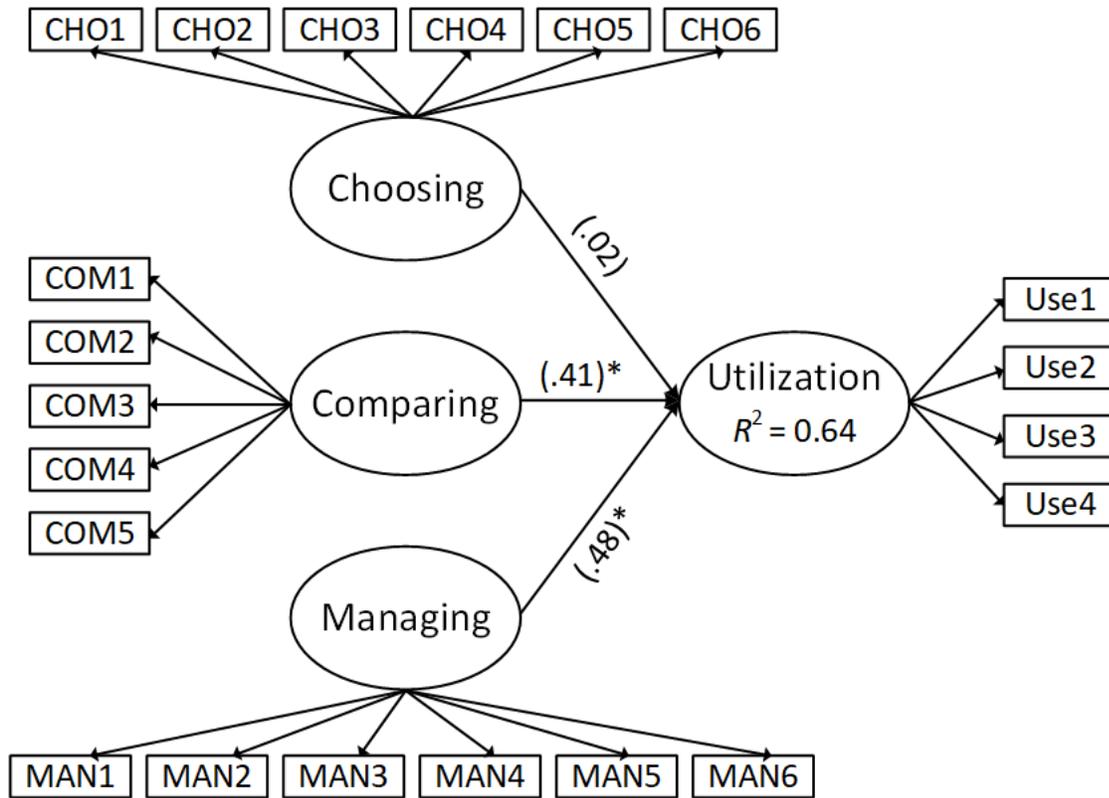
Health Insurance Literacy Model



Source: Based on McCormack, Lauren, Carla Bann, Linda Squiers, Nancy D. Berkman, Claudia Squire, Dean Schillinger, Janet Ohene-Frempong, and Judith Hibbard. "Measuring Health Literacy: A Pilot Study of a New Skills-Based Instrument." *Journal of Health Communication* 15 (2010): 51–71.

Figure 2

Health Insurance Literacy Model Results



Notes: Values in parentheses are the β values indicating the relationship between constructs. R^2 = amount of variance explained. Asterisks indicate statistical significance at $p < .01$.

Appendix A

Health Insurance Literacy Survey

Your participation is voluntary and refusal to participate will not result in any penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time. There are no known risks from participation.

Once the research is completed, you may be able to view the summary findings.

Q1 Birth Year: _____

Q2 Birth Month: _____

Q3 Gender

Male

Female

Decline response

Q4 Ethnicity

Hispanic, Latino, or Spanish origin

Non-Hispanic

Q5 Race

White

Black or African American

Asian

American Indian or Alaska Native

Mixed Race

Other (please specify) _____

Q6 Level of Study

Freshman

Sophomore

Junior

Senior

Graduate Student

Faculty

Other _____

Q7 Major (and minor, if applicable) _____

Q8 Yearly Income

Less than \$25,000

\$25,000 to \$49,000

\$50,000 to \$74,999

\$75,000 to \$99,999

\$100,000 or greater

Q9 Do you have health insurance?

Yes

No

Unsure

Q10 What type of health insurance do you have?

- PPO
- HMO
- Medicaid/CHIP
- Tricare/VA
- Medicare
- Not sure/No insurance
- Other (please specify) _____

Q11 Do you have health insurance through your parents?

- Yes
- No

Q12 In the past year, how frequently did you visit a primary care physician?

- None in the past
- Once
- About two times
- 3-4 times
- 5 or more times

Q13 In the past year, what type(s) of healthcare services did you use? (Check all that apply)

- Preventative/Primary Care
- Specialist (please specify)
- Urgent care/stand-alone clinics
- Inpatient
- Emergency room
- Rehabilitation (Physical Therapy, Occupational Therapy, Speech Therapy)
- None

Q14 Please specify specialty used _____

Q15 On a scale of 1-7 where 1 is not very confident, how confident are you that...

You know where to go for help if you have trouble affording health insurance outside of an employer	1	2	3	4	5	6	7
You know how to estimate what you would have to pay for your healthcare needs in the next year, not including emergencies	1	2	3	4	5	6	7
You know what questions to ask so you can choose the best health plan for you	1	2	3	4	5	6	7
You know where to find information you need to choose a health plan if you were not offered insurance through an employer	1	2	3	4	5	6	7
You understand health insurance terms	1	2	3	4	5	6	7
You would choose the health plan that is best for you	1	2	3	4	5	6	7

Q16 On a scale of 1-7 where 1 is very unlikely and 7 is very likely, how likely are you to...

Find out if the plan covers unexpected costs such as hospital stays	1	2	3	4	5	6	7
Understand what you would have to pay for	1	2	3	4	5	6	7

emergency department visits							
Understand what you would have to pay for specialist visits	1	2	3	4	5	6	7
Understand what you would have to pay for prescription drugs	1	2	3	4	5	6	7
Find out if you have to meet a deductible for health care services	1	2	3	4	5	6	7
Look to see what doctors and hospitals are covered in each plan	1	2	3	4	5	6	7
Q17 On a scale of 1-7 where 1 is not very confident and 7 is very confident, how confident are you that...							
You know what to do if your health plan refuses to pay for service you think should be covered	1	2	3	4	5	6	7
You know how to figure out your share of the cost of care after the health plan pays their share	1	2	3	4	5	6	7
You know what questions to ask the health plan if you have a coverage problem	1	2	3	4	5	6	7
You know most of the things you need to know about using health insurance	1	2	3	4	5	6	7
You know how to find out about what is not covered before you receive a healthcare service	1	2	3	4	5	6	7
Q18 On a scale of 1-7 where 1 is very unlikely and 7 is very likely, how likely are you to...							
Look to member services to tell you what medical services your health plan covers	1	2	3	4	5	6	7
Look into what your health plan will cover before you get health care services	1	2	3	4	5	6	7
Review the statements you get from your health plan showing what you and what they paid for a service	1	2	3	4	5	6	7
Find out if a doctor is in-network before you see him/her	1	2	3	4	5	6	7

Appendix B

Factor Loadings

Construct	CHO	COM	CON	USE
CHO1	0.83	0.40	0.62	0.48
CHO2	0.85	0.48	0.72	0.54
CHO3	0.92	0.53	0.86	0.64
CHO4	0.88	0.43	0.71	0.56
CHO5	0.81	0.46	0.72	0.63
CHO6	0.87	0.52	0.68	0.63
COM1	0.57	0.89	0.57	0.66
COM2	0.50	0.91	0.55	0.61
COM3	0.47	0.94	0.56	0.65
COM4	0.41	0.89	0.47	0.59
COM5	0.44	0.77	0.51	0.60
COM6	0.48	0.85	0.49	0.63
CON1	0.71	0.49	0.87	0.59
CON2	0.73	0.52	0.91	0.66
CON3	0.75	0.57	0.92	0.70
CON4	0.84	0.56	0.95	0.70
CON5	0.77	0.60	0.91	0.76
USE1	0.62	0.57	0.67	0.82
USE2	0.59	0.55	0.66	0.88
USE3	0.55	0.60	0.66	0.86
USE4	0.58	0.72	0.61	0.87