

**CONSUMERISM IN HEALTH INSURANCE:
UNDERSTANDING LITERACY IN HEALTH
INSURANCE PURCHASING AND
BENEFIT CONSUMPTION**

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by
Lisa R. Barbaccio
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Examining Committee Members:

Paul Pavlou, Advisory Chair, Management Information Systems
Susan Mudambi, Fox School of Business, Marketing & Supply Chain Management
Vinod Venkatraman, Fox School of Business, Marketing & Supply Chain Management
Pallavi Chitturi, Fox School of Business, Statistical Science Department

Consumerism in Health Insurance

Understanding Literacy in Insurance Purchasing & Benefit Consumption

ABSTRACT

The growth rate and percent of GDP spend on health care has brought necessary attention to discussions on cost and quality within the health industry. This research posits that in order to tackle issues within these cost and quality-conscious discussions, consumers require increased literacy in the health insurance shopping and utilization processes. Health insurance literacy is relatively new terminology. In regard to consumer literacy measures in purchasing, the findings in Chapter 1 demonstrate that studies on health insurance literacy are inconsistent, with no consensus on which metrics are most appropriate to measure health insurance literacy. While there is a generally agreed upon definition of health insurance literacy, there is currently no standard scale to determine one's literacy level. Additionally, literacy, in a broader construct, can assist consumers in making better informed choices about how to engage with and manage their health insurance. One particular example of a poor utilization habit is the use of the Emergency Room (ER) for non-emergent conditions. The findings in Chapter 2 demonstrate that educated consumers can be influenced to choose alternative sites for ER care. This research suggests that taking measures to advance health insurance literacy can improve both shopping and utilization behavior and, in turn, positively impact health care costs and efficiencies. The conclusion of this research theorizes on the best approach to influence literacy in health insurance; ultimately furthering the body of research that moves toward a more efficient, effective, and literate health insurance industry.

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Consumerism in Health Insurance

Understanding Literacy in Insurance Purchasing & Benefit Consumption

INTRODUCTION

Economic imperatives are driving health care reform; while politics tend to dominate the discussion, the growth rate and percent of GDP spend on health care are driving the need for change. Many new ventures and technologies have come forth in an attempt to control insurer and hospital administrative costs and better manage provider quality. However, in order to control costs, the health care industry vehemently relies on increased consumerism and consumer behavior changes.

The Impetus for Increased Consumerism

The concept of consumerism in health care has been advocated as necessary for some time (Frank and Lamiraud, 2009, Hanoch and Rice, 2011, Wroblewski, 2007). Consumerism in health insurance involves consumers making independent judgements - taking active responsibility in questioning their options and seeking out information to advance their decision-making capabilities. Within the industry, there has been a host of attention given to transparency initiatives, such as the ability to provide better access to electronic medical records (EMRs). Insurance companies now issue plans designed to motivate consumers to make better care choices, including high-deductible health plans (HDHPs), narrow network (or tiered network) plans, steerage on when to use outpatient versus inpatient care, and more. The issue here is, providing access to information and developing consumer driven plans assumes that consumers who have such transparency

will know what to do with the information. Conversely, health insurance literacy in the United States is low. In fact, although the design of HDHP plans provided the consumer with the active ability to make informed health choices, some data shows that HDHP members saw little to no reduction in medical spending (Collins, Gunja, Doty, & Beutel, 2015; Fox, 2009; Mitts & Fish-Parcham, 2015). Misuse of these policies shifted from what was initially touted as a “consumerized health plan” to being viewed simply as an instrument for insurance companies to control and reduce utilization.

Health care can be more efficient with increased health insurance literacy, but as of now there are no official metrics designed to measure literacy levels. As demonstrated in the attached research, studies show that consumers struggle with simplistic insurance terminology as well as the numeracy levels to determine out of pocket costs. This research determines that there is no official consensus on how to measure health insurance literacy and no scale of literacy to determine what should be considered literate. For consumers to take an active part in insurance, and for consumerism to contribute to cost control, the industry will need to focus on determining these metrics.

The Impact of a Consumer Culture of Consumption

With costs continuing to rise, consumers are expected to make more effective health choices. As consumer literacy increases, so must the consumer culture of benefit consumption. One example of a poor benefit consumption behavior, is utilizing the Emergency Room (ER) for non-emergent conditions. Research shows staggering figures of ER abuse and demonstrates the significant costs savings that could be realized if this consumer behavior was better managed (LaCalle and Rabin, 2009, Sarver et al., 2002,

Gandhi and Sabik 2014, Hsia and Niedzwiecki, 2017, Durand et al., 2012, Van den Heede and Van de Voorde, 2016). None of the delivery model changes introduced in the past decade, which were intended to reduce costs, have impacted consumer misuse of benefits, particularly ER abuse.

There is a significant need to better understand a consumer's behavior of ER use for non-emergent conditions. More importantly, there is a need to explore if educating consumers on alternative sites of care can impact behavior. It is clear that literacy, in a broader construct, can assist in making better informed choices about how to engage with and manage insurance, not just about how to select and/or purchase insurance.

As the industry moves forward into a more consumerized atmosphere, determining the best way to approach and measure literacy will be critical. This research suggests that taking steps to advance literacy can improve health care costs and efficiencies. The conclusion of this research theorizes on the best approach to increase shopping literacy and influence behavior through literacy in health insurance. Ultimately, the goal of this research is to further the body of knowledge that moves toward a more efficient, effective, and literate health insurance industry.

CHAPTER 1
LITERACY IN THE HEALTH INSURANCE
PURCHASE CYCLE

A Detailed Look at Measuring Health Insurance Literacy

INTRODUCTION

Health care costs in the United States have faced staggering increases over the past few decades. With a conspicuous amount of U.S. Gross Domestic Product (GDP) being spent on health care expenses, forecasts show that this number will only continue to grow. The Social Security Advisory Board released a study that shows, since 1970, health care spending has grown by an average of 2.5 percentage points faster than the nation's entire GDP rate (Kaiser Family Foundation, 2012). In what is now seen as an unsustainable position, this country has developed an evident need for the cultivation of new proficiencies in health care management, investigation of new theories for containing the cost of care, and exploration of innovative concepts in the health insurance space.

The Affordable Care Act (ACA) was introduced in order to make health insurance more affordable and accessible to the American population. While inclusive of regulatory controls for accessibility, it is affordability and quality that were stressed as critical components of ACA legislation. Particularly, due to the availability of subsidized care and the advent of new enrollment portals, many advancements in the shopping (health insurance selection) process were introduced to the market in the years following ACA's implementation in 2014.

Post-ACA, the health insurance industry underwent significant changes in consumer purchasing. In the new regulatory environment, consumers have become more engaged in both the shopping and enrollment process. As of February, Health and Human Services reported 12.7 million consumers had enrolled in a 2016 health insurance

plan using one of the newly implemented Federal or State based marketplaces (U.S. Health & Human Services, 2016). In addition, a survey conducted in 2015 demonstrates that only 9.2 percent of the total U.S. population (all ages) was uninsured (Clarke, Ward, Freeman, & Schiller, 2015). With uninsured rates at under ten percent, this indicates approximately 290 to 300 million Americans are enrolled in a health insurance plan, and that more than 90% of the people in the United States are actively selecting and utilizing health insurance benefits.

Although the majority of the population has access to, and potentially utilizes, their health insurance plan, studies show that consumers struggle with health insurance terminology, cost liability, and the numeracy levels to determine out of pocket costs (Greene et al., 2008; Norton, Hamel, Brodie, 2014; Quincy, 2010; Quincy 2012; Wood et al., 2011). Research has appealed for better assistance for consumers, allowing them to make more effective health insurance decisions (Frank and Lamiraud, 2009; Hanoch and Rice, 2011; Hibbard, Slovic, Peters, and Finucane, 2002; Wroblewski, 2007); however, the appropriate tools and resources have yet to be developed to strengthen health insurance literacy.

Whether enrolling in an individual health plan, group health plan, or government program for health care; health insurance consumers are faced with the task of both shopping for and utilizing their plan selection. Health insurance enrollment is in a process of industrialization, undergoing an expansion of technology and increased regulation that are driving a re-vamped and consumerized experience. This increased accountability during the shopping and enrollment process, along with a recorded lack of

literacy in health insurance, can directly influence the consumer's plan selection process. Increasing transparency and putting consumers at the helm of the decision making process without increasing literacy can leave them in a precarious position of financial stability – either by being over-insured and paying too much for an insurance plan monthly, or being under-insured and bypassing needed medications or treatments because they are unaffordable for those with high deductibles or coinsurance. If making better, or more effective, choices in healthcare can ultimately affect the entire economic condition; exploration of this process is an important factor to understand and evaluate.

As research has expanded in this area, the importance of health insurance literacy is clearly portrayed. This meta-analysis explores the body of knowledge that is produced on health insurance literacy, diving deeper into the variables that researchers have used to measure health insurance literacy levels.

Exploring the definitions, measures, and outcomes will help to determine the similarities and differences in the current research. From the measurements in place today, we need to understand how they impact the consumer's ability to make an effective plan choice. Ultimately, this research seeks to further develop any areas of weaknesses in the accumulation of health insurance literacy studies today.

LITERATURE REVIEW

In many commercial markets in America, the introduction of technology has truly changed the face of consumerism. While other industries have seen significant success adapting to these new tech environments; industry experts have voiced a lack of

advancement in the insurance space. Grossman, McCarthy, and Aaronson (2004) explain,

“Several areas within the financial services industry, such as banking and investments, have had a significant amount of success adapting to cyberspace. The insurance industry, on the other hand, has been lagging in its adoption of e-commerce” (p. 467).

Additionally, Herzlinger explains that consumers are moving away from the passive roles they’ve served in the past, imploring that consumers, by taking a more active role, can have a significant impact on the transformation of healthcare in the United States (2010).

Recent studies explore enrollment progression over the past 5 years, which demonstrates increasing growth in consumer-driven activity. Aside from the increasingly popular state and federal exchanges used to enroll in individual health coverage, analysts estimate a spike in participants of private exchanges as well (Birhanzel, Brown, and Tauber, 2015). In a relating concept, Booz and Co. discuss how the U.S. health insurance market is tipping from an employer-driven model to one that directly involves the employees in active healthcare selections (2012).

Consumerism in health insurance involves consumers making independent judgements - taking active responsibility in questioning their options and seeking out information to advance their decision-making capabilities. However, health insurance literacy is a relatively new concept; research supports that an incredibly low amount of

American adults are health literate; and similarly, an even smaller cohort of American adults are assumed to be health insurance literate.

It is important to delineate health insurance literacy from other similar concepts. The basis of health insurance literacy is an initiative that stems from health literacy, eHealth literacy, and financial literacy (Kim et al., 2013; Paez et al., 2014). The most comprehensive definition of Health Insurance Literacy is “the degree to which individuals have the knowledge, ability, and confidence to find and evaluate information about health plans, select the best plan for their own (or their family's) financial and health circumstances, and use the plan once enrolled” (Quincy, 2012, p.7). As noted, recent research shows that health insurance literacy levels are lacking. Specifically, consumers lack the appropriate knowledge of health insurance terminology and numeracy for benefit comprehension, such as cost liability (Paez et al., 2014b; Quincy, 2012; Norton et al., 2014).

Other studies have explored the effect of Health Insurance Literacy on decision effectiveness, suggesting that consumers struggle to make fully informed choices among the myriad options available to them (Handel and Kolstad, 2015a). Findings also determine that consumers are not making the most effective plan choices, or choices which are in their best interest (Bhargava, Loewenstein, and Sydnor, 2015; Handel and Kolstad, 2015b; Barnes et al., 2015).

According to a Health and Human Services Report, 70 percent of marketplace consumers actively renewed their plan from 2015 to 2016 (Brennan, 2016). Simply put, a large majority of marketplace consumers actively shopped and selected a new plan

option for 2016, as compared to the mere 30 percent whom renewed into a plan option automatically, taking no independent action. This could indicate a number of different things worth exploring, including the potential that consumers chose new options because they were unhappy, or uncomfortable, with the plan they chose the prior year. Or this could also indicate that consumers are more interested in learning about their insurance options within the market, embracing the drive for consumerism. Regardless of the reason for this high-engagement, it indicates that 70 percent of today's consumers have demonstrated a reasonable level of interest in shopping for and selecting a health plan.

Ensuring the right level of consumer education can be pertinent to consumer self-efficacy. The fiscal implications of poor decision making in health insurance plan selection cascade from an individual level through to a grander economic scale. This is applicable from the channel used to enroll in a health plan to the actual health plan selection; and each consumer's independent choices can propose an impact on both their own financial health as well as the overall cost of care. Studies show independent behavior patterns in the health insurance shopping and enrollment process can leave consumers surrendering approximately \$2,000 of unneeded financial burden. Because of their lack of knowledge to make their own educated decisions, inertia (in this case, choosing the dominated plan and following the herd), left consumers choosing a plan that committed them to unnecessary expenses (Handel, 2013). For example, choosing a plan that is significantly richer than what is needed for one's particular health status can result in higher monthly premium costs than they actually need to pay. Alternatively, Handel's study established this impact is also found in consumers who chose a plan that was lower

in monthly premium, but did not adequately cover the care they needed, resulting in higher out-of-pocket costs to obtain care (2013).

While exploring the latter phenomenon, the Kaiser Family Foundation concluded that only about half of U.S. households have enough liquid assets to manage a high-range annual deductible plan (Claxton, Rae, & Panchal, 2015). Even that fifty percent assumption may not demonstrate the actual impact; the weight of this financial burden may be much greater as the study assumed that these household assets are available for medical bills, which in many cases they're not. In fact, many consumers who are unable to afford medications or treatments often forgo needed care, as they have no means to acquire it. Ample evidence demonstrates that anywhere from twenty to fifty percent of consumers skipped some sort of needed or recommended medical care due to cost constraint (Collins, Gunja, Doty, & Beutel, 2015; Fox, 2009; Mitts & Fish-Parcham, 2015).

Ultimately, this non-compliance can lead to catastrophic care events. For the insurer, the cost of managing a catastrophic event is typically more expensive than the cost of managing chronic illness. And for a consumer, a trip to the ER will almost always cost more than their monthly medication. From this, it becomes clear that appropriate plan selection is essential to effectively managing healthcare from a sound medical and financial standpoint. We can deduct that developing a literate health insurance consumer can directly impact the cost of healthcare as a whole. Because healthcare today is approximately 17 percent of the U.S. Gross Domestic Product (The

World Bank, 2016), advancements in literacy of health insurance purchasing can leave a lot on the table.

In addition, understanding consumer health insurance literacy is pertinent as the market is faced with the development of new shopping and enrollment marketplaces. When developing consumer literacy tools in health insurance, researchers need to consider how to navigate consumers through over choice and data smog. As millions of consumers are now shopping for and electing their plan options on new, digital platforms, consumers in this new environment may also be affected by either deficient information or information overload (i.e., bounded rationality or over choice).

Bounded rationality stems from the concept that consumers are only able to make a decision based on the limited information available to them at the time of their choice (Simon, 1955). For consumers who have low health insurance literacy levels, finding the right sources for information may also be a challenge. Faced with little knowledge and little understanding of where to find the information they need to make an effective choice – consumers will be forced to make a choice with only the information they have at that time. This decision is vital, as choosing an insurance plan is a binding agreement and is issued in an annual contract. Understanding consumer literacy levels during this process would help to develop the right information seeking tools.

Contrariwise, information overload refers to the concept that a limited cognitive capacity occurs when presenting a person with a myriad of available options – or, there is such thing as having too much information available at one time. This concept was made popular from a book by Toffler (1972) who explains that consumers often make hasty

decisions when the available information is too great for them to process appropriately. Later, Shenk (1998) coined the term “data smog”, which coordinates well with this theory. Data smog refers to the overload of data and information as a trigger for stress and confusion. With the new ACA-driven health insurance shopping and enrollment environment, obtaining this much new information can be overwhelming and even detrimental in decision making for consumers with low health insurance literacy levels. Purchasing an insurance plan can be quite different from other retail experiences that today’s consumers are used to. For example, unlike other retail environments, more expensive doesn’t necessarily equal better value in a health insurance plan; and cheapest in monthly premium payments doesn’t always equal the cheapest overall in annual costs.

Consumerism has had a significant impact on other industries, helping to drive down costs through competition and access. Even in the health care space, some specific medical services have demonstrated successful reductions in cost while increasing quality (e.g., Lasik eye surgery exhibited a 90 percent cost reduction without compromising quality). However, in order for this level of consumerism to help overall health care market costs and quality, consumers need to be in a strong position to shop for health insurance services and rates.

Having measurable health insurance literacy levels can help to determine the appropriate amount of education needed to perform specific tasks – and to better understand how a health plan works and what features are important for each consumer. Providing tools to assist consumers with conducting a meaningful search or making an effective plan choice can’t occur until we understand what they know about insurance

today; a basic level of knowledge must be determined. The ability to measure health insurance literacy appropriately gives industry leaders the knowledge needed to better educate the consumer and ultimately drive consumerism in healthcare. Reducing cost and increasing quality are essential to maintain a sustainable market in health insurance.

This research explores health insurance literacy measures through a meta-analysis of the existing literature; evaluating current measures, what they represent, and their impact on plan selection. This study will analyze if the measures used are appropriate for determining a consumer's comprehension level, and if better tools can be provided to prepare consumers for more effective roles in health insurance shopping and purchasing.

METHODOLOGY & DATA ANALYSIS

For this research paper, a meta-analysis of the existing body of knowledge was conducted. By researching the models used to measure health insurance literacy in the existing literature, this study will determine if there are a common set of metrics used to derive at the researchers' conclusions. In addition, this research will seek to determine if higher levels of health insurance literacy lead to more effective plan choices. Moreover, if the metrics used provide a scale (or a level of literacy) demonstrating where consumers are deemed capable of making more effective plan choices. Lastly, this research will highlight areas of weakness in the existing studies, in hopes to develop a complete and standard set of metrics for measurement.

In the interest of complete disclosure, the topic area at hand is quite new. The amount of articles reviewed in this paper does not represent a highly significant sample,

but the study's sample is representative of the body of knowledge accumulated on this topic in 2016, at the time of the research. This research should be seen as a starting point to determine the next step in development, as future studies begin to explore this topic area on a deeper level.

The amount of articles pulled in the initial findings were promising, however, in depth reviews of the literature showed that many studies explored were measuring items other than health insurance literacy and were not valuable to this research review. For example, some papers were discussing health insurance literacy in depth and its value to the consumer; however, ultimately the researchers used alternative studies (e.g., measure of health literacy) to determine consumer outcomes in one particular environment. These findings and measurements are different than the definition of health insurance literacy and were not valuable for this meta-analysis.

Upon completion of the article review, the search resulted in thirteen articles which clearly demonstrated an actual measure to determine health insurance literacy or comprehension was used. Of note, in some of these studies health insurance literacy was not the primary objective of the research model. In addition, studies varied in the sampled population ages and insurance category. These items are controlled for appropriately in the research and do not impact the findings of this meta-analysis. Although particular populations were sampled, this does not impact the metrics used to determine health insurance literacy.

Search Strategy

In order to search for articles that were relevant in displaying a measure of health insurance literacy, a systematic search was conducted in three electronic databases. A demonstration of the strategy and method are detailed in Figure 1, showing the detailed number of articles that were included and excluded along the research path. Using Google Scholar, Business Source Complete, and Academic Search Complete a calculated strategy was used to search for keywords and, where available, the below filtering was used to further narrow the results.

Because health insurance literacy is a fairly new topic, all databases were searched with a history limit of the year 2005 to 2016 in order to reduce irrelevant articles and access a current database of resources. Combinations of keywords were used during the search including health insurance, literacy, comprehension, and self-efficacy.

This keyword search provided a full and comprehensive list of potentially relevant articles. Articles from all three sources were collected into a single database for better management and review. From this database, articles were reviewed by title and author across all sources to determine if any duplicate articles were returned from more than one source. Duplicate articles were removed, leaving only one version from the multiple sources retained.

Once all duplicate articles were removed, an extensive review of the titles and abstracts was conducted. This review was used to determine which articles were actually relevant to the topic area and which used similar or the same keywords but were not

applicable to the topic of health insurance literacy. Any non-relevant articles were removed from the research source list.

Once all duplicate articles were removed, an extensive review of the remaining titles and abstracts was conducted. This review was used to determine which articles were actually relevant to the topic area and which used similar or the same keywords but were not applicable to the topic of health insurance literacy. Any non-relevant articles were removed from the research source list.

For the remaining articles a full article review was conducted. This included reading the entire article and using an in-depth analysis to verify both relevance and health insurance literacy measurement metrics. At this point, some articles were then excluded based on further identification of metrics. For example, some articles were measuring health literacy, a different concept from health insurance literacy, and while there may have been a mention of health insurance-related topics found; there was no particular measure provided to review health insurance literacy or comprehension included in the article. Articles of this nature were removed from the study.

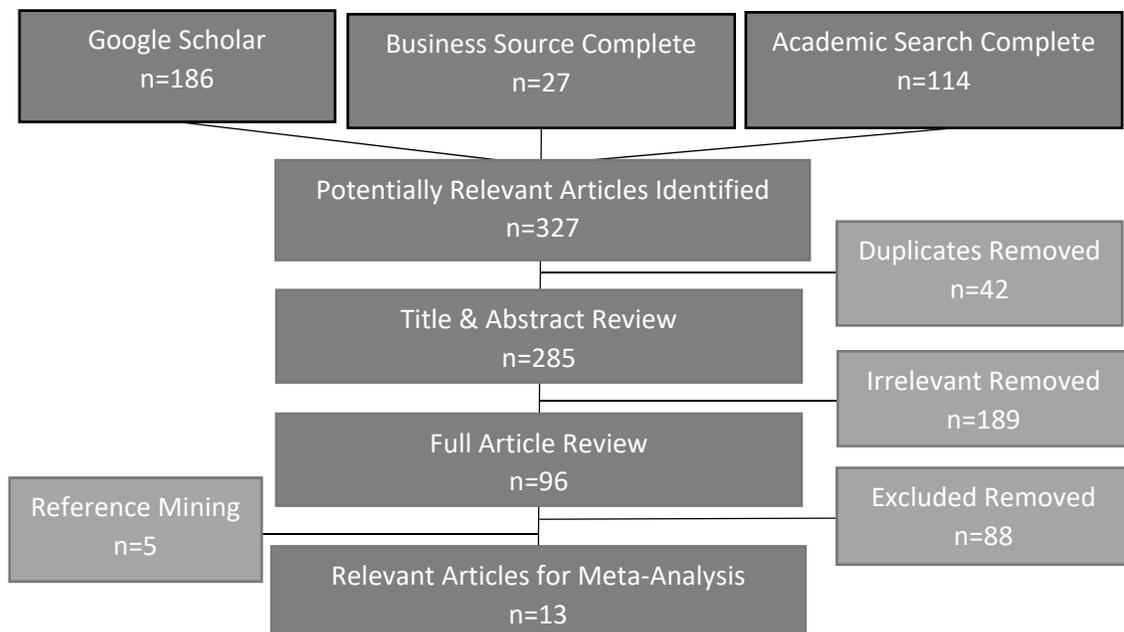
Most of the articles delivered from the entirety of the search included information relating to health insurance literacy and comprehension, going so far as demonstrating a call to action and highlighting the importance of the topic area. However, these articles were not sufficient as measurement for health insurance literacy and often referred to secondary statistics provided from a fairly small amount of health insurance literacy research. Many of the remaining, non-measurement based articles ultimately amassed

the literature review of this research and assisted in developing a full and robust understanding of the topic area.

Upon completion of the full review, the remaining articles consisted of those which included a study using metrics to evaluate health insurance literacy, health insurance comprehension, or self-efficacy in health insurance purchasing and use. This final group was kept for inclusion in the meta-analysis. From these articles, an in depth reference-mining was conducted.

Reference-mined articles were subject to the same rigorous review as the articles found within the three electronic databases. Articles were first reviewed for title and author to determine if they were duplicate to existing studies. Next, a review of the titles and abstracts provided a narrower review of relevance. Lastly, an in-depth review of the article determined if it was applicable for the meta-analysis.

FIGURE 1. CHAPTER 1 RESEARCH MODEL



Article Selection Criteria

Articles we deemed appropriate by using a specific set of criteria to determine their eligibility for this study. The following criteria was used to assess articles that were appropriate for this contribution:

- (1) The article either defines or expands research upon health insurance literacy or a similar concept (such as health insurance comprehension) within the study. This was an important value because it was used to ensure that the research would be measuring an appropriately defined item for this meta-analysis.

Note: Articles without a definition were not deemed ineligible, as long as the study indicated that health insurance literacy (or a similar concept) was an item that the researchers were seeking to establish within the study.

- (2) The article included a measurement of health insurance literacy. This measurement could be constructed in any fashion (e.g., qualitative or quantitative), as long as the measurement was directly correlated to the defined measure of health insurance literacy or comprehension.

Articles were not restricted based on publication type (e.g., report, journal article, etc.); however, they type of publication was recorded within a detailed article profile.

Article Profile

An article profile was developed in order to provide the reader with a comprehensive profile of the articles used to develop this study. Although these factors have no impact on the quality rating or findings within the meta-analysis, this information has been collaborated to help inform the reader or researcher about each article's genetic makeup. This profile develops a well-rounded picture of the studies' sponsorships, grants, or funding - in addition to the type of article, objective, sample size, and population type. The following details were used in developing the criteria of review for the articles and detail the level of information that will be included on such topics in the attached review:

- *Sponsorships/Grants/Funding:* This column highlights the listed sponsors, funders, or grants associated with the research.
- *Article Type:* This column indicates the type of article. Examples might include academic research article, organizational report, or policy briefing. This establishes a background for the literature and helps the reader put the objective into place. It also helps the reader to formulate a concept of how the literature was presented and the purpose for which it serves.
- *Objective:* This column indicates the objective of the article. Although measures of health insurance literacy were included in the study, the intent of the study was not always to determine health insurance literacy levels. Including the objective in this section helps the reader or researcher to have a clearer understanding of the depicted article.

- *Sample Size:* This column indicates the sample size used to conduct the study. Although this information is not directly impacting the quality, the intent of providing this information is to help a reader or researcher to have a better perception on the results from the study. If additional statistical analysis is conducted, this may be a factor to control for.
- *Population Type:* This column indicates the population type of the sample. In some cases studies were focused on the uninsured population, in some studies a senior target was the population. While the results may vary due to these controlled factors, they should not impact the metrics used to develop a health insurance literacy measure. Including this information intends to provide a well-rounded article profile for the reader or researcher.

Quality Assessment

In order to provide a quality component for the articles chosen, a self-developed quality rating method was developed. This quality rating was developed from the Effective Public Health Practice Project's (EPHPP) Quality Assessment Tool for Quantitative Studies Model. Adjustments were needed for this quality rating as the research articles are not systemic and all of the provided criteria is not a fit for the research. The model was altered to account for pertinent items in the research that are specific to the studies of health insurance literacy. Ultimately, the rating system was developed to quantify the quality of an article based on the number of points obtained within the point-scale provided. The self-developed assessment included a total of 11

questions which contribute to the quality of an article. As demonstrated in Table 1, these questions determine article quality and represent a wide variety of quality standards.

The metric derived for this assessment concludes that the number of points received will equate to the quality of article, with lower numbers representing the best quality. There are a minimum of 11 points, being the best quality, and a maximum of 43 points, being the worst quality of an article. Since the point scale ranges from 11-43, an equal number of points divide the scale into three sections with point values of 10 for each section.

Articles that score in the top tier are considered strong quality articles and will have a point value of 11 to 21 points. Articles that score in the middle tier are considered moderate quality articles and will have a point value of 22-32 points. Articles that score in the bottom tier are considered weak quality and will have a point value of 33-43 points. Other information included in the quality collection section included the author citation and year of publication. This information was included in order to label the articles being rated.

The questions for this scale were developed in order to target a specific set of factors which are valid in determining quality for this meta-analysis. Within this scale, as low scores are positive, the lowest point values are assigned to the articles best representing the factors reviewed. Factors evaluated include selection bias, study design, confounders, data collection, and data analysis:

- (1) Selection Bias | Target Population: This metric determines if the sample used in the study is likely to be an appropriate representation of the sample. This helps to validate that the study's findings are valid and contributes to the validation of the tool or metrics used to measure health insurance literacy. The lowest point values are provided to articles using appropriate sample groups.
- (2) Selection Bias | Participation: This metric determines the level of participation the study received and ultimately validates the results and findings based on participation size. If the study did not have a large sample due to ineligibility or participant drop-out, then this could potentially be representative of a poor tool or metric used in the study. The lowest value is provided to samples with participation of 80 percent or more.
- (3) Study Design | Method: This metric evaluates the type of study conducted; with a controlled trial being the strongest method. Controlled trials allow the researcher to test tools against a control group to determine literacy levels. Surveys and interviews are less representative of a true measurement result, as they are subjective to participant feedback versus the use of a designed tool/test.
- (4) Study Design | Sample Selection: Although the sample group might have been different for each study, this metric indicates if the sample selection was randomized. The point value declares a completely random sample as one of the lowest value showing a truly unbiased population. For purposeful and convenience samples, if the randomization was not applicable or not able to be determined, the point value was the weakest.

- (5) Study Design | Sample Method: This metric is indicative of if the sample collection method was described in the study. If the method was described, then the researcher would be able to determine if this sample was appropriate and if there was any potential bias. If the method was not described, the article received a weaker rating.
- (6) Study Design | Sample Method Appropriate: In reviewing if the sample description was included, this item indicates if the method used was appropriate for the study. If the method was not included, this item also indicates a weak score.
- (7) Confounders | Controls: Rating confounders is a metric used to determine appropriate controls were in place which would identify confounders. In some instances, the research was controlling for particular items with the confounders being the independent variables and in other areas the researchers were controlling for confounders to ensure that they did not skew or impact the results. Confounder examples include race, sex, marital/family status, age, income/class, education, health status, etc.
- (8) Data Collection | Validated Tools: This metric gives stronger value to articles where the data collection tools used were validated within the study, or validated through another study.
- (9) Data Collection | Tool reliability: This metric gives stronger value to articles where the data collection tools used demonstrated as reliable within the study, or through another study.

- (10) Analysis | Statistics Used: This metric is used to determine if the statistical methods used within the study were appropriate for the study design. Stronger ratings were assigned to articles with appropriate statistical design.
- (11) Analysis | Potential Bias: This metric evaluates the potential for bias within the findings, due to a funding source or organizational conflict of interest. The strongest value was attributed to studies where no bias was reported or apparent.

The articles used in this meta-analysis ranged from strong to moderate in quality rating, indicating that they are of decent quality for analysis and have a defensible approach to researching and analyzing the topic of health insurance literacy.

All of the articles were ranked at the highest point value in both appropriate control of confounders and use of appropriate statistics. This implies that the research method and study designs were solid and reliable. The three articles that ranked in the strongest category had commonality in both using an appropriate method and describing it within the study. Additionally, these studies shared the use of validated and reliable tools. All three articles had a unique study method.

Only two articles were ranked as moderate quality. The two items that stand out for these articles are their low or unrecorded participation level as well as the lack of sample method description, and thus low scores for the appropriate sample selection method ranking as well.

TABLE 1. QUALITY ASSESSMENT QUESTIONNAIRE

| COLUMN DESCRIPTION | QUESTION AND ANSWER ASSOCIATION |
|---|--|
| Selection Bias (Target Population) | Q: Are the individuals selected to participate in the study likely to be representative of the target population? [1. Very likely, 2. Somewhat likely, 3. Not likely, 4. Undisclosed.] |
| Selection Bias (Participation %) | Q: What percentage of selected individuals agreed to participate or was eligible to participate? [1. 80%-100%, 2. 60%-79%, 3. <60%, 4. Not applicable, 5. Undisclosed.] |
| Study Design (Design) | Indicate the design of the study. [1. Randomized controlled trial, 2. Survey, 3. Interview, 4. Combination of Survey and Interview, 5. Other (SPECIFY), 6. Undisclosed.] |
| Study Design (Sample) | Q: Was the participant sample selection randomized? [1. Completely random, 2. Purposeful sample, 3. Convenience Sample, 4. Not applicable, 5. Undisclosed.] |
| Study Design (Sample Described) | Q: Was the sample collection method described? [1. Yes, 2. No, 3. N/A.] |
| Study Design (Appropriate) | Q: If yes, was the sample collection method appropriate? [1. Yes, 2. No, 3. N/A.] |
| Confounders* | Q: Were there important differences noted within participant selection controlled for? [1. Yes, 2. No, 3. Not Applicable, 4: Undisclosed.] |
| Data Collection (Valid Tools) | Q: Were data collection tools shown to be valid? [1. Yes, 2. No, 3. Undisclosed.] |
| Data Collection (Reliable Tools) | Q: Were data collection tools shown to be reliable? [1. Yes, 2. No, 3. Undisclosed.] |
| Analysis (Stats) | Q: Are the statistical methods used appropriate for the study design? [1. Yes, 2. No, 3. Not Applicable, 4: Undisclosed.] |
| Analysis (Potential Bias) | Q: Is there a potential bias of the findings due to funding or organizational conflict of interest? [1. No, appears to be unbiased. 2. Yes, bias is indicated/disclosed. 3. Undisclosed.] |

*Confounder examples include race, sex, marital/family status, age, income/class, education, health status, etc.

Data Collection

Data was extracted from the articles in a systematic format. Using independent judgment and industry knowledge, the articles were evaluated for their research approach, metrics used, questionnaires, and findings.

First, the articles were categorized as either self-assessments or as tested models (questionnaires, behavior observations, etc.). Self-assessment indicates that the consumer or participant was responsible for evaluating their own level of knowledge, untested. In some cases, “other” is noted if the study used a hybrid of models. Additionally, articles are classified by research type as either qualitative or quantitative reviews.

Next, using personal insight, market knowledge, and deductive reasoning; articles were examined for a list of traits that were marked with either “yes” indicated by a (+) or “no” indicated by a (-). Articles were reviewed to determine if health insurance literacy was the primary objective of the study. In addition, articles were explored to determine if health insurance literacy (or a similar concept, such as health insurance comprehension) was defined. Lacking a definition did not deem an article ineligible for this meta-review as long as the study, as this was not the primary objective for some studies.

Lastly, the measurement metrics for health insurance literacy in the articles were evaluated to determine if they were inclusive of a comprehensive set of common metrics, as listed below:

- *Numeracy*: This indicates if the article includes a numeracy scale or numeracy measure as part of the determination for health insurance literacy. Many numeracy scales are already established and well-tested.
- *Terms*: This factor is used to establish if exploration of health insurance terminology is used in determining the level of health insurance literacy.
- *Shop/Info*: In terms of shopping and information seeking behaviors, these include factors such as knowing where to find assistance, get questions answered, or accessing research options. This column indicates if the article references any of these behaviors or factors in the assessment of health insurance literacy.
- *Choose/Enroll*: Regarding the action of choosing or enrolling in a plan option, behaviors in this area might include items such as the confidence in (or ability to) comprehend coverage limits, evaluate plan benefits and networks, or determine plans that are a good fit for associated needs. This column indicates if the article references any of these behaviors or factors in the assessment of health insurance literacy.
- *Use*: Relating to the use of a health insurance plan, behaviors can consist of provider or facility searches, determining or evaluating the cost of care, or the ability to “shop around” and find cheaper options for available services, such as prescription drugs. This column indicates if the article references any of these behaviors or factors in the assessment of health insurance literacy.
- *Regulatory*: The implementation of the ACA brought about many new regulatory and compliance factors. While some of these are at an employer or carrier level, many fines and penalties are at a consumer level. In addition, guidelines now

exist around open enrollment periods and eligibility clauses. This item indicates if regulatory items were included in the measure of health insurance literacy.

Data Analysis and Reporting

The analysis for this meta-review provides a narrative synthesis of the results found while comparing the published reports and articles on this topic. Statistical analysis and a systemic review would only make sense if there were enough similar factors performed on similar participant samples. Because of the few amount of articles and the differences among them; instead, this analysis will first provide a review of the article profiles, summarize the article quality, and lastly report on conclusions. The final article profile is demonstrated in Table 2.

As depicted in the article profile, one of the most prominent factors that the articles had in common is noted in the publication timeline. As noted, research in this field is new and the majority of these articles were published within a very short timeframe; eight of the reports being published in 2014 and the oldest from 2009. Another notable feature within the article profile is article structure, with about 50 percent of the articles being of an academic research nature and the other half serving an organizational report or policy review purpose. This demonstrates that this field of study is current and gaining attention from academics, research organizations, and policy organizers alike.

TABLE 2. ARTICLE PROFILES

| Author | Year | Sponsor/Funding | Article Type | Objective | Sample Size | Population Type |
|--------------------|------|--|-----------------------|--|-------------|--|
| Barcellos, et al. | 2014 | Grants: P30AG24962, P30AG024968, pilot grant from USC | Academic Research | Investigating if individuals are prepared to make choices through health exchanges. | 3,490 | 18-64 adults |
| Barnes, et al. | 2014 | VCU Masset Cancer Center, Virginia Tobacco Indemnification, Community Revitalization Commission [Grant: 2585] | Academic Research | Exploring consumers' decision making ability in health insurance. | 437 | <65 adults |
| Jacobson, et al. | 2014 | Kaiser Family Foundation | Organizational Report | Investigating seniors and their capacity to choose health plans. | 54-72 | 65+ adults |
| Long & Goin | 2014 | Robert Wood Johnson Foundation | Organizational Report | Defining the need for targeted education outreach. | N/A | N/A |
| Long, et al. | 2014 | Robert Wood Johnson Foundation, The Urban Institute | Organizational Report | Exploring barriers for obtaining and using health insurance. | N/A | <65 adults with under 400% FPL |
| Lowenstein, et al. | 2013 | None Listed. | Academic Research | Exploring consumer misunderstandings in health insurance. | 413 | 25-64 insured (prime decision maker) |
| McCormack, et al. | 2009 | CMS Contract No. 500-00-0024/T.O. # 2 | Academic Research | Exploring health insurance literacy of seniors. | 1,202 | 65+ adults |
| Paez & Mallery | 2014 | American Institutes for Research | Organizational Report | Exposing a gap between what people think they know and what people actually know about health insurance. | 828 | 22-64 adults |
| Paez, et al. | 2014 | Missouri Foundation for Health, American institutes for Research | Academic Research | Developing a health insurance literacy measure. | 31 | 21-65 insured or recently insured adults |
| Politi, et al. | 2013 | Agency for Healthcare Research and Quality [Grant: R21HS020309] | Academic Research | Exploring health insurance terms and details among uninsured. | 51 | 18-65 uninsured adults |
| Quincy | 2011 | The Commonwealth Fund, The California Healthcare Foundation | Organizational Report | Evaluating consumer reactions to new SBC format. | N/A | N/A |
| Quincy | 2012 | The California Healthcare Foundation, The Commonwealth Fund, Missouri Foundation for Health, New York State of Health Foundation | Policy Brief | Investigating consumer difficulty in selecting a health plan. | N/A | 24-64 adults |
| Norton, et al. | 2014 | The Kaiser Family Foundation | Organizational Report | Assessing American's familiarity with health insurance (terms and concepts). | 1,292 | 18-64 uninsured adults |

Next, in reviewing table 3, the quality of the articles - based on the self-developed quality rating scale is shown. Most of the articles are showing strong to moderate in quality, with only one article reporting at a weak rating. Seven of the thirteen articles were showing as strong quality. Five articles were depicted as moderate quality. As aforementioned, only one article was indicative of a weak rating. It should be mentioned that this article was written for summarization purposes for an organizational entity and its low rating is mostly due to the lack of provided information regarding the methodology, sample, and analysis procedures. Due to these factors not being included in the analysis, the weak rating is mostly symptomatic of the lack of disclosure.

The most common trait within the articles is that all, except one article, used a purposeful sample in order to conduct their research. The only other sample type relates to the Quincy (2011) article, which (as noted above) may just be symptomatic of an absence of information regarding the discovery process. While a purposeful sample may have been used to conduct this study, the information was not revealed to the reader within the article summary.

The majority of the articles were showing no bias in research agenda. One article disclosed their research intent clearly and two did not make mention of their intent, leaving any potential bias undisclosed. Although half of the articles were developed for research or policy based organizations, and not for academic purposes, most of the articles are still clearly showing a lack of bias and clearly detailing their methodologies and sample selection. Most of the studies used a sample population that was appropriate

for their research objectives and that would relate to the generic market associated with the research studies.

TABLE 3. QUALITY RATINGS

| Author | Year | Target Pop | Participation (%) | Study Design | Sample | Sample Describe | Appropriate | Confounders | Valid Tools | Reliable Tools | Stats | Bias | Total Score | Rating |
|--------------------|------|------------|-------------------|--------------|--------|-----------------|-------------|-------------|-------------|----------------|-------|------|-------------|--------|
| Barcellos, et al. | 2014 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 14 | Strong |
| Barnes, et al. | 2014 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12 | Strong |
| Jacobson, et al. | 2014 | 2 | 5 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 21 | Strong |
| Long & Goin | 2014 | 2 | 5 | 2 | 2 | 2 | 3 | 4 | 1 | 3 | 1 | 1 | 25 | Mod |
| Long, et al. | 2014 | 1 | 5 | 2 | 2 | 1 | 1 | 4 | 3 | 3 | 1 | 3 | 26 | Mod |
| Lowenstein, et al. | 2013 | 1 | 5 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 20 | Strong |
| McCormack, et al. | 2009 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 14 | Strong |
| Paez & Mallery | 2014 | 1 | 5 | 2 | 2 | 2 | 3 | 4 | 3 | 3 | 4 | 1 | 30 | Mod |
| Paez, et al. | 2014 | 1 | 5 | 2 | 2 | 2 | 3 | 1 | 1 | 3 | 1 | 1 | 22 | Mod |
| Politi, et al. | 2013 | 1 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 15 | Strong |
| Quincy | 2011 | 4 | 5 | 5* | 5 | 2 | 3 | 4 | 3 | 3 | 4 | 1 | 39 | Weak |
| Quincy | 2012 | 1 | 5 | 1 | 2 | 2 | 3 | 1 | 3 | 3 | 1 | 3 | 25 | Mod |
| Norton, et al. | 2014 | 1 | 5 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 18 | Strong |

*Focus Group

In looking at the analysis of the articles, demonstrated in Table 4, this research uncovered a few interesting factors. For starters, exploring questions around both terminology as well as questions regarding the shopping and enrollment process are both present in ten of the thirteen articles reviewed. The other factors typically hover around 50 percent with half of the articles reviewing each factor. The factors least reviewed are noted as use of health insurance, or testing participants on factors regarding their ability

to or confidence in appropriately using the health insurance plan that they have selected. The least tested factor is regulatory knowledge of health insurance. Only one of the thirteen articles addressed any question to the participants regarding ACA compliance, understanding of the open enrollment window, or acknowledgement of any fees or fines that might be associated with non-compliance.

TABLE 4. ARTICLE ANALYSIS

| Author | Year | SA/Test or Other | Research Type | HIL Prime | HIL Define | Numeracy | Terms | Shop/Info | Choose/Enroll | Use | Regs |
|--------------------|------|------------------|---------------|-----------|------------|----------|-------|-----------|---------------|-----|------|
| Barcellos, et al. | 2014 | SA | Quant | - | - | + | + | - | - | - | + |
| Barnes, et al. | 2014 | Test | Quant | - | + | + | - | - | + | - | - |
| Jacobson, et al. | 2014 | Test | Qual | - | - | - | + | + | + | - | - |
| Long & Goin | 2014 | Test | Quant | + | - | + | + | - | - | - | - |
| Long, et al. | 2014 | SA | Qual | + | - | + | - | - | - | - | - |
| Lowenstein, at al. | 2013 | Test | Quant | + | - | - | + | - | + | + | - |
| McCormack, et al. | 2009 | Other | Quant | + | + | + | + | + | + | - | - |
| Paez & Mallery | 2014 | Test | Quant | + | + | - | + | + | + | - | - |
| Paez, et al. | 2014 | SA | Quant | + | + | - | - | + | + | + | - |
| Politi, et al. | 2013 | Test | Qual | + | + | - | + | - | + | - | - |
| Quincy | 2011 | Test | Qual | - | - | - | + | + | + | - | - |
| Quincy | 2012 | Other | Qual | + | - | + | + | + | + | + | - |
| Norton, et al. | 2014 | Test | Quant | + | - | - | + | - | + | + | - |

Of the articles reviewed for eight factors (including: HIL Prime, HIL Define, Numeracy, Terms, Shop/Info, Choose/Enroll, Use, and Regs) only two of the articles

considered as many as six of these eight items in their research. The articles by McCormack et al. (2009) and Quincy (2012) provided a detailed and comprehensive review of most of the features that were considered for this analysis. While others ranged in reviewing anywhere from three to five of the factors, only one article analyzed as few as two factors; Long et al. (2014).

Another notable finding lies in the differences in research factors based on the type of analysis (qualitative versus quantitative). Of the five articles that provided a definition for health insurance literacy, four of the articles were quantitative in nature – only one of them being qualitative. In addition, when reviewing the four articles that analyzed questions regarding the use of insurance, three of the articles were qualitative in nature and only one was qualitative.

As consumerism is more prevalent in the health insurance space, understanding the impact of education and literacy on a consumer's ability to act on their own behalf becomes an important factor for advancement. Lastly, as this research explores health insurance literacy and the impact it has on self-efficacy, articles were reviewed to determine if self-efficacy was an impacted factor or outcome in the research study.

Recognizing that health insurance literacy is intended to lead to higher self-efficacy, understanding the impact of education and literacy on a consumer's ability to act on their own behalf becomes an important factor for advancement. This research uncovered self-efficacy as a highlight for most of the articles reviewed. As shown in Table 5, ten of the thirteen reviewed articles mentioned self-efficacy as a goal of the research study.

TABLE 5. SELF-EFFICACY REVIEW

| Author(s) | Year | Self-Efficacy Reviewed |
|--------------------|------|------------------------|
| Barnes, et al. | 2014 | Yes |
| Paez, et al. | 2014 | Yes |
| Politi, et al. | 2013 | Yes |
| McCormack, et al. | 2009 | No |
| Quincy | 2012 | Yes |
| Lowenstein, et al. | 2013 | Yes |
| Jacobson, et al. | 2014 | No |
| Long, et al. | 2014 | Yes |
| Barcellos, et al. | 2014 | Yes |
| Norton, et al. | 2014 | Yes |
| Quincy | 2011 | No |
| Paez & Mallery | 2014 | Yes |
| Long & Goin | 2014 | Yes |

DISCUSSION

This analysis uncovered a few key contributions that will help to further develop the health insurance market's understanding of consumer literacy, from both an academic perspective as well as a practitioner standpoint.

One important outcome noted from these findings is that little to no researchers are focusing on the regulatory aspect of health insurance literacy. This can be a key component when generating a detailed consumer profile of health insurance knowledge, as the fines and restrictions associated with the ACA can greatly impact the consumer on a personal level. For example, consumers can be assessed with a fine if they obtain subsidized care and are not technically eligible for it (e.g., the consumer is eligible for a qualified group insurance plan). Aside from the fines and fees that may be presented to

non-compliant consumers, there are other important regulatory factors that can impact the consumer's health insurance needs. One example is that consumers must enroll in a health insurance plan during the defined open enrollment window, or have a qualified life event to enroll outside of that period. If the consumer is outside of the open enrollment window and they don't have a qualified life event, this could restrict the consumer of access to any health insurance plan – potentially leaving them uncovered and vulnerable to costly health insurance expenses.

Another important finding exposed during this meta-analysis is the importance of health insurance literacy to self-efficacy. As the health insurance industry morphs into a more consumerized marketplace, this research uncovers the importance of understanding one's level of literacy in order to provide better tools and education that will help individuals make better and more effective plan choices on their own. Although the literature review clearly demonstrates this importance, and ten of the thirteen reviewed articles mention the importance of health insurance literacy as a factor for self-efficacy; none of the research has explored exactly “how” literate an individual needs to be in order to be self-sufficient in the enrollment experience. While measuring literacy is an important factor to determining the type and importance of tools needed to further develop knowledge and education in health insurance – research has not yet produced a standard scale of literacy or determined what is considered an appropriate level of literacy for the tasks that consumers will need to be self-sufficient in performing. As a new area of development, determining an accurate measure for health insurance literacy

is lacking. Research has presented a myriad of definitions, but provided no standard set of metrics, and varying study results.

Contribution to Theory

The meta-analysis included in this research provides an impactful contribution to the theoretical development in this area. By establishing connections between the existing literature-base, researchers can further expand the body of knowledge accumulation on health insurance literacy. By establishing a theoretical base-line within the few literature articles presented on this topic which demonstrate measures in health insurance literacy; researchers can build on the theories and metrics that are already developed. Establishing both commonalities and differences in this existing literature will result in a better formulation of a more reliable and accurate metric or measure that should be used when determining the level of health insurance literacy.

This research also finds an association within some of the literature that implies health insurance literacy impacts self-efficacy in the health insurance shopping and enrollment process. This research implores researchers to further develop the topic area and prompts the development of a better solution for such a problem. This research also uncovers the importance of developing a scale of health insurance literacy to recognize what might be considered normal and determine what tasks can be performed on an independent level for each of the levels on the scale.

Findings from this research will help researchers to better understand how to approach measurement of consumer education level when reviewing health insurance

shopping and use. In order to achieve maximum decision effectiveness, there is a critical need to derive tools that increase literacy during the consumer shopping experience.

Implications for Practice

Since millions of consumers are newly affected by health insurance decision making, understanding health insurance literacy levels is critical to the success of health insurance companies in the U.S. Developments from this research provide insight as to the important metrics used to understand health insurance literacy and can assist in the development of decision support tools which would help consumers make appropriate decisions for their health needs. Developing standard metrics will establish a baseline of the current knowledgebase and help to establish better tools and decision support mechanisms that will help consumers to and determine what is needed to empower consumers to make better and more effective decisions in their health insurance plan selection.

If literacy levels could determine a standard marker for when a consumer is able to make effective plan choices on their own, this would assist agents, brokers, and navigators in truly understanding where their services can be of value and which consumers would most benefit from their assistance.

This knowledge also contributes to health insurance carriers' understanding of their consumer base, potentially driving an alteration in the enrollment process or plan design and development - which might include molding the consumer's educational experience for a more stable outcome. Establishing the reflected results will ultimately

help drive solutions that guide people to better understand the choices and features of their health insurance plan, leading to better behaviors and lower costs. Utilizing the results appropriately can ultimately help to control the total cost of care by (1) establishing better financial security by driving consumers to make more effective plan choices and (2) through increased compliance due to appropriate/effective health plan selection.

By enrolling in the appropriate plan, consumers would be able to better manage their monthly health insurance spend (through retaining premium over-or-under payment dollars) and their overall healthcare spend (through better management of deductibles and medical costs). With healthcare representing disproportionate amounts of GDP spend versus other commodities; the economic impact to these changes could be quite significant.

Future Research

This research implores researchers to further develop the weak findings in this analysis. Additional studies of health insurance literacy and literacy's impact on consumer selection effectiveness are critical to driving empowered consumerism in the health insurance marketplace. Research should continue to explore the regulatory knowledge concepts and further develop metrics that can explore and test these concepts.

Lastly, researchers should further explore the concept of a health insurance literacy scale and developing a better understanding of "how" literate a consumer needs to be in order to be considered self-sufficient.

CHAPTER 2
LITERACY IN HEALTH INSURANCE UTILIZATION

A Detailed Look at Consumer Literacy and Consumption

Through ER Overuse in New York

INTRODUCTION

Health care costs are a dominant conversation in the United States. Costs, exhibiting exorbitant growth, are forcing policy makers and industry leaders to think critically about better control mechanisms to reduce the cost of care, finding new ways to reduce costs in a legacy system.

In recent years, it appears that an initial attempt to control costs was found in changes to the economic model of insurance delivery. Many of these strategies are witnessed within the provider-payment sphere. Value Based Care initiatives changed provider payment models from a fee-for-service approach to one that seeks better patient outcomes; physicians and hospitals are incentivized by higher reimbursements for improved quality and outcomes (i.e., reduced readmission rates). Similarly, Accountable Care Organizations group practitioners whose payments are tied to quality metrics and cost of care. Patient Centered Medical Homes alter the way primary care is offered to patients, using a team-based delivery model to provide comprehensive and continuous care with maximum outcomes. These delivery model changes are all focused around incentivizing doctors to provide better patient outcomes and increased quality. They focus on provider behaviors, but seemingly leave out the role of the consumer. While these changes in delivery are impactful, alone they have not been enough to make a dramatic change in the fast-increasing health care cost deficits that the country is facing.

More recently there has been a recalibration of the market players; within this change, major companies have been merging to provide more effective health care services. This thought stems from the fact that managing a consumer's whole health can

contain per member costs. The market has seen a stunning number of mergers and acquisitions; combining insurers, pharmacy benefit managers, and hospitals. Many companies who handle health insurance services in any aspect are now seeking partnerships which help them provide new levels of whole-health service their consumers. Examples of this include commercial health insurers merging with pharmacy benefit managers (e.g., Aetna and CVS, Humana and Walmart, or United Healthcare and ExpressScripts), or hospital systems introducing insurance platforms (e.g., Kaiser Permanente, Northwell Health). However, regarding the latter, a CMS regional study revealed that (although hospital-based insurance systems are intended to reduce costs) per-capita spending on hospital and physician care grew faster than the average in an area where hospital-based insurers are common (Herman, 2015). It is clear that some of these tactics are just not successful in reducing utilization costs. These market recalibration efforts focus on insurer behaviors; but to date, have seemingly leave out the role of the consumer.

In addition to this market recalibration, the industry has also seen a host of new entrants capitalizing on the need to generate innovative resources to better manage a legacy system of care. One high-profile company includes a joint health care venture announced by JP Morgan Chase, Amazon, and Berkshire Hathaway, which remains unnamed to date. When this organization started, the companies declared a goal to reduce health care costs for their over one million employees (Kamp and Mathews, 2019). Success in this arena could be easily scaled by these three power-companies. A player like Amazon, known for consumer empowerment, could really alter delivery in

health insurance. But with the consumer at the helm, literacy becomes an important variable.

Changes to provider payment structures (focusing on provider behaviors) have not been able to move the needle on cost. Modified delivery models (focusing on insurer behaviors) have yet to demonstrate savings. New players focused on reducing cost have yet to yield expected results. Delivery models alone are not triggering the needed change; through all of these market vicissitudes, one aspect virtually untouched in this market overhaul is targeting consumer behavior.

Research supports the fact that consumer behavior contributes to the rising cost of care and that empowered consumerism could demonstrate cost savings (Cordina, Kumar and Olson, 2017). However, even though consumer behavior is demonstrated as a contributor of cost, the economic model changes described above haven't addressed any aspects of consumer behavior.

Insurers have attempted to impact consumer behavior through plan design aspects, such as high-deductible health plans, generated to help consumers make better health choices. These consumer-driven plans fell flat in their goal to drive consumer behavior. In fact, research demonstrated the reduction in services recognized from such plans is actually realized in ineffective ways, such as avoiding needed care (Altman and Mechanic, 2018). It is apparent that more research is needed on how to control the consumer's culture of insurance consumption and the unnecessary behaviors associated with high-cost utilization.

The concept of consumer consumption (as a whole) is quite broad; however, some specific behaviors demonstrate a direct impact on cost, particularly, Emergency Room (ER) overuse and abuse. Not only are Emergency Rooms expensive, but many times acute care services were available for much lesser cost, and much of the time the use of the facility was avoidable altogether (Galarraga and Pines, 2016). There is an increasing consumer demand for those seeking care in emergency rooms and, at an impactful cost difference, studying why this demand exists is important.

There is a wide breadth of knowledge published on the characterization of ER utilizers; information on what defines a frequent user, which income classes use services most, or even what nationalities, genders, or ages (Gould et al., 2008, Castillo et al., 2014). However, the depth of all of this knowledge stops short of understanding the one thing we can attempt to control, consumer behavior. If research can develop a clear picture of what drives consumers' ER utilization it may help to reduce unnecessary use.

While there is an abundance of research in the medical literature about ER overuse (LaCalle and Rabin, 2009, Sarver et al., 2002, Gandhi and Sabik 2014, Hsia and Niedzwiecki, 2017, Durand et al., 2012, Van den Heede and Van de Voorde, 2016), still little has been done to explore the factors regarding the decisions behind this behavior. New York is a particularly interesting area to explore these behaviors because of increased access to both hospitals as well as alternative ER facilities, such as Urgent Care Centers (UCCs). The goal of this research is to determine if New York (NY) ER utilizers can be influenced to use alternative facilities through education. Using a survey methodology, this study sought insight into participants' decision-making upon their last

ER visit. The survey provided participants with information regarding Urgent Care Centers and Telemedicine providers. After providing the information, the survey sought feedback from consumers on if knowledge of these alternate facilities could change their behavior for future needs. Ultimately, the goal of this research is to deduce consumer insight and to construct theories as to how we can reduce the amount of avoidable ER visits in NY.

LITERATURE REVIEW

Emergency Rooms are a critical component of the healthcare system, but face growing demand and often have inadequate capacity. Emergency Departments served a different purpose in the first half of the century, when physicians still provided home visits and the use of a hospital was for major traumas. A report produced by the National Academy of Science demonstrated that in 1966 almost half of the U.S. ambulance service was still being provided by morticians (Sarver et al., 2002). However, increased access and availability of ER services started to shape consumer behavior trends. Over the past few decades, the United States has significantly increased its reliance on Emergency Rooms to deliver both ambulatory and non-ambulatory health care services.

In 1997, there were approximately 95 million visits to U.S. emergency departments, and since then, hospital Emergency Rooms experienced a dramatic 35% increase in patient volume from 1996 to 2006 (LaCalle and Rabin, 2009, Sarver et al., 2002). Between 2000 and 2008, the volume of hospital-based ER facilities declined,

however visits to remaining facilities grew by nearly 124 million; in turn, less facilities have been available to service a growing demand of customers (Gandhi and Sabik 2014).

Studies now estimate that anywhere between a third and a half of emergency room visits are considered “avoidable,” depending on the criteria and methods used. Research determines the percentage of ER visits considered non-urgent is a median of 32 percent (Durand et al, 2012), which is consistent with limits set by other researchers of between 20 and 40 percent (Van den Heede and Van de Voorde, 2016); although more recent research earmarks as much as 90 percent of visits as non-urgent (Hsia and Niedzwiecki, 2017). These findings demonstrate a gross misuse of emergency room facilities for care that can be provided at sites other than an ER, as well as a long history demonstrating the substitution of emergency room care for that of a primary physician. Research from 1995 indicates that 84% of non-urgent ER visits were made by people with a usual source of care, or a facility where they would usually seek care that is not an ER (Sarver et al., 2002). While this trend of inappropriate ER use is especially pronounced in lower income level population groups in the United States (White and O’Connor, 1970), this trend is not unique to the U.S., as other high-income countries are experiencing similar shifts (Van den Heede and Van de Voorde, 2016). Research evidences that overuse of the ER for non-urgent conditions persists despite financial disincentives from insurers, extended office hours by alternative facilities, and the fast introduction and wide-spread availability of Urgent Care Centers (Sarver et al., 2002).

Rising costs have demonstrated that it’s essential to find more effective strategies to tackle overuse. In 1987, 2% (or approximately \$8.9 billion) of national healthcare

expenditures were attributed to emergency care services (Sarver et al., 2002); today, non-emergent care in ER settings represents approximately 12.5% of national healthcare expenditures (Galarraga and Pines, 2016). With spending increasing at alarming rates, there is a need to identify strategies that can reduce such cost exposure.

An Overview of ER Usage Data

Although the phenomenon to use the ER for care is growing quickly, the premise of this behavior is not new. Around the eighties or nineties, insurers recognized a similar trend and attempted to deter patients from using the ER through coverage denial and preauthorization practices. Soon after, states and federal government passed laws forcing insurers to cover emergency care based on a “prudent layperson standard,” definition, meaning those of average knowledge of health and medicine could make determinations on what constitutes an emergency (Chou et al., 2002). Since then, without any forcible controls, ER abuse has continued to grow.

Some insurance companies have revisited “Avoidable ER” claim denials working around the existing regulations, forcing members to pay full or higher cost for non-ER treatment sought in an ER facility. Research developed by Consumer Affairs confirms that ER claims would reduce by nearly twenty percent if other companies were to adopt similar policies (Chou et al., 2018). Insurers supportive of these policies have argued that they are intended to encourage customers to seek care in the most appropriate setting for their medical needs. By doing so, insurers can ensure high-quality and affordable care options. Insurers contend that patients are disserved by using ERs because they are a time consuming place to receive care and cost up to ten times more for services

(Huffman, 2018). In addition, because of ER misuse, one widely-cited consequence is overcrowding and the associated long wait times in ERs. Not only does this bring about high levels of patient dissatisfaction, it also raises critical safety and efficiency problems, which have been cited from having over-stressed healthcare professionals.

A 2016 research study discovered that when patients replace primary care needs through an ER visit, they experience a lack of care-continuity (which includes less follow up) from ER health care providers than they would have received from a Primary Care Physician (PCP) (Van den Heede and Van de Vorde, 2016). ERs are not designed for continuity, they're designed for one-time use. Most ERs don't even have established processes that allow for continuity, steering patients to their regular doctor for any follow up needs. Because of this, ERs shouldn't be considered a substitute to the quality care one can receive through having a PCP (Morris et al., 2016). ERs are not designed to provide standard care services; their use of 24/7 specialty physicians and sophisticated technologies make them one of the most expensive means to obtain care. (Morris et al., 2016, Durand et al., 2012, Gould et al., 2008).

Dissenting opinions argue that consumers are not qualified to self-triage their issues and that incentivizing or even compelling them to do so can be dangerous. Physicians cited believe it's unreasonable for insurers to ask patients to self-diagnose their care needs, as expecting the average patient to know the difference between minor medical issues and catastrophic events can be dangerous; the articles uses the example of knowing the difference between migraines and aneurysms (Huffman, 2018).

While a reduction in cost might be found by denying unnecessary ER claims, there are also arguments that policies such as these actually lead to higher costs. Physicians also stated that policies such as these lead to higher downstream costs because the average person, discouraged from visiting the ER, may instead leave their illness untreated (Huffman, 2018).

ER Overuse/Abuse in New York

New York represents a prime illustration of the ER dilemma. In a 2016 study, an Excellus Blue Cross of New York analysis of New York State Department of Health data estimated that approximately 2 million of 6.4 billion total ER visits could have been avoided with alternative care, totaling approximately \$1.3 billion in misused funds (Commins, 2016). Similarly, a New York Department of Health Brief demonstrated that in 2012, approximately seventy-five percent of New York State emergency room visits (that did not result in inpatient admission) were potentially preventable (Goins et al., 2014).

A recent New York study focused on the patterns of Emergency Department utilization and acknowledged that, similar to the average U.S. ER; managing problems suited for an ambulatory-care environment through the ER is deficient. ER care is episodic and lacks continuity of care; which, as noted previously, shouldn't be used as a substitution for quality primary care services. The study concluded that without a clear understanding of the patterns and causes of ER use, it will be difficult to optimize care

delivery (Gould, et al., 2008). This research further explores this phenomenon and further investigates the influences that might impact the decision for ER use.

Through this research, it became increasingly clear that many studies explore the validity of an ER visit after the occurrence. However, most haven't included a full look at the consumers' behavior choice leading up to the visit. While there is now ample research determining if visits are necessary or not and what cost savings might be received from avoiding unnecessary visits, there is a clear research gap; a lack of studies which explore the consumers' behavior and what actually drove the member to the ER to seek care for non-emergent services. Most importantly, what influences can impact a consumer's decision to use ER services.

It is unclear which factors may have impact on consumers' choices. This research looks to uncover why consumers visit the ER for non-emergent situations in NY, and aims to construct some theories as to how we can reduce avoidable ER visits in this region.

HYPOTHESIS AND MODEL

As costs for health care are rising, the consumer's need to take on a role of decision-making and purchasing power is expanding. There is a need to better understand consumer behaviors and their impact on cost. Simple human behaviors, such as using the ER for non-emergent services, can significantly impact cost containment and efficiency in the health care space. Health insurance literacy relies on consumers in

making guided and educated facility choices, in order to accomplish this we first need to better understand how literacy of alternatives will impact their decisions.

Existing research demonstrates that consumers use the Emergency Room (ER) for situations that are non-life threatening. Specifically, there are a few common conditions that are most frequently attributed to unnecessary ER visits; these include ear infections, sprains and strains, and abdominal pain (Commins, 2016; Chou et al., 2018; Galarraga and Pines, 2016). Non-acute care needs, such as those listed above, can be treated in alternative facilities (such as Urgent Care Centers) for a fraction of the cost of ER services. Because ERs can cost up to ten times more than UCCs, understanding the impetus for this consumer behavior choice is important. Healthcare costs are a primary focus nationally, seeking ways to redirect this care can offer significant traction by way of reduced costs.

Through a personally-designed survey, this research explores the primary influences that drove consumers to use the ER for non-ER matters. By explaining alternative solutions, the goals of this research is to determine what degree of education affects choices.

Hypotheses

This research leans heavily into the belief that consumers use the Emergency Room for non-acute conditions simply because they are not aware of alternative facilities. Conditions not deemed an emergency, or appropriate for the ER, are still fitting for medical care or treatment in some fashion. Contrary to standard belief that ER costs are

high due to care for the uninsured (Abelson, 2008), non-acute care patients who are users of the ER often have other facility options available. In fact, a 2009 study demonstrated that the uninsured only represent about fifteen percent of frequent ER users and among all uninsured adults, only two percent of them used the ER four or more times in a one-year period (LaCalle and Rabin, 2009).

Non-acute care users are not typically uninsured. Alternatively, this research believes that these consumers often have a PCP who is unavailable at that time services were needed, such as night or weekend hours. The following hypotheses will explore this through three sections: understanding which factors predict current behavior, which factors help in changing this behavior, and how people expect this information to impact future behavior.

Hypothesis one explores the factors that predict current behavior. Research demonstrates that frequent ER users are noted to be more likely (than occasional ER users) to have made primary care visits in the previous month and year, and in fact, are demonstrated to rely heavily on other parts of the healthcare system as well (LaCalle and Rabin, 2009). However, a 2018 study confirmed that PCP treatable diagnosis were present in nearly 9 of 10 ER visits (Chou et al., 2018). Knowing PCP physicians are not available around the clock; consumers with clinical problems (even when non-acute), recognize that they need to be seen even when their doctor is not available. Without access to their PCP, non-emergent care users often visit the ER. Understanding it's unreasonable to ask PCPs to always be available, we need to understand why these consumers chose the ER versus other, more cost effective, facilities. A 2009 study

demonstrated that eighty percent of patients cited the lack of availability of their PCP as the main reason for using the ER, which correlated to night and weekend use (LaCalle and Rabin, 2009). Similar studies demonstrate that the majority of ER visits occurred after-hours (nights after five o'clock in the evening, or on weekends) when most physician offices or clinics were not open for business (Gould, et al., 2008).

The existing research demonstrates that the ER becomes a care center for non-acute cases when PCPs are not available and standard physician offices are not open for business. Alternative facilities to ERs, such as Urgent Care Centers or Telemedicine Doctors, may be more appropriate for non-acute care. Collaborating existing themes from past research noted above, ER users often utilize the ER facility after business hours, when standard PCP offices are not available to provide services. Seemingly, there is a connection between those who utilize PCP services and ER utilizers. This research also indicates that there is a lack of literacy regarding alternative facilities for non-acute care. For consumers who are familiar with PCPs and need services after hours, but are unfamiliar with alternative care sites (such as Urgent Care Centers or Telemedicine Doctors), the ER may be considered their facility of choice. Familiarity with a PCP indicates a consumer who utilizes or is familiar with the services provided from a Primary Care Physician. Past research provides reason to expect that the choice of facility for non-acute care will be impacted by familiarity with care from a Primary Care Physician. Therefore, we expect:

Hypothesis 1: Familiarity with Primary Care Physicians affects the choice of facility for non-acute medical care.

Building on the first hypothesis, hypothesis two explores which factors help in changing the facility choice decision or behavior. Some research demonstrates that it is likely a lack of knowledge that there are alternative resources available for acute conditions driving this behavior (Commins, 2016). However, cost of services has been a particularly notable topic regarding health reform. The phenomenon of cost-containment isn't only relevant on the largest economic scale. Since the implementation of the Affordable Care Act (ACA), consumers have touted the desire for higher-value health care services. Consumers have a greater influence over healthcare delivery and are demanding high-quality services and reduced service costs. While consumers consistently reported that cost was important to them, research demonstrates that only 15% research costs before making healthcare decisions (Cordina, Kumar and Olson, 2017). It is likely that lack of transparency in cost is driving this factor.

In a nine year period, cost-sharing levels (such as deductibles) on employer-sponsored plans grew by more than one-hundred and twenty percent; with consumers out-of-pocket expenses totaling \$330 billion (Cordina, Kumar and Olson, 2017). Because UCCs cost up to ten times less than ERs, cost-conscious consumers will likely be influenced by this information. Research has demonstrated that anywhere from twenty to fifty percent of consumers skipped needed or recommended medical care due to cost constraint (Collins, Gunja, Doty, & Beutel, 2015; Fox, 2009; Mitts & Fish-Parcham, 2015). With a greater potential for cost exposure, this research posits that cost is an important influence to ER users. Therefore:

Hypothesis 2: Education on healthcare costs affects the choice of facility for non-acute medical care.

Hypothesis three explores how people interpret the information they've been given for future use. In addition to cost, other important factors may be impactful in making future choices. Facility quality may motivate consumers, but this research focuses more on the trust aspect. Trust is a critical component of the doctor-patient relationship (Gray, 1997, Hall et al., 2001, Pearson and Raeke, 2002). Consumers need to trust physicians to continue to seek care from them, and by extension, the healthcare facilities which they provide care from. Trust in physician care has been defined many ways, with a myriad reasons why each is credible. While a solid measurement of patient-physician trust is undefined, the importance of trust in the physician and patient relationships is evident (Hall et al., 2001, Pearson and Raeke, 2002).

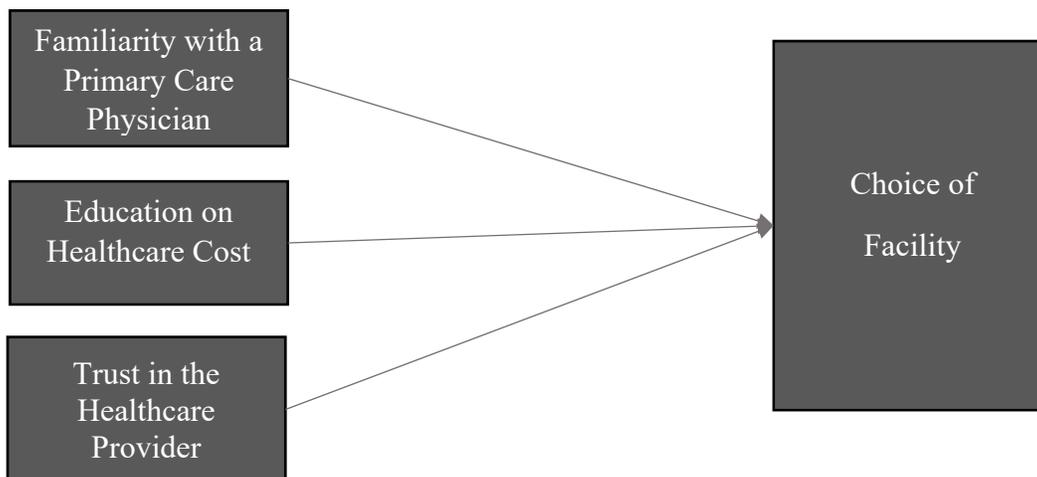
Consumers need to be motivated to make a change to what they have done in the past, and that motivation often encompasses much deeper feelings of unease, such as a lack of confidence in the information they've received (Cordina, Kumar, and Olson, 2017). Trusting that a facility, or doctors within a facility, will appropriately and expertly service one's required medical needs will impact consumer facility choice. Therefore:

Hypothesis 3: Trust in the healthcare provider affects the choice of facility for non-acute medical care.

Research Model

This research model identifies three factors that affect the choice of facility for non-acute medical care. The first is familiarity with the primary care physician, the second is the level of education on healthcare costs, and the third is the level of trust in healthcare providers. Beyond the specific and testable model, it may be that familiarity with a PCP is a factor which predicts current behavior, cost is a factor which helps in changing this behavior, and trust will most influence how people interpret this information for future behavior.

FIGURE 2. CHAPTER 2 RESEARCH MODEL



METHODOLOGY & DATA ANALYSIS

A survey was designed and administered to test the hypothesis and the research model, as described in the following section.

Methodology

This study was reviewed and approved by the Temple University Institutional Review Board. Using a survey, participants were limited to those who reside in New York and are over 18 years old. Participants were asked to respond to questions regarding Emergency Room (ER) utilization and their decision making process prior to deciding if they would need to visit the ER. The survey also explored how many visits the participant had to the ER in the past year.

The survey later informed participants of the definition Urgent Care Centers and Telemedicine Doctors, subsequently providing some common comparative statistics between these facilities and the Emergency Room. After providing these definitions and statistics, the survey asked participants about their likely behaviors when future issues arise.

Recruitment Methods

Approximately 100 subjects were surveyed. Subjects were recruited using the Amazon Mechanical Turk (AMT) service. AMT is a digital platform that engages users to complete small tasks. AMT is an appropriate source for this study because it does not require any specific skills to complete.

Survey Procedures and Protocol

Participation in the study required the completion of a short online questionnaire. For example, subjects answered a few questions about why they choose to use the ER for a medical issue within the past year. Next, subjects were provided with a small education block regarding the definition of Urgent Care Centers and Telemedicine Doctors, as well as comparing the average cost and wait times between these options. Lastly, subjects answered questions about what they expect their behavior will entail when faced with a non-emergent situation in the future.

Qualtrics was used to create the survey template and Amazon's Mechanical Turk (AMT) will be used to operationalize it. Creating a new project on AMT, the Qualtrics link was shared through the AMT site. The survey was posted on AMT as a Human Intelligence Task (HIT), with a brief description of the study. Participants, referred to as subjects, were paid a nominal amount of \$2 for participation. Each participant was limited to perform the HIT one time only. The payment is made automatically via the Amazon payment system. The estimated survey completion time is about 15 minutes.

Sampling

Using Amazon Mechanical Turk (AMT), this research used participants who live in New York (NY). Through the Worker Requirements section in AMT, a demographic restriction was placed on the study, recruiting only New York residents. The survey also required English fluency and for participants to be 18 years of age or older. The sample did not discriminate any genders, educational backgrounds, or social statuses.

Participants are anonymous and recorded only by a unique identifier in a secure database, housed at AMT. Participant names were not stored in the database and no personally identifiable information was stored in the data set. Participants had the ability to withdraw at any time from the study.

Data Collection

The survey was first launched on Amazon Mechanical Turk to only twenty-five participants. By releasing to a smaller batch of participants first, it allowed for a review of the responses to ensure that the data was displaying as expected. In the second launch, changes made to the first survey were minimal. A “force response” action was added to a few questions which did not previously display it correctly. In addition, the structure of question five was changed from a slider (of 1-100) to a Likert Scale, for better alignment in future analysis. Next, the survey was launched to an additional 125 participants. In the final review, these samples were combined.

At the time of the final data collection, 148 responses were provided. After this final data pull, an initial data cleanup occurred. First, the data was sorted to find any preview responses. As these responses were not performed by live participants, and were meant for testing purposes only, they would need to be removed from the dataset. There were a total of eleven preview responses, all of which were removed. The research was intended to encompass those living in New York State. While there was a filter on the AMT survey to limit responses to these participants, a question was asked to self-report on the respondents’ living area. Any respondents who chose “Outside of New York State” as a response were removed from the dataset; this represented eight responses.

The survey was expected to take less than fifteen minutes to complete, with a recorded average response time of eight minutes. Of note, the average of all responses collected initially totaled thirty-three minutes but included three outliers which took over one-thousand minutes to complete. When removing these outliers, the average response was eight minutes for the remaining participants. It was expected that respondents might take less than the provided time to complete the survey, as was demonstrated. However, because there were detailed questions provided, any participants that took less than three minutes (180 seconds) to complete the survey were removed; this totaled twelve responses. Lastly, in order to accurately compare responses, incomplete surveys were not able to be used. Therefore, fifteen surveys with missing data were removed from the dataset. When cleaned, the final dataset showed 102 unique values.

Focusing on the hypothesis provided above, this research will seek to identify the educational influences that would steer members away from the ER for their non-emergent care needs, to more cost-appropriate settings.

Data Analysis

For this research, simple survey data was captured. The data was cleaned, as discussed in the data collection section. With the data ready to be statistically analyzed, initial descriptive statistics were performed (see Appendix B-1), along with Pearson Correlations for each question (Appendix B-2). The table below demonstrates qualitative tests performed for each hypothesis:

TABLE 6. DATA ANALYSIS METHODS

| Hypothesis | Survey Items | Analysis Method |
|--|---|---|
| H1: Familiarity with a Primary Care Physician affects the choice of facility for non-acute medical care. | <p><i>Dependent Variable:</i></p> <ul style="list-style-type: none"> - Q8: SD-SA 2_3 [I believe the ER was the best place to handle the care for my medical issue] <p><i>Independent Variables:</i></p> <ul style="list-style-type: none"> - Q5: Influence_1 [I didn't know where else to go] (Education) - Q5: Influence_2 [The ER was the best of multiple options considered] (Quality) - Q5: Influence_11 [I trust the doctors at the ER more than any other doctor] (Trust) - Q6: SD-SA 1_2 [I believe I paid a reasonable price for the care I received at the ER] (Cost) | Linear Regression |
| H2: Education on healthcare costs affects the choice of facility for non-acute medical care. | <p>TEST 1: <i>Dependent Variable:</i></p> <ul style="list-style-type: none"> - Q8: SD-SA 2_3 [I believe the ER was the best place to handle the care for my medical issue] <p><i>Independent Variables:</i></p> <ul style="list-style-type: none"> - Q5: Influence_1 [I didn't know where else to go – EDUCATION] - Q5: Influence_2 [The ER was the best of multiple options considered – QUALITY] - Q5: Influence_11 [I trust the doctors at the ER more than any other doctor-TRUST] - Q6: SD-SA 1_2 [I believe I paid a reasonable price for the care I received at the ER – COST] <p>TEST 2: <i>Dependent Variable:</i></p> <ul style="list-style-type: none"> - Q8: SD-SA 2_3 [I believe the ER was the best place to handle the care for my medical issue] <p><i>Independent Variables:</i></p> <ul style="list-style-type: none"> - Q9: Ed Impact_1 [Considering my last visit to the ER, the ER was the best place for my medical care] - Q10: Cost Impact_1 [Considering my last visit to the ER, the ER was the best place for my medical care] - Q11: Quality Impact_1 [Considering my last visit to the ER, the ER was the best place for my medical care] | <p>Test 1: Linear Regression</p> <p>Test 2: Paired Samples T-Test</p> |
| H3: Trust in the healthcare provider affects the choice of facility for non-acute medical care. | <p><i>Dependent Variable:</i></p> <ul style="list-style-type: none"> - Q8: SD-SA 2_3 [I believe the ER was the best place to handle the care for my medical issue] <p><i>Independent Variables:</i></p> <ul style="list-style-type: none"> - Q15: Future Influence_1 [Cost would most likely influence my decision to use a facility other than the ER] - Q15: Future Influence_2 [Quality would most likely influence my decision to use a facility other than the ER] - Q15: Future Influence_3 [Trust would most likely influence my decision to use a facility other than the ER] - Q15: Future Influence_4 [Education would most likely influence my decision to use a facility other than the ER] | Paired Samples T-Test |

Findings

In total, 102 unique responses were recorded. Taking an initial look at the data, this research first explores some of the more descriptive statistics at first glance; taking the time to understand that data findings naturally before running any comparative statistics to test the hypotheses.

First, looking at location and gender of the participants, the research brings about some interesting dynamics from the start. The findings demonstrate an almost even split between respondents who are residents of New York City, which includes fifty respondents from the five boroughs (Manhattan, Queens, Brooklyn, Bronx, and Staten Island) and fifty-two respondents from outside of the five boroughs, which includes any area in New York state that is not encompassed within the five boroughs (including examples such as Long Island, Westchester, or Upstate). The data also shows the gender of survey participants leaned toward male participants, with fifty-eight respondents (57%) being male and only forty-four being female.

Next, this research looked more intently at questions specifically relating to ER use. In reviewing the age of ER users shown in Figure 3, the majority respondents indicated an ER user age between 25-34 years old (29%). Ages 35-44 were the next highest represented (20%), totaling just about half of the respondents within the age range of 25-44 years old and an average age of 37.8. The least represented age group for ER users were those between 45 and 64 years of age.

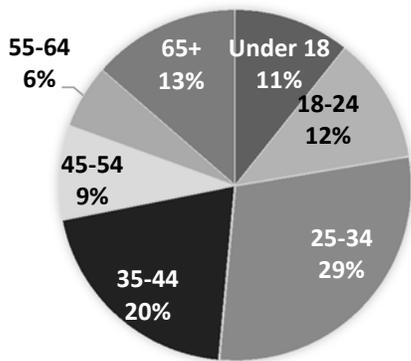


FIGURE 3. AGE OF ER USER

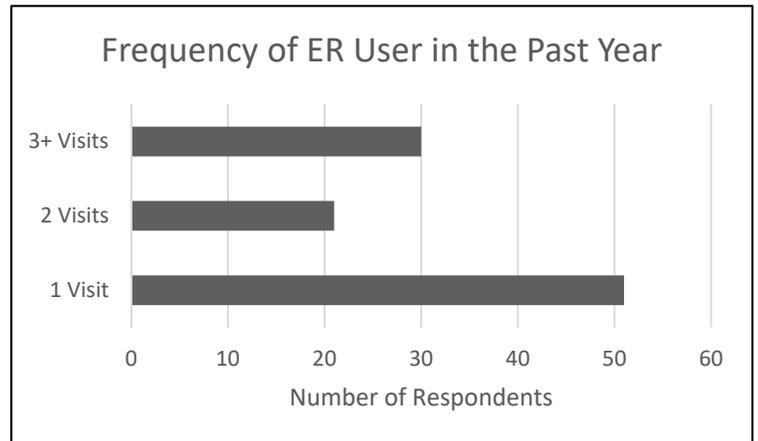


FIGURE 4. FREQUENCY OF USER IN THE PAST YEAR

The research demonstrates that exactly half of respondents only had one ER visit in the past year. As an outlier, one participant indicated that they had visited the ER twenty or more times in the past year. For averaging purposes, this respondent’s visit total was capped at twenty-one. A distribution of frequency is demonstrated in Figure 4 above.

One interesting factor to review is the arrival time in the ER. As demonstrated in the literature review, users often use the ER facility on nights and weekends, when their regular doctor is unavailable (Sarver et al., 2002, Van den Heede and Van de Vorde, 2016). On the surface, Table 7 depicts a different picture: the highest response rate is actually found under normal business hours, indicated here as Monday through Friday between eight o’clock in the morning and six o’clock in the evening. However, when looking holistically at the data in Figure 5, another trend does materialize. Times outside

of normal business hours, such as weekday evenings collectively, actually hold the highest response rate as the time respondents arrived at the ER for their last visit, defined as Monday through Friday between six o'clock in the evening and 8 o'clock in the morning. Weekends, defined as Saturday and Sunday, are equally as busy in the day or night hours.

TABLE 7. ER ARRIVAL TIMES

| When Arrived | |
|--------------|-----------|
| TIME | COUNT |
| M-F 8A-6P | 31 |
| M-F 6P-10P | 26 |
| M-F 10P-8A | 22 |
| SA/SU 8A-6P | 12 |
| SA/SU 6P-10P | 8 |
| SA/SU 10P-8A | 3 |
| MODE | M-F 8a-6p |

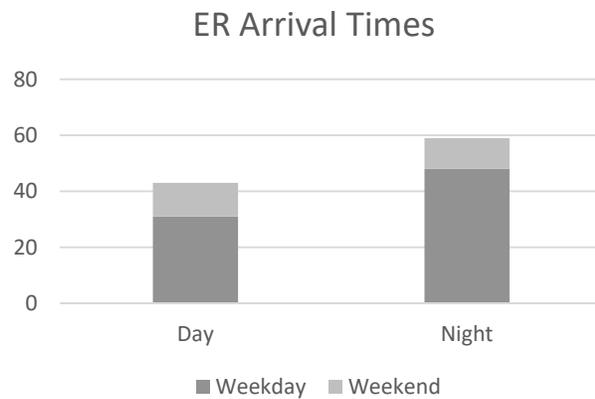


FIGURE 5. ER ARRIVAL TIMES

Survey respondents were also asked to include information about how they arrived at the ER. This is important to understand because when Emergency Services is called and an ambulance ride is required, the ER is the only facility option for the user. Shown in Table 8, thirty-nine survey respondents (38%) either called Emergency Services (9-1-1) on their own or had 9-1-1 called on their behalf and rode in an ambulance to the Emergency Room. An equal percentage (38%) received a ride from a friend or family member where facility choice is more flexible. In total, sixty-two

respondents (or 61% of those surveyed) used a transportation option other than an ambulance as their transportation to the Emergency Room.

TABLE 8. TRANSPORT SELECTION

| How Arrived | |
|-----------------------|-------|
| TRANSPORT | COUNT |
| 911 called, ambulance | 32 |
| Called 911, ambulance | 7 |
| Ride (friend/family) | 39 |
| Uber/Taxi | 12 |
| Drove | 8 |
| Public Transport | 2 |
| Walked | 1 |

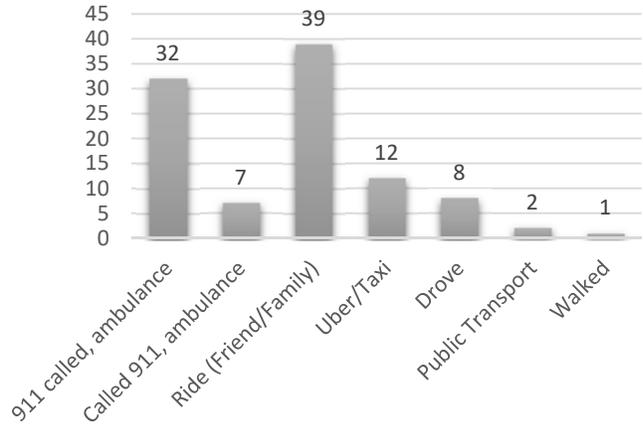


FIGURE 6. TRANSPORT SELECTION

Diving more deeply into the data, the responses in Figure 7 demonstrate participants’ familiarity with particular facilities. This question, asking for a gauge of familiarity from “Not At All Familiar” to “Very Familiar” was asked prior to providing participants with any education of alternative facilities.

In Figure 7, “familiar” is measured as a combination of both familiar and very familiar responses and “not familiar” is measured using a combination of both not familiar and not familiar at all responses. While most participants were familiar with PCPs and ERs, a much smaller percentage was representative of the other facilities. Only 60% of participants were aware of Urgent Care Centers while 83% of respondents were familiar with ERs and PCPs. Notably, there is a dramatic familiarity difference demonstrated for Telemedicine Doctors, showing almost an inversion from the other

facilities. Here, 65% of surveyed participants were not familiar with Telemedicine Doctors prior to receiving education within the survey.

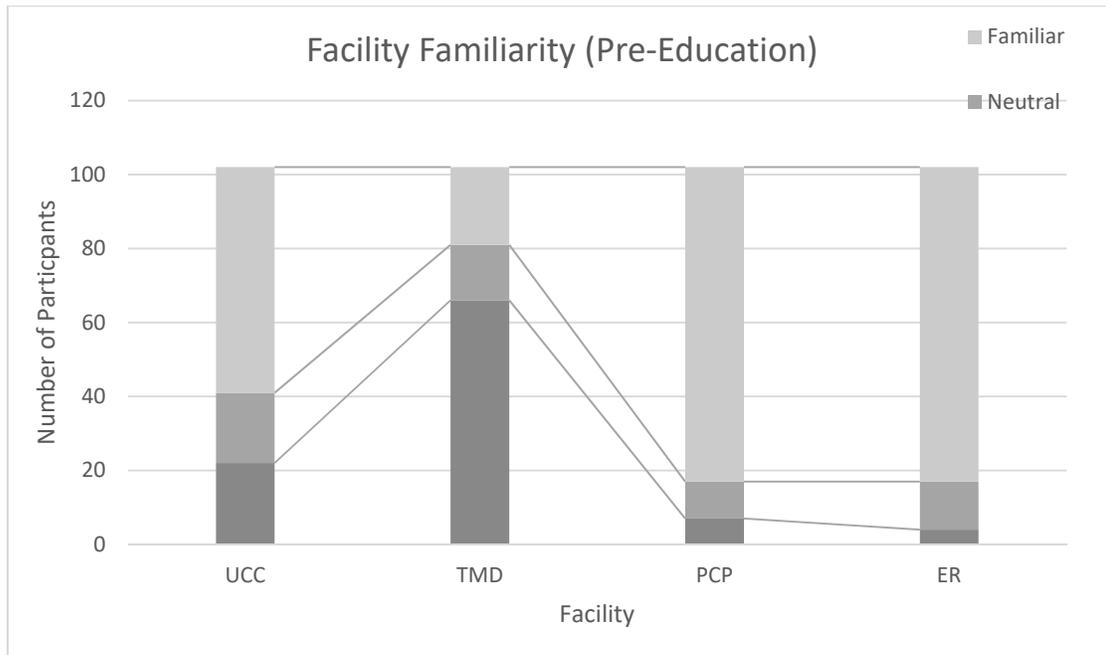


FIGURE 7. FACILITY FAMILIARITY (PRE-EDUCATION)

Survey participants were asked a few questions regarding wait times (relating to quality), cost, and trust, prior to receiving any additional education. Shown in the data on Figure 8, it is a generally even distribution for whether or not the participants felt they had a long wait time in the ER. To be fair, this question is quite subjective, but could be indicative of quality concerns. ER Cost results show an interesting trend; most participants agree (to any degree) that they paid a reasonable price for their ER care. Increased ER costs are typically passed on to the consumer (either through higher deductibles, coinsurance, or even increased premium rates), the respondents seem to

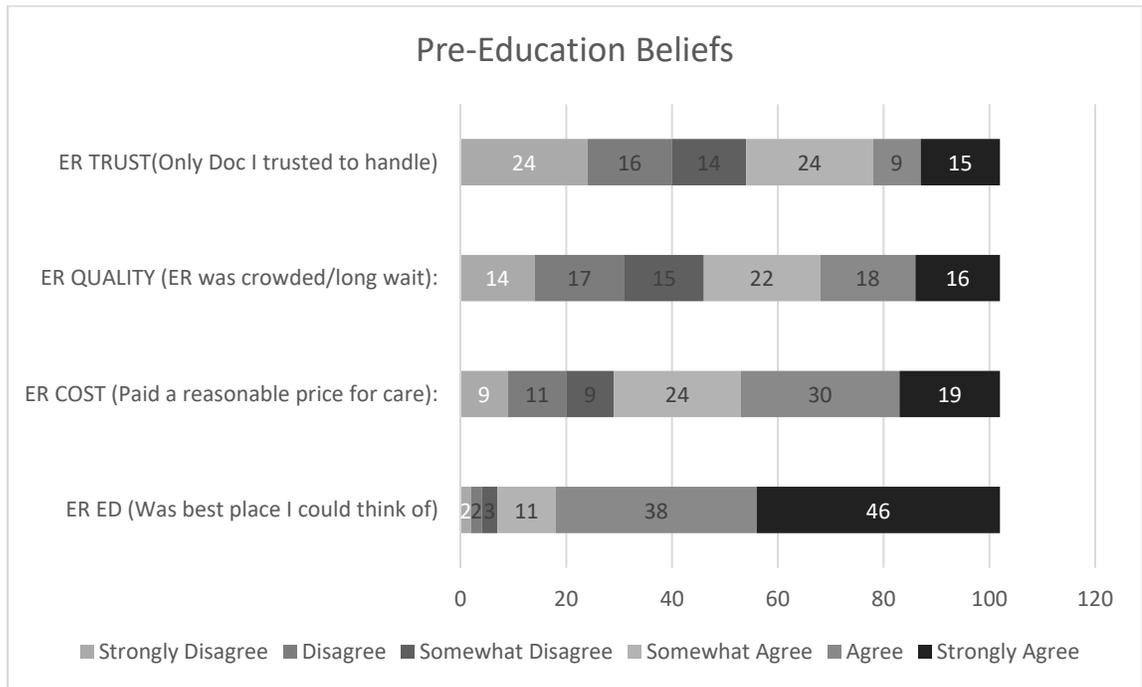
indicate that this cost is not something they were sensitive to or aware of. This is quite interesting and is something that should be further explored.

When questioned on trust, few participants strongly agreed that the ER is the only doctor they would have trusted to handle their care. In fact, 53% of respondents indicated some level of disagreement in this statement. This is an interesting discovery as it may indicate that ER users will be willing to obtain care at alternative sites.

Since the basis of the survey is regarding the lack of education on alternative options, participants were also asked to rate their degree of agreement on whether the ER was the best place they could think of to help them with their medical need at that time. Prior to receiving any education on alternative choices, or comparative cost and quality information on those sites of service, an alarmingly high number of respondents (45%) strongly agreed that the ER was the best place they could think of to obtain the care they needed. More significantly, 95% of respondents agreed to some degree with this statement.

Because we know that most non-acute care ER cases could have been serviced at an alternative facility, this is an alarming number of respondents who couldn't think of an alternative location to obtain care. As demonstrated in Figure 8 below (where most respondents did not rate medical emergency as a high degree of influence), one limitation of this study is that we don't know which, if any, respondents had a true acute care need, or a true emergent condition that warranted ER use. However, this is something worth exploring in detail in future studies. Taking into consideration the limitation of this

survey, it is still notable that the implications of alternative facility literacy could be highly impactful.



Shown as Total Response Counts

FIGURE 8. PRE-EDUCATION BELIEFS

One intent of this research was to further explore the decision making process that lead participants to choose the ER as the facility for their care. To better explore this topic, participants were asked about probable reasons on why the ER was their choice; they were asked to provide the degree of influence these items had on their decision to visit the ER.

Demonstrated in Figure 9, only 29 participants indicated that their issue being a medical emergency had a significant influence on their decision to use the ER. Later

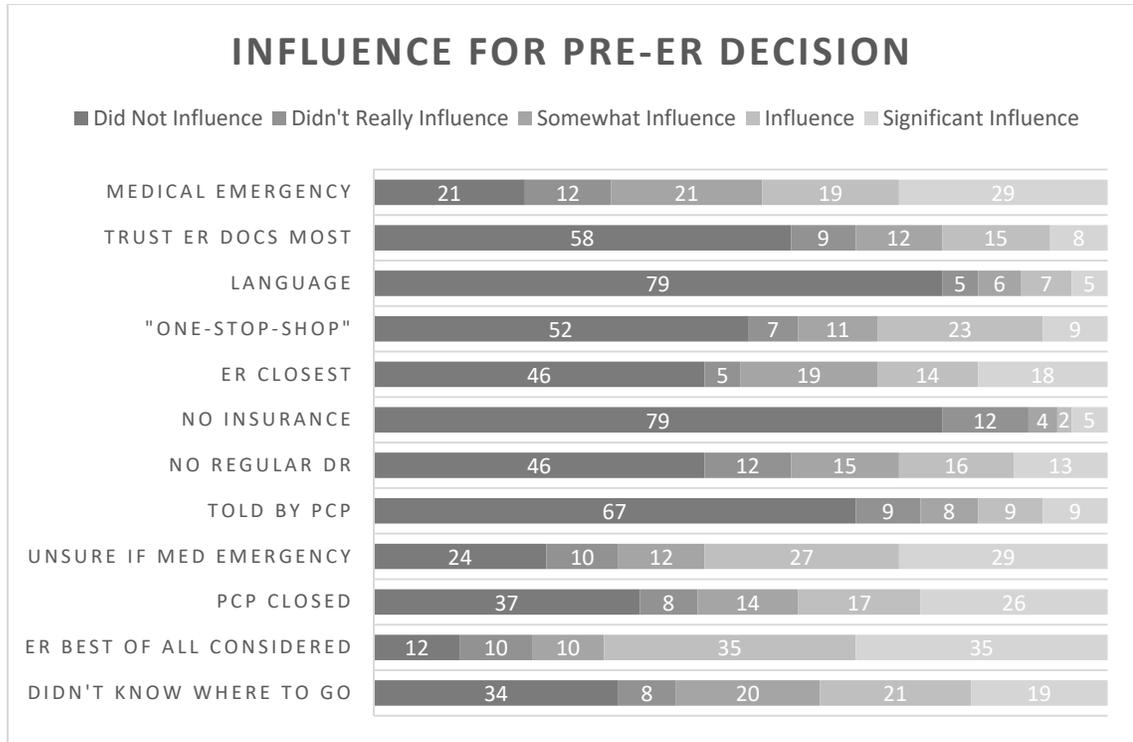
defined in the survey, a medical emergency is an injury or illness that poses an immediate risk on a person's life or long-term health, one that could cause death or permanent injury if not treated quickly (Wake Forrest, 2010). ERs are intended to care for these life threatening issues, which correlates with the cost of services provided in that setting. With such a low percentage of users indicating the significance of this factor, it leaves room to develop the theory that alternative care sites may have been acceptable facilities for their needs.

As discussed earlier in this paper, there is a common belief that the uninsured and undocumented drive much of ER costs. However, as cited previously, existing research demonstrates that a small number of uninsured represent frequent ER users and even less use the ER more than 4 times per year (LaCalle and Rabin, 2009). Findings from this study further validates these statements. Notably, in Figure 9, a lack of insurance was not a driver for ER facility choice.

Most respondents also indicated that little influence was due to their PCP office being closed. Considering most participants visited the ER outside of regular business hours, one might have expected this to reflect more strongly as an influencer. Again, this is something that warrants additional discovery in future research. Convenience didn't seem to be an indicator of ER use, as using the ER as a "One Stop Shop" and the fact that the ER was the closest facility did not have significant influence on user-choice.

Figure 9 also hosts an interesting discovery regarding trust. When previously questioned on trust (in Figure 8), few participants strongly agreed that the ER is the only doctor they trusted to handle their care. Similarly below, the majority of respondents

advised that trusting the ER doctors most was not an influence on their choice to use the ER facility. Prior to receiving any education, when in need of urgent or emergent medical care, trustworthiness was not impactful to decision making.



Shown as Total Response Counts

FIGURE 9. INFLUENCE FOR PRE-ER DECISION

Next, this research explores early findings on future indicators for facility choice. Participants were asked their degree of agreement on whether the below items will have an influence on their future facility choices (when faced with a non-emergent condition). As shown in Figure 10, quality and trust rank quite highly on this scale, with cost a close follower. Education, in it's broadest definition is still ranked at 71%. Very few

respondents found that these four items would not influence their choice to use a different facility.

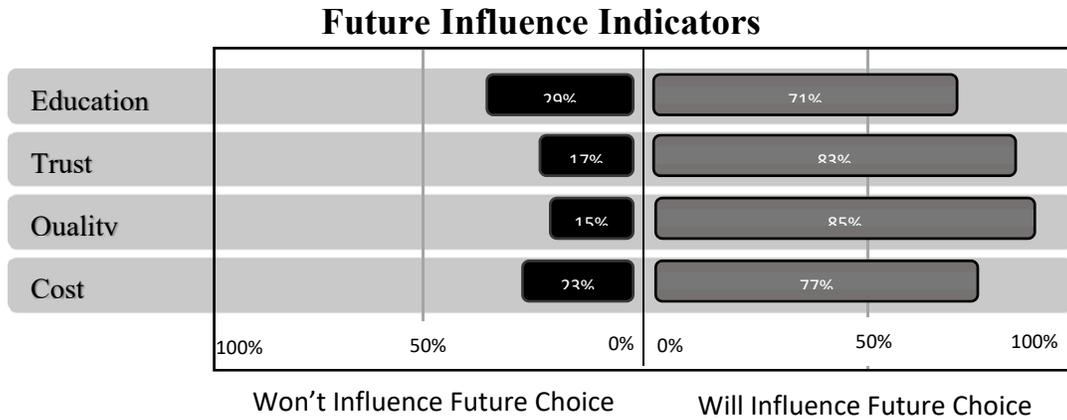


FIGURE 10. FUTURE INFLUENCE FACTORS

Respondents were asked to rank their choice of facility for future non-emergent conditions. After providing information on alternative options, including cost and quality data, this survey asked respondents which facility they would choose first when seeking non-acute care in the future. When reviewing Figure 11, you'll notice an astounding number of participants chose the Urgent Care Center as their number one choice for future non-emergent care needs.

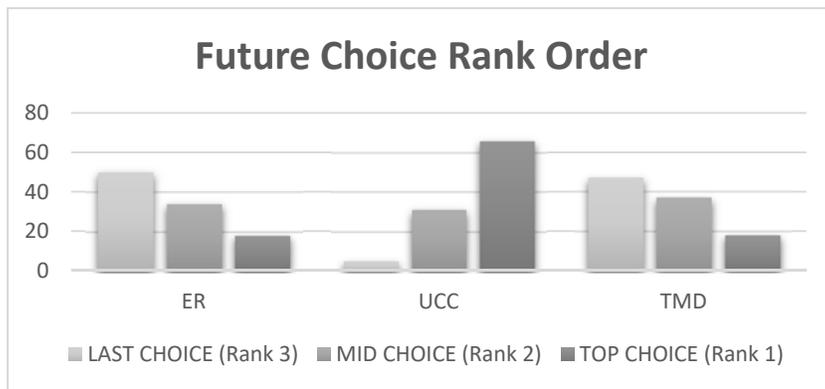


FIGURE 11. FUTURE FACILITY RANK ORDER

Hypothesis Testing

In seeking to validate the hypotheses for this research, the below findings were analyzed in detail using the analysis methods noted above. In short, while only some of the hypotheses were supported, the research was still able to affirm much of the research intention. Specific detail on each hypothesis finding is listed below:

Hypothesis 1:

To better understand how education can impact the decision to use an alternative facility, it is important to understand what drives consumers to the ER today. Specifically, this research reviewed the scale of facility familiarity compared to the belief that the ER was the best choice of facility. As demonstrated in Table 9, we can see significance in the relationship between those who are familiar with a PCP and those who believe the ER was the best place for their care needs.

TABLE 9. H1 - FAMILIARITY IMPACT

| Model | Unstandardized Coefficients | | Standardized Coefficients | | |
|--|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | T | Sig. |
| (Constant) | 2.526 | .351 | | 7.191 | .000 |
| Familiarity_UCC | .043 | .090 | .051 | .474 | .636 |
| Familiarity_TMD | -.065 | .076 | -.078 | -.853 | .395 |
| Familiarity_PCP | .333 | .097 | .340 | 3.438 | .001 |
| a. Dependent Variable: SD-SA ER BEST | | | | | |

Table 9 shows that the more familiar respondents are with a PCP (Familiarity PCP), the greater the agreement to the statement that the ER was the best place to seek care. This is represented in the dependent variable shown, which indicates the participants' response to a strongly disagree to strongly agree scale that the ER was the best place to handle the respondents' medical issue. Because ER users are familiar with PCPs, this finding can also support theories that ER utilization occurs when PCPs are not available; instead of the fact that ERs are used in lieu of PCPs. In this analysis, there is no statistical significance between familiarity with an Urgent Care Center or Telemedicine Doctor to the same statement, which in theory makes sense. If literacy of these alternative choices is an issue, there would not be a significant finding between those who chose the ER and their familiarity with these alternative facilities. This alternative finding may continue to support the theory that increased literacy of alternative sites of care can lead to more effective care choices in utilization. Ultimately, this analysis supports hypothesis one that familiarity with a Primary Care Physician affects the choice of facility for non-acute medical care.

Hypothesis 2:

Because the insurance space is dominated by cost-consciousness conversations, not just from insurers but from consumers as well, this research posits that education on cost will have an impact on a consumer's facility choice. This analysis, first explored the influence cost has on current users, prior to education. Again, it is important to understand how cost has influenced consumers' decision to use the ER today.

TABLE 10. H2 - EDUCATION ON COST IMPACT AS INFLUENCE

| Model | Unstandardized Coefficients | | Standardized Coefficients | | |
|--|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | T | Sig. |
| (Constant) | 2.884 | .357 | | 8.080 | .000 |
| Influence_Education | -.042 | .064 | -.062 | -.659 | .511 |
| Influence_Quality | .075 | .074 | .097 | 1.009 | .315 |
| Influence_Trust | .040 | .066 | .057 | .608 | .544 |
| Influence_Cost | .203 | .063 | .296 | 3.207 | .002 |
| a. Dependent Variable: SD-SA ER BEST | | | | | |

Demonstrated in Table 10, we can see significance in the relationship between cost as an influence for ER use (demonstrated as the variable Influence_Cost) and those who believe the ER was the best place for their care needs. Again, this is represented in the dependent variable shown, which indicates the participants' response to a strongly disagree to strongly agree scale that the ER was the best place to handle the respondents' medical issue. In this analysis, education (demonstrated as the variable Influence_Education), quality (demonstrated as the variable Influence_Quality), and trust (demonstrated as the variable Influence_Trust) are not proven to be statistically significant factors. However, this table does determine that ER utilizers were influenced by cost. This is a bit surprising, and is contrary to what is expected; cost-conscious customers should not see benefit in using the ER as a cost-efficient facility.

To further explore the impact of cost education, the analysis next reviewed which of the tested factors most influenced a change in facility choice. Respondents were provided education on alternative facilities, such as Urgent Care Centers or Telemedicine

Doctors. They were also provided education on cost and education on quality at all three facilities. After each education section, they were again asked if the ER was the best place to obtain their care. This research indicates that, post-education, respondents no longer think the ER is the best place to obtain care. In fact, all three factors (education, cost, and quality) influenced a change in the participants' belief that the ER was the best choice of facility for their most recent ER visit.

As shown in Table 11, the mean difference of all three education factors has decreased participants' response in variable SD-SA | ER Best, which represents participants' response to a strongly disagree to strongly agree scale that the ER was the best place to handle the respondents' medical issue.

The most influential of these items appears to be, simply, education. Because literacy of alternatives choices is an issue, this analysis demonstrates that education of alternative facilities (including education on cost and quality) can influence the decision to use the ER. Within this analysis, the second most impactful education component was education on quality factors. Within the survey, this included information about wait times and the potential for misdiagnosis in crowded facilities. Of the factors reviewed here, the education component that was the least influential was education on cost. Initially, this finding does not support Hypothesis 2.

TABLE 11. H2. EDUCATION ON COST IMPACT AS FUTURE SELECTION

| 95% Confidence Interval | | | | | | | | |
|---------------------------------------|-------|----------------|-----------------|-------|-------|--------|-----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | Lower | Upper | t | df | sig. (2-tailed) |
| SD-SA ER BEST (-) Ed Impact | -.574 | 1.251 | .107 | -.786 | -.361 | -5.347 | 135 | .000 |
| SD-SA ER BEST (-) Cost Impact | -.215 | 1.453 | .125 | -.462 | .032 | -1.718 | 134 | .088 |
| SD-SA ER BEST (-) Quality Impact | -.463 | 1.333 | .114 | -.689 | -.237 | -4.053 | 135 | .000 |

However, in order to test the validity of these findings, three new variables were created using the studied factors. In SPSS, the variables were computed using the equation: Variable X - Q8SDSA2_3. The three new variables are listed in Table 12 as Rev_Ed Impact, Rev_Cost Impact, and Rev_Quality Impact.

The revised variables were recalculated to demonstrate the internal validity of the research results. By recoding the mathematical solutions from Table 11 into independent variables, we are able to compare the true means of the variables in their revised form. The resulting data was analyzed through a one-way ANOVA demonstrated via an individual pairs test, shown in Table 12.

TABLE 12. H2 - REVISED ANOVA - EDUCATION ON COST IMPACT

| 95% Confidence Interval | | | | | | | | |
|---|---------|----------------|-----------------|---------|---------|--------|-----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | Lower | Upper | t | df | sig. (2-tailed) |
| Rev_Ed Impact (-) Rev_Cost Impact | .35556 | 1.17478 | .10111 | .15558 | .55553 | 3.517 | 134 | .001 |
| Rev_Ed Impact (-) Rev_Quality Impact | .11029 | 1.10670 | .09490 | -.07739 | .29797 | 1.162 | 135 | .247 |
| Rev_Cost Impact (-) Rev_Quality Impact | -.24444 | 1.00348 | .08637 | -.41526 | -.07363 | -2.830 | 134 | .005 |

The new variables illustrated in Table 12 confirm that education (in and of itself) is the variable which provides the greatest impact to a change in agreement that the ER was the best facility choice for the respondent’s care needs. Just knowing about an alternative has garnered support of using a different facility. In fact, cost has the lowest impact to education and quality. In this analysis, hypothesis two is not supported. However, one important item uncovered in this finding is that increased literacy of alternative facility choices (in regard to general education, education on cost, and education on quality) does lead to a decreased confidence that the ER was the correct place to seek medical care.

Hypothesis 3:

Next, Table 13 used variables from Q15 (Future Influence_1-4), which asks “_____ would most likely influence my decision to use a facility other than the ER”, providing a Likert scale for the factors: education, cost, quality, and trust. The hypothesis

posits that trust will rank among the highest of these items as a good predictor of willingness to use alternative facilities. While this analysis includes factors other than trust, the intent is to determine if trust is more influential than other factors when choosing a facility for non-acute medical care.

In an initial paired samples t-test, this hypothesis is partially supported. In Table 13, trust in the healthcare provider affects the choice of facility for non-acute medical care, although it is not the most influential factor. In fact, participants indicated that quality would most influence their choice of facility for non-acute medical care.

TABLE 13: H3- TRUST IMPACT AS FUTURE INFLUENCE

| 95% Confidence Interval | | | | | | | | |
|---|-------|----------------|-----------------|-------|-------|--------|-----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | Lower | Upper | t | df | sig. (2-tailed) |
| SD-SA ER BEST (-) Future Influence_Cost | -.316 | 1.767 | .152 | -.616 | -.017 | -2.087 | 135 | .039 |
| SD-SA ER BEST (-) Future Influence_Quality | -.743 | 1.425 | .122 | -.984 | -.501 | -6.079 | 135 | .000 |
| SD-SA ER BEST (-) Future Influence_Trust | -.640 | 1.479 | .127 | -.891 | -.389 | -5.044 | 135 | .000 |
| SD-SA ER BEST (-) Future Influence_Education | -.088 | 1.621 | .139 | -.363 | .187 | -.635 | 135 | .527 |

However, in order to test the validity of these findings, three new variables were created using the studied factors. In SPSS, the variables were computed using the

equation: Variable X - Q8SDSA2_3. The three new variables are listed in Table 14 as Rev_CostInfluence, Rev_QualityInfluence, Rev_TrustInfluence, and Rev_EdInfluence.

The revised variables were recalculated to demonstrate the internal validity of the research results. By recoding the mathematical solutions from Table 13 into separate variables, we are able to compare the means of the variables in their revised form. The resulting data was analyzed through a one-way ANOVA demonstrated via a series of individual pairs test, shown in Table 14. Similar to the findings in Table 13, quality appears to be the most influential factor that participants noted which would drive their future facility choice.

TABLE 14: H3 - REVISED ANOVA - TRUST IMPACT AS FUTURE INFLUENCE

| 95% Confidence Interval | | | | | | | | |
|--|---------|----------------|-----------------|---------|---------|--------|-----|-----------------|
| | Mean | Std. Deviation | Std. Error Mean | Lower | Upper | t | df | sig. (2-tailed) |
| Rev_CostInfluence (-) Rev_QualityInfluence | -.42647 | 1.61765 | .13871 | -.70080 | -.15214 | -3.075 | 135 | .003 |
| Rev_Cost_Influence (-) Rev_Trust_Influence | -.32353 | 1.72941 | .14830 | -.61681 | -.03025 | -2.182 | 135 | .031 |
| Rev_Cost_Influence (-) Rev_Ed_Influence | .22794 | 1.54425 | .13242 | -.03394 | .48982 | 1.721 | 135 | .087 |
| Rev_Quality_Influence (-) Rev_Trust_Influence | .10294 | .81903 | .07023 | -.03595 | .24184 | 1.466 | 135 | .145 |
| Rev_QualityInfluence (-) Rev_Ed_Influence | .65441 | 1.48263 | .12713 | .40298 | .90585 | 5.147 | 135 | .000 |
| Rev_Trust_Influence (-) Rev_Ed_Influence | .55147 | 1.41850 | .12164 | .31091 | .79203 | 4.534 | 135 | .000 |

While the hypothesis is supported that trust does impact future facility choice, it is not the most impactful factor. This is an interesting discovery because the least impactful factor is education. While participants responded that education was least likely to influence their choice, this is contradictory to earlier survey results, which demonstrated that education (in and of itself) was the most influential education factor that triggered a change in behavior.

Additional Findings

One interesting discovery in the research is relating to participants' medical emergency perceptions. In the survey, participants were asked to indicate their level of confidence that their visit to the ER was a true and warranted medical emergency. The relevance of this question is the insight it provides into understanding the thought process behind the decision to use the ER. This topic was explored through two questions, one asking participants their confidence that their issue was a true medical emergency prior to their visit to the ER (Before ER, Med ER), and another asking participants if after their diagnosis they still believed their issue to be a medical emergency (Post-DX, Med ER).

In Table 15, more ER users indicated that they thought their issue was a true medical emergency prior to going to the ER versus after they arrived and received their diagnosis. This is demonstrated through the mean of participants who indicated that their issue was perceived as medical emergency being higher before they went to the ER (variable Before ER, Med ER) versus the mean of participants who believed it was an emergency after they received their diagnosis (Post-DX, Med ER).

TABLE 15. MEDICAL EMERGENCY PERCEPTIONS

Paired Samples Statistics

| | | Mean | N | Std. Deviation | Std. Error Mean |
|--------|-------------------|------|-----|----------------|-----------------|
| Pair 1 | Before ER, Med ER | 3.73 | 136 | 1.202 | .103 |
| | Post DX, Med ER | 3.40 | 136 | 1.335 | .114 |

This is an interesting finding which should trigger more research in the area of emotion during decision making, when selecting an acute care facility. The data demonstrates that while the difference between these two items may not be deemed a significant change (.33 variance), it is a possible indication that education of alternatives may be impacted by the layperson's inability to assess medical necessity. This is something that should be explored further in additional future research.

DISCUSSION

The findings of this research have helped to uncover the thought process regarding consumer behaviors in health insurance utilization; specifically, exploring consumers' decision to utilize the Emergency Room for care and what factors help to modify that behavior. By exploring the influences on the utilization of ER care or alternative facilities, this research is able to make insightful deductions on how to best address the gaps in knowledge and understanding to better steer members to care centers that are appropriate for their needs. Learning from those who chose to use the ER for non-emergent services, this research is able to better understand this form of consumer

consumption behavior. Ultimately, this research has constructed theories about the impetus of ER visits in NY. Education, trust, cost, and quality all played a role in influencing future facility choice.

Contributions to Theory

This research explores the decision making process for consumers utilizing health services. By demonstrating that consumers are influenced, with education, to make changes in their site of service, this research advances theories that have been developed around consumer utilization habits. This research also validates findings by LaCalle and Rabin (2009) that ER patients rely heavily on other parts of the healthcare system as well, shown through a familiarity with PCPs. In addition, this research supports research by Gould (et al.), in 2008, by demonstrating that that the majority of ER visits occurred after-hours (nights or weekends) when most physician offices or clinics were not open for business. By exploring this topic, this research also helps to further new theories on cost-reduction techniques in the health insurance space.

Contribution to Practice

As an industry, there is more that can be done in the movement toward health insurance cost-containment. Progress in cost-management has been slow but changes are required to stabilize the industry, as the current position is unsustainable. Much reliance has been placed on implementing changes to the delivery model and introducing new technology options, however, attention should be shifted to consumer literacy in insurance utilization. This research addresses ways to manage one of the larger cost

issues faced by insurers, ER over-utilization. The findings of this study demonstrate that education is needed on alternative sites of care and that, with the appropriate information, consumers can be influenced to make site of care changes. Developing a strategy and tools to manage the dissemination of this information are critical in the next phase of cost-containment for insurers.

Of note, some insurers are currently exploring new ER policies, including ER claim denials for those who sought non-emergent care in an ER. This research acknowledges the fact that such policy changes may have an impact on future behavior (due to the financial incentive). However, policies of this nature place an even stronger burden on the insurer to guarantee that policy holders have the appropriate knowledge needed to make the appropriate site of care decisions.

Future Research

Though this study was able to further the body of knowledge in this topic area, it has also highlighted a number of areas where future research should be performed. Specifically of note within the research body, further examination of the perception of ER costs should be explored. Within the initial descriptive statistics, results pointed to an astounding number of participants who agreed that they paid a reasonable price for their ER care. When utilizing the ER, it is typical that the consumer faces higher costs through either a higher deductible or higher coinsurance. Consumers were influenced by cost factors to make changes in site of service, so detailed exploration as to why participants believed their ER care was reasonably priced is one area that should be further explored and would be valuable to extend theories on this topic.

The majority of survey participants, sixty-five percent of respondents, indicated that they were not familiar with Telemedicine Doctors (TMDs). Because TMDs are another example of a site of service that offers reduced pricing opportunities, similar studies should be conducted on consumer reactions to Telemedicine doctors and what influences may impact their decision to use a TMD as a care site. While this research made an effort to uncover deeper findings regarding use of telemedicine physicians, use of these physicians is more comparable to that of a PCP than an emergency room. In addition, the survey did not provide enough information and understanding on how to use TMDs. Therefore, future studies in this area would clearly continue to advance the knowledge gaps in cost-containment.

Limitations

When surveying participants, randomization was used for the factors of cost and quality, after education on the facilities was provided. Because education ended up being the most significant factor, it is important to discuss the limitation that education was not part of the survey randomization. Because of this, a survey designed to capture this randomization should be further explored.

This study recognizes that in the decision-making moments prior to receiving medical care, consumers can make irrational decisions due to health concerns. In addition, it can be noted that frequent ER use may represent unaddressed social issues in the United States, including: fragmented care, the declining availability of primary care physicians, and the rising rates of chronic disease; all of which may impact behaviors regarding frequent ER use regardless of education. Additionally, the study was limited to

NY residents, so further tests would be required to determine if these results are generalizable to other geographies.

Because this research did not ask for any personal health information (PHI), the results of this survey did not have insight into the condition of the ER user (specifically if they had a true emergent condition). Additional research exploring this topic on a specific cohort consisting only of individuals who used the ER inappropriately would be impactful.

Lastly, while there was significant industry knowledge and research provided in the question design, the survey was constructed by a novice survey designer. While the questions are of high-standard and the results are credible, this research recognizes the limitation that may be provided through the survey scheme.

CONSUMERISM IN HEALTH INSURANCE:

Understanding Literacy in Insurance Purchasing & Benefit Consumption

CONCLUSION AND CONTRIBUTIONS

As this research suggests, improved literacy can yield better informed choices in regard to health insurance purchasing and utilization. Taking measures to advance literacy can improve behavior and, in turn, have positive impacts on health care costs and efficiencies. This research provides the industry with a well-rounded view of literacy impacts within the health insurance space.

Chapter 1 evaluated existing research and determined that there are no agreed upon metrics for health insurance literacy, commonly defined as the knowledge, ability, and confidence to find, evaluate, select, and use the best plan for individual or family needs and circumstances. Health insurance literacy is a relatively new concept; the need birthed from initiatives involving technological and regulatory change which are leading consumers to take more active measures to evaluate their health insurance options. Thus, while the definition is fairly solidified, the industry has not yet come to a firm consensus on the metrics for evaluation. There is agreement, however, that surprisingly few American adults are fully health insurance literate.

Chapter 2 studied consumer choice behavior in the particular care setting of Emergency Room utility. This research suggests that the relatively low level of literacy regarding Emergency Room alternatives has contributed to the trend of the overuse and abuse of Emergency Room facilities. When consumers were provided information about

alternative sites of care, there is an indication that education would influence use of these facilities in the future. Because Urgent Care Center charges are one-tenth the cost of Emergency Room charges for equal treatment, this behavior change leads to lower overall costs and improved efficiencies within the health care space. In addition, consumers would see the benefit of garnering the ability to make cost-conscious decisions that ultimately lead to safer and more effective care.

Thus, extrapolating the results of this research, establishing clear metrics for evaluating health insurance literacy and improving utilization knowledge can yield benefits throughout the health care industry by reducing costs and enhancing provider utilization efficiencies.

Contributions to Theory

This research has established commonalities and differences in the existing measures of health insurance literacy. This research furthers the body of knowledge in this topic area. Findings from this research will help researchers to better understand how to approach the measurement of consumer education levels in regards to health insurance.

By highlighting the importance of a reliable metric, this research also encourages researchers to enable the future development of a standardized scale to measure health insurance literacy, which can define ranges of knowledge (e.g., low, medium, high). In addition, this scale should establish insight to the capabilities one should be able to perform at each level in the scale.

In addition, this research also expands the body of knowledge regarding consumer consumption behaviors. Chapter 2 suggests that education (or increased literacy) can impact consumers' site of care choices, which can ultimately contribute to cost-control and the ability to create market efficiency. This research should uncover that health care consumers often make choices based on inadequate or asymmetric information; and establishes that improved literacy equals improved efficiency.

Implications for Practice

In order to achieve maximum decision effectiveness, there is a critical need to derive tools that increase insurance literacy. Developing standard metrics for evaluating health insurance literacy will help both insurers and consumers determine what is needed to make better and more effective decisions in their health insurance plan selection. In addition, understanding literacy in insurance utilization is also a prominent area for industry professionals to review. Research on consumer choice behavior concerning ER care utilization will enable insightful deductions on addressing gaps in knowledge and understanding to better steer members to care centers that are appropriate for their needs.

Tools / Measures

The development of standard markers and measurements would assist agents, brokers, and navigators in understanding where their services can be of value and which consumers would most benefit from their assistance. Without these tools, consumers are blind to any potential incompetence and are forced to make major decisions instinctively, which can clearly impact their health and financial stability. This knowledge also

benefits health insurers, by allowing them to accurately tailor their enrollment processes or plan designs. In turn, consumers would be able to better manage their monthly health insurance costs more effectively.

This study also highlights the importance the development of educational tools to assist consumers in making better choices regarding ER utilization. Having tools of this nature are pertinent, especially if the industry expects empowered consumerism to thrive. While the focus of the research was on consumer choices in the particular context of Emergency Room facilities, the conclusions can be fairly applied to other health care settings. Further illustrated in this context, the research establishes that health insurance illiteracy is prominent and people are not aware of how they should select and engage with their health insurance plan.

Industry Responsibility

Consumers, as care users, have a personal responsibility to better prepare for their health needs. Consumerism in health insurance implies that, by providing the knowledge and power for consumers to make effective choices, consumers can influence their outcomes through behavior changes. Consumers, especially those with chronic conditions, should have plan for what to do when health issues arise. They should consider working in advance with a doctor or case manager to detail a plan of action on how to best support emergency needs and how to best manage symptoms that may occur from prescribed medications or tests.

Hospital ERs also have an active role in promoting change. Emergency Departments should be looking for innovative payment structures that would allow them to see non-emergent patients for reduced services costs. A reduced fee for non-emergent services would reduce costs for insurers and patients who continue to utilize the ER for its convenience. Continuity of care is also an issue for post-ER patients, which can cause relapsed medical needs and readmissions. Emergency Departments have the responsibility of building in a continuity of care plan for patients.

Alternatively, Urgent Care Centers have a responsibility to become more engaged in the local community. ERs are often part of large hospital systems that are a recognizable or trusted brand. By engaging the local community, UCCs can generate trust and familiarity, this helps consumers to think first of Urgent Care Centers when they have a medical need.

Education

It's important to continue to education consumers on the disadvantages of using the ER when it is not appropriate. This includes the wait times and cost exposures, which are demonstrated to be significantly reduced at UCCs or through TMDs. But there are other educational opportunities available that can assist with ER misuse. Insurance companies should consider posting health tutorials on public websites. In today's social culture, videos are a primary source of information access and sharing. One example of how insurance companies could leverage this medium would be to post videos that explain symptoms, post common images, or help clarify potential medical risks versus common reactions. Videos might explain symptoms that are considered normal for your

condition, such as swelling that is expected or a low grade fever that is anticipated, the video can explain that these symptoms are often normal and help potential patients to remain calm and make educated decisions about where their care needs are best served.

In addition, spreading knowledge of Telemedicine Doctors (TMDs) is critical. As found in this research, knowledge of TMDs is significantly underdeveloped. The benefits offered from TMD services fit well into the consumer profile of today. TMDs allow consumers 24/7 convenience and instant gratification within the health sphere. Not only is this a time-saver, but it also feeds into the mindset that everything is available to you, from the comfort of your home, in a matter of hours. With TMD, there is no waiting room and, in fact, there is no need to even leave your home. This is a great alternative, especially for millennials (or younger) who may be used to technology driven platforms. This is also a great alternative for the elderly who have a difficult time with transportation, or for mothers who aren't interested in "packing up" their young children to head to a local waiting room.

Reviving the PCP

With a demonstrated reduction in Primary Care Doctors (PCPs), medical schools and insurance companies should consider platforms that revive the desirability for the role of a PCP. Consumerism in health insurance advocates the need to reintroduce PCPs in the health market. There should be incentives to bring PCPs back to the core of the patient-provider relationship. The cost for services through specialty physicians is higher than standard care physicians. Having a PCP helps patients determine less-costly and effective alternatives, especially for non-acute care needs. PCPs can also encourage well-

visits, which can act in a preventative manner, keeping patients healthy and avoiding acute care needs. PCPs should also be proactively assisting their patients with identifying the best alternatives for treatment when they are unavailable. This might include education on the hours and location of the nearest Urgent Care Center as well as companies that provide Telemedicine services for after-hours health needs.

Policy Changes

Insurers should consider policies that encourage consumers to make more effective decisions. One policy noted in this research is one which denies claims for services received at an Emergency Room when the services were not deemed emergencies. This policy, offered through some Blue Cross Blue Shield carriers, has undergone scrutiny from physicians and hospitals, but has provided the first innovative mechanism to start providing consumers with control of their health costs. By enforcing guidelines around ER abuse, consumers are faced with a choice – one which their decision directly impacts their outcomes. This type of empowered consumerism is one of the best ways to influence a behavioral shift. To think critically about how to advance this policy to be one that is more acceptable to physicians, we should consider adding a requirement for PCP continuity of care. With this suggestion, claims would not deny for non-emergent ER users who see a PCP within 48-hours. This would help with continuity of care, but would also assist in relationship building for the patient and PCP on how to best handle similar future medical situations.

From a public policy perspective, it is important for Federal and State markets to analyze ER utilization on a state by state basis. Recognizing the cost implications of ER

overuse, regulations should define a clearly established role of an Emergency Department. By instituting guidelines around what's acceptable ER care, regulations of this nature help to further solidify policies that penalize costs due to unnecessary ER care. Policies of this nature would help to alleviate additional public health concerns such as ER wait times and increased risks of misdiagnosis from understaffed ERs.

In addition, governmental bodies should consider options that further literacy in health insurance. This could consist of agencies that assist consumers with health insurance decisions, or even implementing a Federal health insurance literacy scale with decided upon metrics for literacy measurement. Also, insurance companies have trouble with some ER denial policies because of federal guidelines stating that companies must use the prudent, layperson standard for review of ER necessity. Doctors must provide a comprehensive assessment to every patient who thinks they have an issue, even if no signs of medical need are present. Federal law requires that emergency medical conditions be covered, regardless of if they are in network, but this also includes prudent layperson's definition of medical emergency – not just true medical emergencies. The creation of a firm definition of Emergency Room qualified services, in federal law, would help insurers to make better policies that help consumers make better choices and provide a clear explanation of when ER services are deemed appropriate. This would remove some of the flexibility found in prudent, layperson definitions of ER standards.

Future Research

Given that healthcare represents approximately one-fifth of GDP; the economic impact to these changes could be quite significant. This research should enable insightful

discussions on addressing gaps in knowledge and understanding. The consumer culture of consumption is a problem that leads to higher costs and reduced efficiencies. With the exposure of consumers' illiteracy to alternatives, the market should be able to look past the results of this survey, which are ER specific, and recognize that similar events are likely occurring in other areas of health insurance access. The market should be exploring these options and how literacy can impact performance.

Additionally, this research recognized the limitation of emotion in decision making, when choosing an ER facility for care. Future assessments should review the probabilities or impacts to consumer choice, controlling for emotion. Ultimately, the body of research in this paper and these future research suggestions can move us toward a more efficient, effective, and literate health insurance industry.

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APPENDICES

Appendix A:
Documents Relating to the
Emergency Room (ER) Utilization Survey

**A-1. IRB Study Protocol for
Emergency Room (ER) Utilization Survey**

Protocol for Study:

Emergency Room (ER) Utilization Survey

1. Abstract of the study

The use of Emergency Rooms (ERs) for non-emergent services is steadily rising. The cost for ER care is significantly higher than using alternative resources such as Urgent Care Centers (UCCs) or Telemedicine (aka Telehealth) Doctors (TMDs). However, consumers are still utilizing the ER for services that could easily be serviced through UCCs or TMDs. This study seeks to better understand this phenomenon, specifically determining the impetus for the consumers' decision to use the ER versus other the other facilities. In addition, the study will also educate consumers on UCCs and TMDs as ER alternatives, including wait time and cost comparisons between all three resources, and explore if this knowledge might alter future behavior.

2. Protocol Title

Emergency Room (ER) Utilization Survey

3. Investigators

Primary Investigators:

Paul Pavlou, Professor, Office of Research, Doctoral Programs & Strategic Initiatives

Susan Mudambi, Professor, Marketing and Supply Chain Management

Student Investigator:

Lisa Barbaccio, Fox School Doctorate of Business Administration Candidate

4. Objectives

- Understand why consumers are using the ER for non-emergent care.
- Understand if education of alternative solutions, including wait time and cost comparisons, could impact consumer choice.

Examples of Hypotheses

H1: There will be a higher weighted response to if visits were perceived as a medical emergency before visiting the ER as compared to after knowing their diagnosis.

H2: Most participants who used the ER were unaware of alternative sites of service (Urgent Care Centers or Telehealth Doctors) prior to visiting the ER.

5. Rationale and Significance

As consumerism in health insurance is expanding, there is a need to better understand consumer behaviors. Simple human behaviors, such as using the ER for non-emergent services, can significantly impact cost containment and efficiency in the healthcare space. In order to assist consumers in making guided and educated choices, we first need to better understand how literacy of alternatives will impact their decisions.

Because ERs cost up to ten times more than UCCs or TMDs, understanding the impetus for this consumer behavior choice is important. In addition, exploring the impact of literacy (regarding cost and wait time specifically), is needed to better understand the impact of education and direct future research in this area.

6. Resources and Setting

The investigators involved with this study actively participated in the design of this protocol. They are familiar with the instruments and the experimental procedure.

Participation in the study requires completing a short online questionnaire. For example, subjects will answer a few questions about why they did, or did not, choose to use the ER for a medical issue within the past year. Next, subjects will get a small education block regarding the definition of UCCs and TMDs, and comparing the average cost and wait times between the three facilities. Then subjects will answer questions about what they expect their behavior will entail when faced with a non-emergent situation in the future.

The research will be focused on New York State residents. We will recruit subjects and deliver the survey using Amazon Mechanical Turk (www.mturk.com). (See question 8).

7. Prior Approvals

N/A

8. Study Design

a. Recruitment Methods

Describe how many subjects will be needed.

We estimate that 100 subjects will be needed.

Describe when, where, and how potential subjects will be identified and recruited.

Subjects will be recruited using the Amazon Mechanical Turk (AMT) service. AMT is a platform for matching workers with small, discrete tasks. Since no specific skills required for this task and the task is simple and non-invasive, AMT is an appropriate source for this study.

There will be a demographic restriction on who can or cannot participate in this study to those located in New York State. The survey will also require English fluency. We plan to enforce a threshold level of previous successful participation on AMT (i.e., 50 previously completed tasks by anyone else on the service).

Describe materials that will be used to recruit subjects, e.g., advertisements.

There will be no recruitment materials. We will post our survey through Amazon Mechanical Turk as a HIT (Human Intelligence Task), with a brief description describing the purpose of the study. We will make it clear that participation is optional.

The description will read: “You are invited to participate in a study about Emergency Room (ER) utilization. The purpose of this research is to understand the relationship between education of alternative facilities and the impact on ER use. The survey will take less than 15 minutes to complete.”

Describe any payments to subjects, including the amount, timing (at the end of the study or prorated for partial study participation), method (e.g., paid via Mturk), and whether subjects will experience a delay in receiving the payment.

All subjects who participate will receive approximately \$2 for completing the online survey. The payment will be made automatically via the Amazon payment system. Due to the nature of payment system, there will be up to 24-hour delay in payment after the subject completes the study.

b. Inclusion and Exclusion Criteria

The study will only include participants who are at least 18 years old and live in New York.

c. Study Timelines

We estimate the entire survey will require about 15 minutes to complete.

Participation is open to anyone that meets the AMT threshold, but participants are limited to finish only one hit.

We will launch the project immediately upon the approval of the protocol. We will complete the data collection within a month from the approval of the protocol. We anticipate the completion of the study including data analysis and the preparation of the draft within three months from the date of approval.

d. Study Procedures and Data Analysis

Subjects will complete the online questionnaire through Amazon Mechanical Turk. Participation in the study requires completing a short online questionnaire. The entire procedure will take about 15 minutes to complete.

As an example, a task can involve several steps:

- Subjects will first answer a series of questions about their choice to use an ER for their medical issue within the past year.
- Subjects will then read a brief education block regarding the definition of Urgent Care Centers (UCCs) and Telemedicine Doctors (TMDs), with additional information comparing cost and wait times between ERs, UCCs, and TMDs.
- Subjects will then answer questions about their potential future behavior when faced with non-emergent situations in the future.
- Subjects will also be asked for basic demographic information, including age and gender.

Their information will be anonymously recorded (by a unique identifier) in a secure database. Their name will NOT be stored in the database.

The survey data will be reviewed and analyzed in order to inform research on this topic area. The analysis will contribute to developing theories on whether education of alternative facilities will impact the decision to use (or not to use) the ER in future non-emergent issues.

e. Withdrawal of Subjects

Subjects may withdraw from the study simply by ending the task early. No contact with the investigator is required. There are no circumstances where a subject will be removed from the study without his or her consent.

f. Privacy & Confidentiality

The study will not use or disclose subjects' personal health information (PHI).

The data will be stored on a password-protected computer. Regardless, there will be no personally-identifiable information in the data set.

The study results will be presented in aggregate form in working and completed research papers. The results will not be able to be traced back to individual responses.

We will make sure the subjects are aware that we will anonymize the data so that individual responses cannot be linked back to their name. We will explain this during recruitment, on the consent form, and on the instrument.

9. Risks to Subjects

There are no risks to subjects in this study.

10. Potential Benefits to Subjects

There is no direct benefit to individual subjects, other than the payment they will receive for completing the task. All subjects who participate will receive approximately \$2 for completing the online survey.

11. Costs to Subjects

None

12. Informed Consent

Informed consent will be presented the beginning of the session. The informed consent will be obtained via qualification through Amazon Mechanical Turk. Qualification is an Amazon Mechanical Turk feature that enforces a requirement that a worker has to meet in order to be assigned the task. Consent will take place as qualification before they can complete the task.

This is a completely voluntary study as it is not a part of any courses or job. We do not see any possibility of coercion or undue influence.

It will be made clear during the consent process (before they sign the consent form) that participation is optional and they can leave at any time.

The study will be explained during the consent process (before they acknowledge their consent through the online form).

13. Vulnerable Populations

None

**A-2. IRB Stamped Consent for
Emergency Room (ER) Utilization Survey**

Temple IRB Approved

03/06/2019

RESEARCH SUBJECT CONSENT FORM

Title: Emergency Room Utilization Survey

Protocol No.: 25660

Sponsor: Paul Pavlou, Advisory Chair, Office of Research, Doctoral Programs & Strategic Initiatives

Investigator: Paul Pavlou [Student Investigator: Lisa Barbaccio]
1801 Liacouras Walk, Alter Hall 334
Philadelphia, PA 19112
USA

Daytime Phone Number: 212-204-4252

RESEARCH CONSENT SUMMARY

You are being asked for your consent to take part in a research study. This document provides a concise summary of this research. It describes the key information that we believe most people need to decide whether to take part in this research. Later sections of this document will provide all relevant details.

What should I know about this research?

- Someone will explain this research to you.
- Taking part in this research is voluntary. Whether you take part is up to you.
- If you don't take part, it won't be held against you.
- You can take part now and later drop out, and it won't be held against you
- If you don't understand, ask questions.
- Ask all the questions you want before you decide.

How long will I be in this research?

We expect that your taking part in this research will last no more than 15 minutes.

Why is this research being done?

The purpose of this research is to investigate your influences when deciding on a site for medical care, particularly your decision to use an Emergency Room.

What happens to me if I agree to take part in this research?

If you decide to take part in this research study, the general procedures include answering questions about your Emergency Room utilization, learning about alternative facilities, and answering additional questions regarding your potential future choices.

Could being in this research hurt me?

There are no foreseeable risks or discomforts expected from taking part in this survey.

Will being in this research benefit me?

There is no cost to subjects for participating in this survey. A benefit to you as a subject is an associated payment for completing the HIT. Your Amazon account information will be kept for tracking purposes only, so we can pay you for your work. A limited number of research team members will have access to the data during data collection and any personally identifiable information will be stripped from the final dataset.

What else should I know about this research?

By clicking on the link to the survey below I am agreeing that I am over 18 years old and to participate in this research project.

DETAILED RESEARCH CONSENT

You are being invited to take part in a research study. A person who takes part in a research study is called a research subject, or research participant. In this consent form “you” generally refers to the research subject. If you are being asked as the legally authorized representative, parent, or guardian to permit the subject to take part in the research, “you” in the rest of this form generally means the research subject.

What should I know about this research?

- Someone will explain this research to you.
- This form sums up that explanation.
- Taking part in this research is voluntary. Whether you take part is up to you.
- You can choose not to take part. There will be no penalty or loss of benefits to which you are otherwise entitled.
- You can agree to take part and later change your mind. There will be no penalty or loss of benefits to which you are otherwise entitled.
- If you don’t understand, ask questions.
- Ask all the questions you want before you decide.

Why is this research being done?

The purpose of this research is to investigate your influences when deciding on a site for medical care, particularly your decision to use an Emergency Room

About 100 subjects will take part in this research.

How long will I be in this research?

We expect that your taking part in this research will last no more than 15 minutes.

What happens to me if I agree to take part in this research?

If you decide to take part in this research study, the general procedures include answering questions about your Emergency Room utilization, learning about alternative facilities, and answering additional questions regarding your potential future choices.

What are my responsibilities if I take part in this research?

If you take part in this research, you will be responsible to:

- Answer survey questions relating to recent Emergency Room visits
- Read educational information regarding alternative facilities for urgent care needs
- Answer additional survey questions relating to your potential future site of care choices.

Could being in this research hurt me?

There are no foreseeable risks or discomforts expected from taking part in this survey.

Will it cost me money to take part in this research?

There is no cost to subjects for participating in this survey.

Will being in this research benefit me?

A benefit to you as a subject is an associated payment for completing the HIT. Your Amazon account information will be kept for tracking purposes only, so we can pay you for your work. A limited number of research team members will have access to the data during data collection and any personally identifiable information will be stripped from the final dataset.

What other choices do I have besides taking part in this research?

The alternative to participating is not to participate. You may decline to participate at any time.

What happens to the information collected for this research?

Your private information will be shared with individuals that conduct or watch over this research, including:

- The research sponsor
- People who work with the research sponsor
- The Institutional Review Board (IRB) that reviewed this research
- Temple University

We may publish the results of this research. However, we will keep your name and other identifying information confidential.

We protect your information from disclosure to others to the extent required by law. We cannot promise complete secrecy.

Who can answer my questions about this research?

If you have questions, concerns, or complaints, or think this research has hurt you or made you sick, talk to the research team at the phone number listed above on the first page.

This research is being overseen by an Institutional Review Board (“IRB”). An IRB is a group of people who perform independent review of research studies. You may talk to them at (215) 707-3390 or irb@temple.edu if:

- You have questions, concerns, or complaints that are not being answered by the research team.

- You are not getting answers from the research team.
- You cannot reach the research team.
- You want to talk to someone else about the research.
- You have questions about your rights as a research subject.

What happens if I agree to be in this research, but I change my mind later?

Your participation in this survey is voluntary. You have the right to withdraw from participation at any time without penalty.

Will I be paid for taking part in this research?

You will be paid approximately \$2 for completing this research. Your Amazon account information will be kept for tracking purposes, only so we can pay you for your work. A limited number of research team members will have access to the data during data collection. This information, along with any other personally identifiable information about you, will be stripped from the final dataset.

**A-3. Formatted Copy of
Emergency Room (ER) Utilization Survey**

ER Utilization Survey - V2

Start of Block: Introduction and Consent

Emergency Room (ER) Utilization Survey

You are being invited to take part in a research study. A person who takes part in a research study is called a research subject, or research participant. In this consent form, "you" generally refers to the research subject. If you are being asked as the legally authorized representative, parent, or guardian to permit the subject to take part in the research, "you" in the rest of this form generally means the research subject.

What should I know about this research?

- Someone will explain this research to you.
- This form sums up that explanation.
- Taking part in this research is voluntary. Whether you take part is up to you.
- You can choose not to take part. There will be no penalty or loss of benefits to which you are otherwise entitled.
- You can agree to take part and later change your mind. There will be no penalty or loss of benefits to which you are otherwise entitled.
- If you don't understand, ask questions.
- Ask all the questions you want before you decide.

Why is this research being done?

The purpose of this research is to investigate your influences when deciding on a site for medical care, particularly your decision to use an Emergency Room. About 100 subjects will take part in this research.

How long will I be in this research?

We expect that your taking part in this research will last no more than 15 minutes.

What happens to me if I agree to take part in this research?

If you decide to take part in this research study, the general procedures include answering

questions about your Emergency Room utilization, learning about alternative facilities, and answering additional questions regarding your potential future choices.

What are my responsibilities if I take part in this research?

If you take part in this research, you will be responsible to:

- Answer survey questions relating to recent Emergency Room visits.
- Read educational information regarding alternative facilities for urgent care needs.
- Answer additional survey questions relating to your potential future site of care choices.

Could being in this research hurt me?

There are no foreseeable risks or discomforts expected from taking part in this survey.

Will it cost me money to take part in this research?

There is no cost to subjects for participating in this survey.

Will being in this research benefit me?

A benefit to you as a subject is an associated payment for completing the HIT. Your Amazon account information will be kept for tracking purposes only, so we can pay you for your work. A limited number of research team members will have access to the data during data collection and any personally identifiable information will be stripped from the final dataset.

What other choices do I have besides taking part in this research?

The alternative to participating is not to participate. You may decline to participate at any time.

What happens to the information collected for this research?

Your private information will be shared with individuals that conduct or watch over this research, including:

- The research sponsor
- People who work with the research sponsor
- The Institutional Review Board (IRB) that reviewed this research
- Temple University

We may publish the results of this research. However, we will keep your name and other identifying information confidential. We protect your information from disclosure to others to the extent required by law. We cannot promise complete secrecy.

Who can answer my questions about this research?

If you have questions, concerns, or complaints, or think this research has hurt you or made you sick, talk to the research team at the phone number listed above on the first page. This research is being overseen by an Institutional Review Board ("IRB"). An IRB is a group of people who

perform independent review of research studies. You may talk to them at (215) 707-3390 or irb@temple.edu if:

- You have questions, concerns, or complaints that are not being answered by the research team.
- You are not getting answers from the research team.
- You cannot reach the research team.
- You want to talk to someone else about the research.
- You have questions about your rights as a research subject.

What happens if I agree to be in this research, but I change my mind later?

Your participation in this survey is voluntary. You have the right to withdraw from participation at any time without penalty.

Will I be paid for taking part in this research?

You will be paid approximately \$2 for completing this research. Your Amazon account information will be kept for tracking purposes, only so we can pay you for your work. A limited number of research team members will have access to the data during data collection. This information, along with any other personally identifiable information about you, will be stripped from the final dataset

By continuing I am agreeing that I am over 18 years old and to participate in this research project.

End of Block: Introduction and Consent

Start of Block: Participant Section

ER Define

Emergency Room (ER) or Emergency Department (ED)

Emergency Rooms or Emergency Departments, often abbreviated as ERs or EDs, are the department of a hospital that provides immediate treatment for acute illness and trauma. Emergency rooms are often used for concerns such as poisoning, heart attacks, serious head injuries, deep knife or gunshot wounds, as well as other life threatening emergencies.

Participate Trigger

Have you (in this survey, "you" means either you or a member of your immediate family) ever been to the ER?

Yes (1)

No (2)

Skip To: End of Block If Have you (in this survey, "you" means either you or a member of your immediate family) ever been... = Yes
Skip To: End of Survey If Have you (in this survey, "you" means either you or a member of your immediate family) ever been... = No

End of Block: Participant Section

Start of Block: Benefit Utilization Questions (Default)

Q1: Freq How many times have you (in this survey, "you" means either you or a member of your immediate family) been to the ER in the past year?

▼1 (1) ... More than 20 (21)

Q2: Age User

Please think about your most recent visit to the ER for the following questions...

What was the age of the patient that visited the ER?

▼Under 1 (1) ... 100+ (101)

Q3: When? The patient arrived at the ER:

- Monday through Friday, between 8am - 6pm (1)
 - Monday through Friday, between 6pm - 10pm (2)
 - Monday through Friday, between 10pm - 8am (3)
 - Saturday or Sunday, between 8am - 6pm (4)
 - Saturday or Sunday, between 6pm - 10pm (5)
 - Saturday or Sunday, between 10pm - 8am (6)
-

Q4: How? How did the person get to the Emergency Room?

- 911 was called for the person, and the person traveled in an ambulance (1)
 - The person called 911 and traveled in an ambulance (2)
 - Received a ride from a friend or family member (3)
 - Uber or taxi (4)
 - Drove (5)
 - Public transportation (6)
 - Walked (7)
 - Arrived at the ER another way (please explain): (8)
-

Page Break

Q5: Influence How influential were the following in the decision to go to the Emergency Room?

| | This did not influence my choice (1) | This hardly influenced my choice (2) | This moderately influenced my choice (3) | This influenced my choice (4) | This significantly influenced my choice (5) |
|---|--------------------------------------|--------------------------------------|--|-------------------------------|---|
| I didn't know where else to go. (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The ER was the best of multiple health care options that were considered. (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My primary care doctor's office was closed. (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I was unsure if the issue was life threatening or a medical emergency (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I was told to go there by the primary care physician. (5) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I didn't have access to a regular doctor. (6) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I didn't have health insurance. (7) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The ER was the closest location. (8) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I wanted a "one-stop-shop" to get all of my medical care and medicine in one place. (9) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I needed to speak with someone who spoke my language. (10) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I trust the doctors at the ER more than any other doctor. (11) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I knew the issue was life threatening and a medical emergency. (12) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q6: SD-SA 1 Please rate the truth of the statements below:

| | Strongly Disagree (1) | Disagree (2) | Somewhat Disagree (3) | Somewhat Agree (4) | Agree (5) | Strongly Agree (6) |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| The ER was the best place I could think of to help me with my issue: (1) | <input type="radio"/> |
| I believe I paid a reasonable price for the care I received at the ER: (2) | <input type="radio"/> |
| The ER was crowded (or my wait time was long) when I visited the ER: (3) | <input type="radio"/> |
| An ER doctor is the only person I would have trusted to handle my medical issue: (4) | <input type="radio"/> |

Page Break

Q7: Familiarity How familiar are you with the following facilities or physician resources?

| | Not at all Familiar (1) | Not Familiar (2) | Somewhat Familiar (3) | Familiar (4) | Very Familiar (5) |
|-------------------------------------|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Urgent Care Centers (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Telemedicine/Telehealth Doctors (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Primary Care Physicians (PCPs) (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Emergency Rooms (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

End of Block: Benefit Utilization Questions (Default)

Start of Block: Med Emergency Block

Med ER Define

Medical Emergency

A medical emergency is an acute injury or illness that poses an immediate risk to a person's life or long-term health. A true medical emergency is when an illness or injury places a person's health or life in serious jeopardy and treatment cannot be delayed. Examples include difficulty breathing, chest pain, a head injury, or indigestion of a toxic substance.

Q8: SD-SA 2 Based on your opinion:

| | Strongly Disagree (1) | Disagree (2) | Neither Agree nor Disagree (3) | Agree (4) | Strongly Agree (5) |
|--|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| Before visiting the ER, I believed my issue was a true medical emergency (as defined above) (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| After visiting the ER and learning my diagnosis, my issue was determined a true medical emergency (as defined above) (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I believe the ER was the best place to handle the care for my Medical Issue (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

End of Block: Med Emergency Block

Start of Block: UCC/TMD Education

UCC Define

Urgent Care Centers:

An Urgent Care Center is a medical clinic with expanded hours that is specially equipped to diagnose and treat a broad spectrum of non-life and limb threatening illnesses and injuries. Urgent care centers are enhanced by on-site radiology and laboratory services. Urgent care centers accept unscheduled, walk-in patients seeking medical attention during all posted hours of operation

Telemed Define

Telehealth or Telemedicine Doctors:

Telehealth is the use of communication tools which allow doctors and therapists to have real-time video or phone visits with patients on the web or mobile devices. Using electronic information and telecommunication technology, telehealth supports and promotes long-distance clinical health care, patient and professional health-related education.

Telehealth is frequently performed on mobile devices, but can also include telephone, web, or kiosk solutions. Telehealth is great for diagnosing and treating bronchitis, the flu, contact dermatitis, sinusitis, and other common conditions that you could typically see your Primary Care Provider (PCP) for.

Q9: Ed Impact After reading about the alternative options available for urgent health needs, answer the following:

| | Strongly Disagree (1) | Disagree (2) | Somewhat Disagree (3) | Somewhat Agree (4) | Agree (5) | Strongly Agree (6) |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Considering my last visit to the ER, the ER was the best place for my medical care (1) | <input type="radio"/> |
| Considering my last visit to the ER, I would have gone to an Urgent Care Center for my medical care instead of an ER (2) | <input type="radio"/> |
| Considering my last visit to the ER, I would have called a Telemedicine Doctor for my medical care instead of an ER (3) | <input type="radio"/> |

End of Block: UCC/TMD Education

Start of Block: UCC/TMD Cost

Cost Define

Cost Comparisons:

Emergency Room

ER visits range from \$1,757 - \$2,259. An ambulance ride alone can cost upward of \$1,200.

Urgent Care

Visiting an Urgent Care Center instead of an ER can typically save patients hundreds to thousands of dollars. The average cost of services during an Urgent Care Center visit ranges from \$155-\$176.

Telehealth Doctors

The average cost for "all-in" medical care of 11 common conditions was 1.45 times higher at an Urgent Care Center and 6.35 times higher at an ER than for those same episodes treated through Telehealth doctors. As for member responsibility of this care, members saved an average of \$201 per episode.

Q10: Cost Impact After reading about the cost comparisons for alternative options, answer the following:

| | Strongly Disagree (1) | Disagree (2) | Somewhat Disagree (3) | Somewhat Agree (4) | Agree (5) | Strongly Agree (6) |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Considering my last visit to the ER, the ER was the best place for my medical care (1) | <input type="radio"/> |
| Considering my last visit to the ER, I would have gone to an Urgent Care Center for my medical care instead of an ER (2) | <input type="radio"/> |
| Considering my last visit to the ER, I would have called a Telemedicine Doctor for my medical care instead of an ER (3) | <input type="radio"/> |

End of Block: UCC/TMD Cost

Start of Block: UCC/TMD Quality

Quality Define

Wait Time Comparisons:

Emergency Room:

In the ER, the average wait time is between 2 - 4.5 hours. Since 2014, 75% of polled physicians stated that ER volume had increased, of which 28% said volume has increased greatly. Research also suggests that patients in crowded ERs are more likely to be misdiagnosed or experience treatment delays and that overcrowded emergency rooms result in an increase in medical negligence and medical malpractice.

Urgent Care:

In Urgent Care, the average wait time is 30 minutes. 57% of patients wait less than 15 minutes and 84% of patients "in-and-out" within one hour.

Telehealth Doctors:

The average wait time for most Telehealth visits are approximately 20 minutes, with some waiting as little as under 5 minutes. The total wait time should be compared to the amount of time spent traveling to a facility.

Q11: Quality Impact After reading about wait times and quality concerns within the listed facilities, answer the following questions:

| | Strongly Disagree (1) | Disagree (2) | Somewhat Disagree (3) | Somewhat Agree (4) | Agree (5) | Strongly Agree (6) |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Considering my last visit to the ER, the ER was the best place for my medical care (1) | <input type="radio"/> |
| Considering my last visit to the ER, I would have gone to an Urgent Care Center for my medical care instead of an ER (2) | <input type="radio"/> |
| Considering my last visit to the ER, I would have contacted a Telemedicine Doctor for my medical care instead of an ER (3) | <input type="radio"/> |

End of Block: UCC/TMD Quality

Start of Block: Future Use

Q12: Trust I trust my medical care with the following providers:

| | Strongly disagree (1) | Somewhat disagree (2) | Neither agree nor disagree (3) | Somewhat agree (4) | Strongly agree (5) |
|------------------------------------|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|
| Primary Care Physicians (PCPs) (1) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Telemedicine Doctors (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Urgent Care Doctors (3) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Emergency Room Doctors (4) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Page Break

Q13: Rank Future In the future, for non-urgent matters, rank the order in which you would choose the below facilities to handle your medical issue: (Examples of non-urgent conditions might include: feeling nauseous/vomiting, the flu, or a skin rash)

- _____ Emergency Room (1)
 - _____ Urgent Care Center (2)
 - _____ Telemedicine/Telehealth Doctor (3)
-

Q14: Why Rank? The answer that best describes why I chose the top response (1) represented above, is because: (Note: You may select more than one response)

- I trust the doctors here the most with my care (1)
- I believe this facility is the quickest and most efficient place to obtain care (2)
- I don't want to wait a long time to see a doctor (3)
- I don't care to try somewhere new (4)
- I don't know how to tell what an emergency is and what is not (5)
- I do know how to tell what an emergency is and what is not (6)
- The cost for services is important to me (7)
- The cost for services here is not significantly different for me (8)
- I don't have insurance (9)

Page Break

Q15: Future Influence _____ would most likely influence my decision to use a facility other than the ER:

| | Strongly Disagree (1) | Disagree (2) | Somewhat Disagree (3) | Somewhat Agree (4) | Agree (5) | Strongly Agree (6) |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Cost (1) | <input type="radio"/> |
| Quality (2) | <input type="radio"/> |
| Trust (3) | <input type="radio"/> |
| Learning / Education of Alternatives (4) | <input type="radio"/> |

End of Block: Future Use

Start of Block: Demographics

Gender The gender I identify with is:

▼Male (1) ... Other (3)

Age My age is:

▼18 (1) ... 65+ (48)

Location I currently live in:

- New York City (Manhattan, Queens, Bronx, Brooklyn, Staten Island) (1)
 - New York State (outside of the 5 boroughs) (2)
 - Outside of New York State (3)
-

Mturk Id Please write your Mturk Id.

End of Block: Demographics

Start of Block: Completion Codes

Code 1 Here is your completion code. Type this code into the MTURK box for completion credit.

75468

Code 2 Here is your completion code. Type this code into the MTURK box for completion credit.

26491

Code 3 Here is your completion code. Type this code into the MTURK box for completion credit.

86457

Code 4 Here is your completion code. Type this code into the MTURK box for completion credit.

19462

Code 5 Here is your completion code. Type this code into the MTURK box for completion credit.

36371

End of Block: Completion Codes

**A-4. IRB Approval for the
Emergency Room (ER) Utilization Survey**



Approval for a Project Involving Human Subjects Research that Does Not Require Continuing Review

Date: 06-Mar-2019

Protocol Number: 25660
PI: PAVLOU, PAUL A.
Review Type: EXEMPT
Approved On: 06-Mar-2019
Committee: A1
School/College: BUSINESS SCHOOL (1500)
Department: FSBM:MANAGEMENT INFORMATION SYSTEMS (15280)
Sponsor: NO EXTERNAL SPONSOR
Project Title: Emergency Room (ER) Utilization Survey

The IRB approved the protocol 25660.

The study was approved under Exempt or Expedited review. The IRB determined that the research **does not require a continuing review**, consequently there is not an IRB approval period.

If applicable to your study, you can access your IRB-approved, stamped consent document or consent script through ERA. Open the Attachments tab and open the stamped documents by clicking the Latest link next to each document. The stamped documents are labeled as such. **Copies of the IRB approved stamped consent document or consent script must be used in obtaining consent.**

Note that all applicable Institutional approvals must also be secured before study implementation. These approvals include, but are not limited to, Medical Radiation Committee ("MRC"); Radiation Safety Committee ("RSC"); Institutional Biosafety Committee ("IBC"); and Temple University Survey Coordinating Committee ("TUSCC"). Please visit these Committees' websites for further information.

Finally, in conducting this research, you are obligated to submit the following:

- **Amendment requests - All changes to the research must be reviewed and approved by the IRB.**
Changes requiring approval include, but are not limited to, changes in the design or focus of the research project, revisions to the information sheet for participants, addition of new measures or instruments, increasing the subject number, and changes to the research funding. Changes made to eliminate apparent immediate hazards to subjects and implemented prior to IRB approval must be promptly reported to the IRB.
- **Reportable New Information** - using the Reportable New Information e-form, report new information items such as those described in HRP - 071 Policy - Prompt Reporting Requirements to the IRB **within 5 days**.
- **Closure report** - using a closure e-form, submit when the study is permanently closed to enrollment; all subjects have completed all protocol related interventions and interactions; collection of private identifiable

information is complete; and analysis of private identifiable information is complete.

For the complete list of investigator responsibilities, please see the HRP – 070 Policy – Investigator Obligations, the Investigator Manual (HRP-910), and other Policies and Procedures found on the Temple University IRB website: <https://research.temple.edu/irb-forms-standard-operating-procedures>.

Please contact the IRB at (215) 707-3390 if you have any questions.

Appendix B:
Data and Information Tables for the
Emergency Room (ER) Utilization Survey

**B-1. Descriptive Statistics for the data collected from the
Emergency Room Utilization Survey**

Descriptive Statistics
All Questions Reviewed

| Descriptive Statistics | | | | | |
|---|-----|---------|---------|------|----------------|
| | N | Minimum | Maximum | Mean | Std. Deviation |
| Q1: Freq | 102 | 1 | 21 | 2.48 | 2.910 |
| Q2: Age User | 102 | 1 | 2 | 1.75 | .432 |
| Q3: When? | 102 | 1 | 6 | 2.50 | 1.391 |
| Q4: How? | 102 | 1 | 8 | 2.73 | 1.510 |
| Q5: Influence_1: Didn't know where else to go | 102 | 1 | 5 | 2.83 | 1.536 |
| Q5: Influence_2: ER best of multiple options | 102 | 1 | 5 | 3.70 | 1.348 |
| Q5: Influence_3: PCP Closed | 102 | 1 | 5 | 2.87 | 1.651 |
| Q5: Influence_4: Unsure if Med ER | 102 | 1 | 5 | 3.26 | 1.547 |
| Q5: Influence_5: Told by PCP | 102 | 1 | 5 | 1.86 | 1.372 |
| Q5: Influence_6: No Regular Doc | 102 | 1 | 5 | 2.39 | 1.497 |
| Q5: Influence_7: No insurance | 102 | 1 | 5 | 1.45 | 1.021 |
| Q5: Influence_8: ER Closest | 102 | 1 | 5 | 2.54 | 1.584 |
| Q5: Influence_9: "One-Stop-Shop" | 102 | 1 | 5 | 2.31 | 1.496 |
| Q5: Influence_10: Language | 102 | 1 | 5 | 1.57 | 1.173 |
| Q5: Influence_11: Trust ER Docs most | 102 | 1 | 5 | 2.08 | 1.412 |
| Q5: Influence_12: Knew Med ER | 102 | 1 | 5 | 3.23 | 1.495 |
| Q6: SD-SA 1_1: ER was best place | 102 | 1 | 6 | 5.15 | 1.075 |
| Q6: SD-SA 1_2: Paid reasonable price | 102 | 1 | 6 | 4.10 | 1.538 |
| Q6: SD-SA 1_3 : ER was crowded (long wait) | 102 | 1 | 6 | 3.60 | 1.649 |

| | | | | | |
|--|-----|---|---|------|-------|
| Q6: SD-SA 1_4: Only trusted ER Doc | 102 | 1 | 6 | 3.23 | 1.729 |
| Q7: Familiarity_1: UCC | 102 | 1 | 5 | 3.57 | 1.309 |
| Q7: Familiarity_2: TMD | 102 | 1 | 5 | 2.21 | 1.308 |
| Q7: Familiarity_3: PCP | 102 | 1 | 5 | 4.25 | 1.021 |
| Q7: Familiarity_4: Ers | 102 | 1 | 5 | 4.24 | .892 |
| Q8: SD-SA 2_1: Before ER, Believe Med ER | 102 | 1 | 5 | 3.93 | 1.171 |
| Q8: SD-SA 2_2: After DX, Med ER | 102 | 1 | 5 | 3.43 | 1.361 |
| Q8: SD-SA 2_3: ER Best Place (BASELINE) | 102 | 1 | 5 | 4.06 | 1.003 |
| Q9: Ed Impact_1: ER Best Place | 102 | 1 | 6 | 4.64 | 1.427 |
| Q9: Ed Impact_2: Would UCC | 102 | 1 | 6 | 3.21 | 1.691 |
| Q9: Ed Impact_3: Would TMD | 102 | 1 | 6 | 2.31 | 1.689 |
| Q10: Cost Impact_1: ER Best Place | 102 | 1 | 6 | 4.19 | 1.663 |
| Q10: Cost Impact_2: Would UCC | 102 | 1 | 6 | 3.46 | 1.767 |
| Q10: Cost Impact_3: Would TMD | 102 | 1 | 6 | 2.32 | 1.624 |
| Q11: Quality Impact_1: ER Best Place | 102 | 1 | 6 | 4.40 | 1.491 |
| Q11: Quality Impact_2: Would UCC | 102 | 1 | 6 | 3.44 | 1.772 |
| Q11: Quality Impact_3: Would TMD | 102 | 1 | 6 | 2.39 | 1.678 |
| Q12: Trust_1: PCP | 102 | 1 | 5 | 4.33 | .916 |
| Q12: Trust_2: TMD | 102 | 1 | 5 | 2.76 | 1.170 |
| Q12: Trust_3: UCC | 102 | 1 | 5 | 3.89 | 1.062 |
| Q12: Trust_4: ER | 102 | 1 | 5 | 4.27 | .997 |
| Q13: Rank Future_1: ER RANK | 102 | 1 | 3 | 2.31 | .758 |
| Q13: Rank Future_2: UCC RANK | 102 | 1 | 3 | 1.40 | .585 |

| | | | | | |
|--------------------------------------|-----|-----|------|-------|--------|
| Q13: Rank Future_3: TMD RANK | 102 | 1 | 3 | 2.28 | .750 |
| Q15: Future Influenc_1: COST | 102 | 1 | 6 | 4.33 | 1.471 |
| Q15: Future Influenc_2: QUALITY | 102 | 1 | 6 | 4.86 | 1.320 |
| Q15: Future Influenc_3: TRUST | 102 | 1 | 6 | 4.78 | 1.354 |
| Q15: Future Influenc_4: EDUCATION | 102 | 1 | 6 | 4.13 | 1.398 |
| Gender | 102 | 1 | 2 | 1.43 | .498 |
| Age | 102 | 2 | 48 | 17.72 | 9.903 |
| Location | 102 | 1 | 2 | 1.51 | .502 |
| Q2AgeUser=1.0 | 102 | .00 | 1.00 | .2451 | .43227 |
| Q2AgeUser=2.0 | 102 | .00 | 1.00 | .7549 | .43227 |
| Valid N (listwise) | 102 | | | | |

**B-2. Pearson Correlations Table for the data collected from the
Emergency Room Utilization Survey**

| | | Q1: Freq | Q2: Age User | Q3: When? | Q4: How? | Q5: Influence_1: Didn't know where else to go | Q5: Influence_2: ER best of multiple options | Q5: Influence_3: PCP Closed | Q5: Influence_4: Unsure if Med ER |
|---|---------------------|----------|--------------|-----------|----------|---|--|-----------------------------|-----------------------------------|
| Q1: Freq | Pearson Correlation | 1 | -0.102 | 0.043 | -.256** | -0.011 | 0.022 | 0.003 | -0.094 |
| Q2: Age User | Pearson Correlation | -0.102 | 1 | -0.107 | 0.139 | 0.012 | -0.078 | 0.095 | 0.054 |
| Q3: When? | Pearson Correlation | 0.043 | -0.107 | 1 | -0.146 | -0.016 | -0.129 | 0.123 | -0.113 |
| Q4: How? | Pearson Correlation | -.256** | 0.139 | -0.146 | 1 | 0.087 | 0.109 | .236* | 0.154 |
| Q5: Influence_1: Didn't know where else to go | Pearson Correlation | -0.011 | 0.012 | -0.016 | 0.087 | 1 | .267** | .335** | .385** |
| Q5: Influence_2: ER best of multiple options | Pearson Correlation | 0.022 | -0.078 | -0.129 | 0.109 | .267** | 1 | .245* | .300** |
| Q5: Influence_3: PCP Closed | Pearson Correlation | 0.003 | 0.095 | 0.123 | .236* | .335** | .245* | 1 | 0.141 |
| Q5: Influence_4: Unsure if Med ER | Pearson Correlation | -0.094 | 0.054 | -0.113 | 0.154 | .385** | .300** | 0.141 | 1 |
| Q5: Influence_5: Told by PCP | Pearson Correlation | .262** | -0.124 | 0.036 | -0.037 | 0.111 | 0.170 | .338** | -0.025 |
| Q5: Influence_6: No Regular Doc | Pearson Correlation | 0.045 | 0.058 | 0.086 | 0.193 | .494** | .329** | .481** | .318** |
| Q5: Influence_7: No insurance | Pearson Correlation | 0.046 | 0.029 | -0.056 | 0.088 | .238* | 0.129 | 0.093 | .243* |
| Q5: Influence_8: ER Closest | Pearson Correlation | .205* | 0.050 | 0.092 | 0.087 | .241* | 0.105 | .273** | 0.147 |
| Q5: Influence_9: "One-Stop-Shop" | Pearson Correlation | 0.142 | 0.105 | -0.033 | 0.183 | .299** | .244* | .349** | 0.152 |
| Q5: Influence_10: Language | Pearson Correlation | .267** | -0.074 | -0.073 | 0.000 | .256** | 0.117 | .222* | 0.173 |
| Q5: Influence_11: Trust ER | Pearson Correlation | .241* | -0.066 | -0.131 | -0.027 | 0.125 | .241* | 0.170 | 0.090 |
| Q5: Influence_12: Knew Med ER | Pearson Correlation | 0.141 | -0.159 | 0.121 | -0.187 | 0.012 | 0.098 | -.233* | -0.030 |
| Q6: SD-SA 1_1: ER was best place | Pearson Correlation | -0.048 | -0.156 | -0.010 | -0.054 | 0.057 | .250* | 0.078 | 0.054 |
| Q6: SD-SA 1_2: Paid reasonable price | Pearson Correlation | 0.096 | -0.127 | 0.079 | 0.084 | 0.036 | 0.143 | .305** | 0.031 |
| Q6: SD-SA 1_3: ER was crowded (long wait) | Pearson Correlation | 0.018 | -0.112 | 0.015 | 0.071 | .278** | .261** | .316** | 0.046 |
| Q6: SD-SA 1_4: Only trusted ER Doc | Pearson Correlation | 0.157 | -0.058 | 0.039 | -.200* | 0.044 | 0.030 | 0.052 | -0.008 |
| Q7: Familiarity_1: UCC | Pearson Correlation | 0.188 | -0.119 | -0.130 | 0.115 | -0.080 | 0.166 | 0.144 | -0.026 |
| Q7: Familiarity_2: TMD | Pearson Correlation | .224* | -0.032 | -0.008 | 0.064 | 0.037 | .210* | 0.113 | -0.037 |
| Q7: Familiarity_3: PCP | Pearson Correlation | 0.108 | -0.193 | -0.070 | 0.046 | 0.021 | 0.172 | 0.166 | 0.113 |
| Q7: Familiarity_4: Ers | Pearson Correlation | 0.151 | -0.157 | 0.040 | -0.032 | 0.159 | 0.101 | 0.068 | 0.005 |
| Q8: SD-SA 2_1: Before ER, Believe Med ER | Pearson Correlation | 0.123 | 0.045 | 0.015 | -.207* | 0.021 | 0.056 | -0.035 | 0.081 |
| Q8: SD-SA 2_2: After DX, Med ER | Pearson Correlation | .230* | -0.121 | -0.120 | -0.188 | -0.051 | 0.110 | -0.059 | -0.017 |
| Q8: SD-SA 2_3: ER Best Place (BASELINE) | Pearson Correlation | 0.122 | -0.126 | 0.050 | -0.068 | -0.071 | 0.130 | 0.082 | 0.009 |
| Q9: Ed Impact_1: ER Best Place | Pearson Correlation | 0.073 | -0.081 | -0.172 | -0.175 | -0.041 | 0.091 | -0.129 | 0.062 |
| Q9: Ed Impact_2: Would UCC | Pearson Correlation | -0.036 | -0.012 | -0.048 | .325** | .322** | 0.076 | .247* | 0.180 |
| Q9: Ed Impact_3: Would TMD | Pearson Correlation | 0.124 | -0.002 | -0.004 | 0.061 | 0.120 | -0.032 | 0.135 | 0.157 |
| Q10: Cost Impact_1: ER Best Place | Pearson Correlation | .214* | -.253* | -0.182 | -0.149 | -0.135 | 0.043 | -0.099 | -0.169 |
| Q10: Cost Impact_2: Would UCC | Pearson Correlation | -0.074 | -0.019 | 0.018 | .259** | .295** | 0.138 | .238* | .234* |
| Q10: Cost Impact_3: Would TMD | Pearson Correlation | 0.189 | 0.029 | 0.055 | 0.061 | 0.062 | -0.059 | 0.178 | 0.044 |
| Q11: Quality Impact_1: ER Best Place | Pearson Correlation | .263** | -0.138 | -0.126 | -.258** | -0.122 | -0.017 | -0.071 | -0.154 |
| Q11: Quality Impact_2: Would UCC | Pearson Correlation | 0.006 | -0.142 | 0.022 | .268** | .333** | .206* | .266** | .286** |
| Q11: Quality Impact_3: Would TMD | Pearson Correlation | .235* | -0.016 | 0.068 | 0.051 | 0.129 | 0.001 | 0.183 | 0.181 |
| Q12: Trust_1: PCP | Pearson Correlation | -0.128 | -0.117 | -0.047 | 0.160 | -0.066 | 0.179 | 0.146 | 0.077 |
| Q12: Trust_2: TMD | Pearson Correlation | 0.039 | -0.154 | 0.000 | -0.009 | 0.072 | 0.111 | 0.138 | .253* |
| Q12: Trust_3: UCC | Pearson Correlation | -0.063 | -0.015 | -0.057 | .241* | 0.001 | .212* | 0.184 | 0.120 |
| Q12: Trust_4: ER | Pearson Correlation | -0.060 | -0.049 | -0.100 | .287** | -0.106 | 0.188 | 0.124 | -0.028 |
| Q13: Rank Future_1: ER | Pearson Correlation | -0.150 | -0.065 | 0.038 | 0.041 | -0.099 | -0.032 | -0.079 | 0.080 |
| Q13: Rank Future_2: UCC | Pearson Correlation | -0.022 | 0.159 | 0.018 | -0.177 | -0.090 | -.208* | -0.141 | -.250* |
| Q13: Rank Future_3: TMD | Pearson Correlation | 0.168 | -0.058 | -0.052 | 0.096 | 0.171 | 0.194 | 0.190 | 0.114 |
| Q15: Future Influnc_1: COST | Pearson Correlation | -0.019 | -0.073 | 0.005 | 0.131 | 0.121 | -0.038 | 0.177 | 0.187 |
| Q15: Future Influnc_2: QUALITY | Pearson Correlation | -0.063 | 0.027 | -0.075 | 0.189 | 0.120 | 0.154 | 0.146 | .212* |
| Q15: Future Influnc_3: TRUST | Pearson Correlation | -0.026 | 0.027 | -0.152 | 0.184 | 0.125 | 0.110 | 0.178 | .259** |
| Q15: Future Influnc_4: EDUCATION | Pearson Correlation | 0.021 | -0.046 | 0.079 | 0.003 | .328** | 0.010 | .286** | .277** |
| Gender | Pearson Correlation | -0.021 | -0.102 | -0.086 | 0.014 | 0.056 | 0.020 | -0.005 | 0.095 |
| Age | Pearson Correlation | 0.128 | -0.185 | 0.174 | -0.060 | -0.097 | 0.019 | -0.130 | -0.075 |
| Location | Pearson Correlation | 0.081 | -0.148 | 0.014 | 0.043 | -0.120 | 0.099 | 0.067 | 0.054 |

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

| Q5: Influence_5: Told by PCP | Q5: Influence_6: No Regular Doc | Q5: Influence_7: No insurance | Q5: Influence_8: ER Closest | Q5: Influence_9: "One-Stop-Shop" | Q5: Influence_10: Language | Q5: Influence_11: Trust ER Docs most | Q5: Influence_12: Knew Med ER | Q6: SD-SA 1_1: ER was best place | Q6: SD-SA 1_2: Paid reasonable price | Q6: SD-SA 1_3: ER was crowded (long wait) |
|---------------------------------|------------------------------------|----------------------------------|--------------------------------|-------------------------------------|-------------------------------|--|----------------------------------|--|--|---|
| .262 | 0.045 | 0.046 | .205 | 0.142 | .267 | .241 | 0.141 | -0.048 | 0.096 | 0.018 |
| -0.124 | 0.058 | 0.029 | 0.050 | 0.105 | -0.074 | -0.066 | -0.159 | -0.156 | -0.127 | -0.112 |
| 0.036 | 0.086 | -0.056 | 0.092 | -0.033 | -0.073 | -0.131 | 0.121 | -0.010 | 0.079 | 0.015 |
| -0.037 | 0.193 | 0.088 | 0.087 | 0.183 | 0.000 | -0.027 | -0.187 | -0.054 | 0.084 | 0.071 |
| 0.111 | .494 | .238 | .241 | .299 | .256 | 0.125 | 0.012 | 0.057 | 0.036 | .278 |
| 0.170 | .329 | 0.129 | 0.105 | .244 | 0.117 | .241 | 0.098 | .250 | 0.143 | .261 |
| .338 | .481 | 0.093 | .273 | .349 | .222 | 0.170 | -.233 | 0.078 | .305 | .316 |
| -0.025 | .318 | .243 | 0.147 | 0.152 | 0.173 | 0.090 | -0.030 | 0.054 | 0.031 | 0.046 |
| 1 | 0.017 | .320 | .226 | .412 | .535 | .399 | 0.092 | -0.073 | 0.166 | 0.185 |
| 0.017 | 1 | .291 | .332 | .263 | .216 | 0.182 | -0.084 | 0.099 | 0.168 | .225 |
| .320 | .291 | 1 | .246 | .283 | .445 | .305 | 0.024 | -0.034 | 0.047 | .221 |
| .226 | .332 | .246 | 1 | .371 | .340 | .432 | -0.027 | -0.152 | 0.116 | 0.069 |
| .412 | .263 | .283 | .371 | 1 | .467 | .368 | -0.045 | -0.035 | .206 | .220 |
| .535 | .216 | .445 | .340 | .467 | 1 | .594 | 0.158 | -0.090 | 0.117 | 0.150 |
| .399 | 0.182 | .305 | .432 | .368 | .594 | 1 | .249 | 0.012 | .211 | .201 |
| 0.092 | -0.084 | 0.024 | -0.027 | -0.045 | 0.158 | .249 | 1 | .269 | -0.057 | 0.025 |
| -0.073 | 0.099 | -0.034 | -0.152 | -0.035 | -0.090 | 0.012 | .269 | 1 | .380 | 0.106 |
| 0.166 | 0.168 | 0.047 | 0.116 | .206 | 0.117 | .211 | -0.057 | .380 | 1 | 0.137 |
| 0.185 | .225 | .221 | 0.069 | .220 | 0.150 | .201 | 0.025 | 0.106 | 0.137 | 1 |
| .205 | 0.031 | .250 | .205 | 0.187 | .429 | .617 | .340 | 0.126 | .234 | .199 |
| 0.105 | 0.107 | 0.006 | 0.061 | 0.131 | 0.103 | 0.099 | 0.030 | .285 | .306 | .208 |
| .375 | 0.085 | .256 | 0.022 | .296 | .336 | .206 | 0.138 | 0.063 | .197 | .388 |
| 0.032 | 0.102 | -0.054 | -0.104 | 0.012 | -0.122 | -0.041 | 0.046 | .434 | .305 | .214 |
| 0.067 | 0.064 | 0.035 | 0.085 | 0.137 | -0.110 | 0.040 | 0.153 | .232 | .257 | 0.159 |
| -0.086 | 0.044 | 0.126 | 0.106 | -0.089 | 0.036 | 0.165 | .563 | .338 | 0.075 | -0.025 |
| 0.053 | 0.038 | 0.080 | 0.056 | -0.072 | 0.130 | .266 | .536 | .308 | 0.145 | -0.103 |
| 0.042 | -0.068 | -0.142 | 0.030 | -0.019 | -0.046 | 0.192 | .288 | .423 | .323 | -0.051 |
| 0.010 | -0.114 | 0.018 | -0.127 | -0.113 | 0.018 | 0.117 | .489 | .377 | 0.107 | 0.047 |
| .204 | .363 | .290 | .261 | .291 | .375 | 0.068 | -.257 | -0.033 | 0.099 | .282 |
| .391 | 0.166 | .348 | .343 | .255 | .574 | .251 | -0.032 | -.238 | 0.015 | 0.170 |
| 0.107 | -.236 | -0.091 | -0.159 | -0.099 | 0.042 | 0.162 | .353 | .383 | .240 | 0.013 |
| 0.067 | .399 | .235 | .303 | .244 | .274 | 0.144 | -.246 | -0.031 | 0.103 | .329 |
| .336 | 0.143 | .240 | .259 | .259 | .438 | .226 | -0.071 | -.249 | 0.078 | .223 |
| 0.080 | -0.133 | -0.010 | -0.105 | -0.066 | 0.027 | .220 | .385 | .290 | 0.186 | 0.006 |
| 0.115 | .363 | .250 | .274 | .310 | .312 | 0.093 | -.228 | 0.033 | 0.078 | .346 |
| .394 | 0.155 | .289 | .352 | .317 | .539 | .267 | -0.020 | -.219 | -0.007 | .211 |
| -0.034 | 0.099 | 0.049 | 0.121 | -0.077 | -0.095 | 0.010 | -0.157 | .382 | .398 | 0.090 |
| .257 | 0.008 | 0.148 | .224 | .229 | .394 | .203 | 0.099 | 0.122 | 0.161 | .325 |
| -0.071 | 0.139 | 0.054 | 0.082 | -0.028 | -0.014 | -0.107 | -0.147 | .274 | .322 | 0.167 |
| -0.016 | 0.053 | -0.074 | 0.043 | 0.028 | -0.177 | 0.097 | -0.022 | .442 | .473 | -0.047 |
| -0.111 | -0.014 | -0.121 | 0.014 | -0.070 | -0.147 | -.227 | -0.028 | 0.076 | 0.135 | 0.078 |
| 0.119 | -0.193 | 0.008 | -0.033 | 0.036 | .255 | 0.141 | 0.144 | -0.158 | -0.099 | -.221 |
| 0.019 | 0.164 | 0.115 | 0.011 | 0.043 | -0.051 | 0.119 | -0.084 | 0.046 | -0.059 | 0.093 |
| 0.116 | 0.111 | 0.024 | .249 | 0.091 | 0.147 | 0.092 | -0.003 | 0.013 | 0.125 | 0.170 |
| 0.077 | .223 | -0.012 | 0.036 | 0.177 | 0.051 | 0.032 | 0.086 | .272 | .411 | 0.120 |
| 0.112 | .237 | 0.078 | 0.110 | .200 | 0.134 | 0.149 | 0.044 | .233 | .386 | 0.107 |
| .200 | .269 | 0.119 | .264 | .241 | .354 | .206 | -0.038 | 0.040 | .238 | .302 |
| 0.073 | -0.070 | 0.062 | -0.084 | -0.037 | 0.067 | -0.147 | -0.012 | -0.083 | -0.108 | .238 |
| -0.079 | -0.060 | -0.043 | -0.181 | 0.028 | -0.061 | -0.095 | 0.129 | 0.144 | 0.090 | 0.082 |
| 0.002 | 0.061 | -0.009 | -0.013 | -0.057 | -0.077 | -0.057 | -0.141 | 0.098 | 0.063 | -0.192 |

Correlations

| Q6: SD-SA 1_4: Only trusted ER Doc | Q7: Familiarity_1: UCC | Q7: Familiarity_2: TMD | Q7: Familiarity_3: PCP | Q7: Familiarity_4: Ers | Q8: SD-SA 2_1: Before ER, Believe Med ER | Q8: SD-SA 2_2: After DX, Med ER | Q8: SD-SA 2_3: ER Best Place (BASELINE) | Q9: Ed Impact_1: ER Best Place | Q9: Ed Impact_2: Would UCC | Q9: Ed Impact_3: Would TMD |
|--|---------------------------|---------------------------|---------------------------|---------------------------|--|------------------------------------|---|-----------------------------------|-------------------------------|-------------------------------|
| 0.157 | 0.188 | .224* | 0.108 | 0.151 | 0.123 | .230* | 0.122 | 0.073 | -0.036 | 0.124 |
| -0.058 | -0.119 | -0.032 | -0.193 | -0.157 | 0.045 | -0.121 | -0.126 | -0.081 | -0.012 | -0.002 |
| 0.039 | -0.130 | -0.008 | -0.070 | 0.040 | 0.015 | -0.120 | 0.050 | -0.172 | -0.048 | -0.004 |
| -.200* | 0.115 | 0.064 | 0.046 | -0.032 | -.207* | -0.188 | -0.068 | -0.175 | .325** | 0.061 |
| 0.044 | -0.080 | 0.037 | 0.021 | 0.159 | 0.021 | -0.051 | -0.071 | -0.041 | .322** | 0.120 |
| 0.030 | 0.166 | .210* | 0.172 | 0.101 | 0.056 | 0.110 | 0.130 | 0.091 | 0.076 | -0.032 |
| 0.052 | 0.144 | 0.113 | 0.166 | 0.068 | -0.035 | -0.059 | 0.082 | -0.129 | .247* | 0.135 |
| -0.008 | -0.026 | -0.037 | 0.113 | 0.005 | 0.081 | -0.017 | 0.009 | 0.062 | 0.180 | 0.157 |
| .205* | 0.105 | .375** | 0.032 | 0.067 | -0.086 | 0.053 | 0.042 | 0.010 | .204* | .391** |
| 0.031 | 0.107 | 0.085 | 0.102 | 0.064 | 0.044 | 0.038 | -0.068 | -0.114 | .363** | 0.166 |
| .250* | 0.006 | .256** | -0.054 | 0.035 | 0.126 | 0.080 | -0.142 | 0.018 | .290** | .348** |
| .205* | 0.061 | 0.022 | -0.104 | 0.085 | 0.106 | 0.056 | 0.030 | -0.127 | .261** | .343** |
| 0.187 | 0.131 | .296** | 0.012 | 0.137 | -0.089 | -0.072 | -0.019 | -0.113 | .291** | .255** |
| .429** | 0.103 | .336** | -0.122 | -0.110 | 0.036 | 0.130 | -0.046 | 0.018 | .375** | .574** |
| .617** | 0.099 | .206* | -0.041 | 0.040 | 0.165 | .266** | 0.192 | 0.117 | 0.068 | .251* |
| .340** | 0.030 | 0.138 | 0.046 | 0.153 | .563** | .536** | .288** | .489** | -.257** | -0.032 |
| 0.126 | .285** | 0.063 | .434** | .232* | .338** | .308** | .423** | .377** | -0.033 | -.238* |
| .234* | .306** | .197* | .305** | .257** | 0.075 | 0.145 | .323** | 0.107 | 0.099 | 0.015 |
| .199* | .208* | .388** | .214* | 0.159 | -0.025 | -0.103 | -0.051 | 0.047 | .282** | 0.170 |
| 1 | -0.005 | 0.089 | -0.050 | 0.094 | .238* | .291** | .312** | .210* | -0.033 | .250* |
| -0.005 | 1 | .515** | .527** | .291** | 0.123 | 0.150 | 0.057 | 0.170 | 0.054 | 0.107 |
| 0.089 | .515** | 1 | .249* | 0.145 | 0.119 | 0.155 | -0.047 | 0.104 | .218* | .392** |
| -0.050 | .527** | .249* | 1 | .499** | 0.098 | 0.055 | 0.178 | .275** | 0.027 | -0.087 |
| 0.094 | .291** | 0.145 | .499** | 1 | .196* | 0.111 | .294** | .239* | -0.131 | -0.043 |
| .238* | 0.123 | 0.119 | 0.098 | .196* | 1 | .708** | .467** | .542** | -.288** | 0.001 |
| .291** | 0.150 | 0.155 | 0.055 | 0.111 | .708** | 1 | .445** | .596** | -.379** | -0.116 |
| .312** | 0.057 | -0.047 | 0.178 | .294** | .467** | .445** | 1 | .465** | -.247* | -0.145 |
| .210* | 0.170 | 0.104 | .275** | .239* | .542** | .596** | .465** | 1 | -.428** | -.228* |
| -0.033 | 0.054 | .218* | 0.027 | -0.131 | -.288** | -.379** | -.247* | -.428** | 1 | .574** |
| .250* | 0.107 | .392** | -0.087 | -0.043 | 0.001 | -0.116 | -0.145 | -.228* | .574** | 1 |
| .202* | .219* | .205* | .251* | .250* | .347** | .594** | .426** | .671** | -.493** | -.243* |
| 0.063 | -0.003 | 0.134 | 0.033 | -0.126 | -.224* | -.368** | -0.172 | -.381** | .863** | .462** |
| .245* | 0.062 | .374** | -0.104 | -0.039 | -0.051 | -0.131 | -0.091 | -.291** | .520** | .869** |
| .222* | .247* | 0.181 | .205* | .248* | .458** | .607** | .434** | .712** | -.505** | -.204* |
| 0.000 | 0.070 | 0.161 | 0.118 | -0.035 | -.233* | -.388** | -0.126 | -.320** | .855** | .460** |
| .239* | 0.006 | .337** | -0.065 | -0.023 | -0.026 | -0.114 | -0.067 | -0.188 | .537** | .865** |
| -0.035 | .328** | 0.074 | .501** | 0.194 | 0.095 | -0.029 | 0.172 | 0.109 | 0.179 | 0.028 |
| .237* | .198* | .355** | 0.167 | -0.041 | 0.096 | 0.102 | 0.046 | 0.073 | .340** | .529** |
| -0.035 | .408** | .216* | .464** | 0.111 | 0.034 | 0.012 | 0.053 | 0.039 | .327** | 0.107 |
| 0.176 | .213* | -0.036 | .456** | .361** | 0.101 | 0.189 | .578** | .210* | 0.013 | -0.181 |
| -0.070 | 0.118 | 0.054 | 0.113 | -0.008 | 0.002 | -0.008 | 0.067 | 0.061 | -0.020 | -0.101 |
| .203* | -0.159 | 0.033 | -.206* | 0.026 | 0.041 | -0.021 | -0.058 | -0.120 | -0.004 | .272** |
| -0.088 | 0.005 | -0.081 | 0.047 | -0.012 | -0.034 | 0.024 | -0.022 | 0.033 | 0.024 | -0.110 |
| 0.048 | 0.045 | 0.046 | 0.193 | 0.030 | 0.100 | -0.013 | -0.027 | -0.036 | .318** | 0.165 |
| .226* | 0.195 | 0.097 | .283** | .263** | 0.128 | 0.083 | 0.193 | 0.152 | 0.133 | 0.055 |
| .228* | 0.120 | 0.064 | .219* | 0.133 | 0.134 | 0.132 | 0.170 | 0.092 | .197* | 0.134 |
| .267** | -0.035 | .262** | 0.046 | 0.047 | 0.042 | 0.002 | 0.051 | -0.116 | .441** | .436** |
| 0.024 | 0.060 | .273** | 0.015 | -0.052 | -0.051 | -0.087 | -0.031 | -0.001 | 0.188 | .214* |
| -0.108 | 0.169 | .306** | .248* | 0.075 | 0.030 | 0.074 | 0.027 | 0.037 | -0.090 | -0.067 |
| -.202* | 0.157 | -0.131 | 0.188 | 0.105 | -0.024 | -0.035 | 0.077 | 0.040 | -0.078 | -0.097 |

| Q10: Cost Impact_1: ER Best Place | Q10: Cost Impact_2: Would UCC | Q10: Cost Impact_3: Would TMD | Q11: Quality Impact_1: ER Best Place | Q11: Quality Impact_2: Would UCC | Q11: Quality Impact_3: Would TMD | Q12: Trust_1: PCP | Q12: Trust_2: TMD | Q12: Trust_3: UCC | Q12: Trust_4: ER | Q13: Rank Future_1: ER RANK |
|---|-------------------------------------|-------------------------------------|--|--|--|----------------------|----------------------|----------------------|------------------|-----------------------------------|
| .214 | -0.074 | 0.189 | .263 | 0.006 | .235 | -0.128 | 0.039 | -0.063 | -0.060 | -0.150 |
| -.253 | -0.019 | 0.029 | -0.138 | -0.142 | -0.016 | -0.117 | -0.154 | -0.015 | -0.049 | -0.065 |
| -0.182 | 0.018 | 0.055 | -0.126 | 0.022 | 0.068 | -0.047 | 0.000 | -0.057 | -0.100 | 0.038 |
| -0.149 | .259 | 0.061 | -.258 | .268 | 0.051 | 0.160 | -0.009 | .241 | .287 | 0.041 |
| -0.135 | .295 | 0.062 | -0.122 | .333 | 0.129 | -0.066 | 0.072 | 0.001 | -0.106 | -0.099 |
| 0.043 | 0.138 | -0.059 | -0.017 | .206 | 0.001 | 0.179 | 0.111 | .212 | 0.188 | -0.032 |
| -0.099 | .238 | 0.178 | -0.071 | .266 | 0.183 | 0.146 | 0.138 | 0.184 | 0.124 | -0.079 |
| -0.169 | .234 | 0.044 | -0.154 | .286 | 0.181 | 0.077 | .253 | 0.120 | -0.028 | 0.080 |
| 0.107 | 0.067 | .336 | 0.080 | 0.115 | .394 | -0.034 | .257 | -0.071 | -0.016 | -0.111 |
| -.236 | .399 | 0.143 | -0.133 | .363 | 0.155 | 0.099 | 0.008 | 0.139 | 0.053 | -0.014 |
| -0.091 | .235 | .240 | -0.010 | .250 | .289 | 0.049 | 0.148 | 0.054 | -0.074 | -0.121 |
| -0.159 | .303 | .259 | -0.105 | .274 | .352 | 0.121 | .224 | 0.082 | 0.043 | 0.014 |
| -0.099 | .244 | .259 | -0.066 | .310 | .317 | -0.077 | .229 | -0.028 | 0.028 | -0.070 |
| 0.042 | .274 | .438 | 0.027 | .312 | .539 | -0.095 | .394 | -0.014 | -0.177 | -0.147 |
| 0.162 | 0.144 | .226 | .220 | 0.093 | .267 | 0.010 | .203 | -0.107 | 0.097 | -.227 |
| .353 | -.246 | -0.071 | .385 | -.228 | -0.020 | -0.157 | 0.099 | -0.147 | -0.022 | -0.028 |
| .383 | -0.031 | -.249 | .290 | 0.033 | -.219 | .382 | 0.122 | .274 | .442 | 0.076 |
| .240 | 0.103 | 0.078 | 0.186 | 0.078 | -0.007 | .398 | 0.161 | .322 | .473 | 0.135 |
| 0.013 | .329 | .223 | 0.006 | .346 | .211 | 0.090 | .325 | 0.167 | -0.047 | 0.078 |
| .202 | 0.063 | .245 | .222 | 0.000 | .239 | -0.035 | .237 | -0.035 | 0.176 | -0.070 |
| .219 | -0.003 | 0.062 | .247 | 0.070 | 0.006 | .328 | .198 | .408 | .213 | 0.118 |
| .205 | 0.134 | .374 | 0.181 | 0.161 | .337 | 0.074 | .355 | .216 | -0.036 | 0.054 |
| .251 | 0.033 | -0.104 | .205 | 0.118 | -0.065 | .501 | 0.167 | .464 | .456 | 0.113 |
| .250 | -0.126 | -0.039 | .248 | -0.035 | -0.023 | 0.194 | -0.041 | 0.111 | .361 | -0.008 |
| .347 | -.224 | -0.051 | .458 | -.233 | -0.026 | 0.095 | 0.096 | 0.034 | 0.101 | 0.002 |
| .594 | -.368 | -0.131 | .607 | -.388 | -0.114 | -0.029 | 0.102 | 0.012 | 0.189 | -0.008 |
| .426 | -0.172 | -0.091 | .434 | -0.126 | -0.067 | 0.172 | 0.046 | 0.053 | .578 | 0.067 |
| .671 | -.381 | -.291 | .712 | -.320 | -0.188 | 0.109 | 0.073 | 0.039 | .210 | 0.061 |
| -.493 | .863 | .520 | -.505 | .855 | .537 | 0.179 | .340 | .327 | 0.013 | -0.020 |
| -.243 | .462 | .869 | -.204 | .460 | .865 | 0.028 | .529 | 0.107 | -0.181 | -0.101 |
| 1 | -.552 | -.213 | .792 | -.461 | -0.168 | 0.056 | 0.114 | -0.067 | .262 | -0.031 |
| -.552 | 1 | .479 | -.545 | .874 | .423 | .204 | .273 | .349 | 0.012 | 0.002 |
| -.213 | .479 | 1 | -.197 | .397 | .818 | -0.007 | .494 | 0.089 | -0.074 | -0.091 |
| .792 | -.545 | -.197 | 1 | -.521 | -.222 | 0.046 | 0.100 | -0.016 | .212 | -0.060 |
| -.461 | .874 | .397 | -.521 | 1 | .524 | 0.189 | .308 | .294 | 0.004 | -0.030 |
| -0.168 | .423 | .818 | -.222 | .524 | 1 | -0.067 | .542 | -0.026 | -0.130 | -0.168 |
| 0.056 | .204 | -0.007 | 0.046 | 0.189 | -0.067 | 1 | 0.166 | .659 | .517 | 0.190 |
| 0.114 | .273 | .494 | 0.100 | .308 | .542 | 0.166 | 1 | .282 | 0.081 | 0.106 |
| -0.067 | .349 | 0.089 | -0.016 | .294 | -0.026 | .659 | .282 | 1 | .393 | 0.178 |
| .262 | 0.012 | -0.074 | .212 | 0.004 | -0.130 | .517 | 0.081 | .393 | 1 | 0.042 |
| -0.031 | 0.002 | -0.091 | -0.060 | -0.030 | -0.168 | 0.190 | 0.106 | 0.178 | 0.042 | 1 |
| 0.024 | -0.114 | .216 | 0.040 | -0.096 | .252 | -.197 | 0.038 | -.312 | -0.157 | -.399 |
| 0.013 | 0.087 | -0.076 | 0.030 | 0.106 | -0.027 | -0.038 | -0.137 | 0.064 | 0.080 | -.699 |
| -0.131 | .371 | .215 | -0.125 | .368 | 0.187 | .343 | .253 | .359 | 0.140 | 0.136 |
| 0.106 | 0.104 | 0.086 | 0.064 | 0.157 | 0.060 | .276 | 0.075 | .300 | .337 | 0.123 |
| 0.102 | 0.137 | 0.131 | 0.034 | .217 | 0.181 | .274 | 0.130 | .259 | .323 | -0.059 |
| -0.130 | .453 | .422 | -0.153 | .457 | .447 | 0.113 | .466 | 0.183 | 0.053 | 0.027 |
| 0.022 | 0.053 | 0.156 | -0.049 | 0.175 | .270 | -0.101 | 0.159 | 0.033 | -0.081 | -0.047 |
| .206 | -0.113 | -0.011 | 0.141 | -0.089 | -0.083 | -0.021 | 0.091 | 0.060 | 0.078 | 0.056 |
| 0.039 | -0.033 | -0.095 | 0.107 | 0.023 | -0.110 | 0.144 | -0.181 | 0.160 | 0.133 | -0.138 |

| Q13: Rank Future_2: UCC RANK | Q13: Rank Future_3: TMD RANK | Q15: Future Influenc_1: COST | Q15: Future Influenc_2: QUALITY | Q15: Future Influenc_3: TRUST | Q15: Future Influenc_4: EDUCATION | Gender | Age | Location |
|------------------------------------|------------------------------------|---------------------------------|---------------------------------------|-------------------------------------|---|--------|--------|----------|
| -0.022 | 0.168 | -0.019 | -0.063 | -0.026 | 0.021 | -0.021 | 0.128 | 0.081 |
| 0.159 | -0.058 | -0.073 | 0.027 | 0.027 | -0.046 | -0.102 | -0.185 | -0.148 |
| 0.018 | -0.052 | 0.005 | -0.075 | -0.152 | 0.079 | -0.086 | 0.174 | 0.014 |
| -0.177 | 0.096 | 0.131 | 0.189 | 0.184 | 0.003 | 0.014 | -0.060 | 0.043 |
| -0.090 | 0.171 | 0.121 | 0.120 | 0.125 | .328** | 0.056 | -0.097 | -0.120 |
| -.208* | 0.194 | -0.038 | 0.154 | 0.110 | 0.010 | 0.020 | 0.019 | 0.099 |
| -0.141 | 0.190 | 0.177 | 0.146 | 0.178 | .286** | -0.005 | -0.130 | 0.067 |
| -.250* | 0.114 | 0.187 | .212* | .259** | .277** | 0.095 | -0.075 | 0.054 |
| 0.119 | 0.019 | 0.116 | 0.077 | 0.112 | .200* | 0.073 | -0.079 | 0.002 |
| -0.193 | 0.164 | 0.111 | .223* | .237* | .269** | -0.070 | -0.060 | 0.061 |
| 0.008 | 0.115 | 0.024 | -0.012 | 0.078 | 0.119 | 0.062 | -0.043 | -0.009 |
| -0.033 | 0.011 | .249* | 0.036 | 0.110 | .264** | -0.084 | -0.181 | -0.013 |
| 0.036 | 0.043 | 0.091 | 0.177 | .200* | .241* | -0.037 | 0.028 | -0.057 |
| .255** | -0.051 | 0.147 | 0.051 | 0.134 | .354** | 0.067 | -0.061 | -0.077 |
| 0.141 | 0.119 | 0.092 | 0.032 | 0.149 | .206* | -0.147 | -0.095 | -0.057 |
| 0.144 | -0.084 | -0.003 | 0.086 | 0.044 | -0.038 | -0.012 | 0.129 | -0.141 |
| -0.158 | 0.046 | 0.013 | .272** | .233* | 0.040 | -0.083 | 0.144 | 0.098 |
| -0.099 | -0.059 | 0.125 | .411** | .386** | .238* | -0.108 | 0.090 | 0.063 |
| -.221* | 0.093 | 0.170 | 0.120 | 0.107 | .302** | .238* | 0.082 | -0.192 |
| .203* | -0.088 | 0.048 | .226* | .228* | .267** | 0.024 | -0.108 | -.202* |
| -0.159 | 0.005 | 0.045 | 0.195 | 0.120 | -0.035 | 0.060 | 0.169 | 0.157 |
| 0.033 | -0.081 | 0.046 | 0.097 | 0.064 | .262** | .273** | .306** | -0.131 |
| -.206* | 0.047 | 0.193 | .283** | .219* | 0.046 | 0.015 | .248* | 0.188 |
| 0.026 | -0.012 | 0.030 | .263** | 0.133 | 0.047 | -0.052 | 0.075 | 0.105 |
| 0.041 | -0.034 | 0.100 | 0.128 | 0.134 | 0.042 | -0.051 | 0.030 | -0.024 |
| -0.021 | 0.024 | -0.013 | 0.083 | 0.132 | 0.002 | -0.087 | 0.074 | -0.035 |
| -0.058 | -0.022 | -0.027 | 0.193 | 0.170 | 0.051 | -0.031 | 0.027 | 0.077 |
| -0.120 | 0.033 | -0.036 | 0.152 | 0.092 | -0.116 | -0.001 | 0.037 | 0.040 |
| -0.004 | 0.024 | .318** | 0.133 | .197* | .441** | 0.188 | -0.090 | -0.078 |
| .272** | -0.110 | 0.165 | 0.055 | 0.134 | .436** | .214* | -0.067 | -0.097 |
| 0.024 | 0.013 | -0.131 | 0.106 | 0.102 | -0.130 | 0.022 | .206* | 0.039 |
| -0.114 | 0.087 | .371** | 0.104 | 0.137 | .453** | 0.053 | -0.113 | -0.033 |
| .216* | -0.076 | .215* | 0.086 | 0.131 | .422** | 0.156 | -0.011 | -0.095 |
| 0.040 | 0.030 | -0.125 | 0.064 | 0.034 | -0.153 | -0.049 | 0.141 | 0.107 |
| -0.096 | 0.106 | .368** | 0.157 | .217* | .457** | 0.175 | -0.089 | 0.023 |
| .252* | -0.027 | 0.187 | 0.060 | 0.181 | .447** | .270** | -0.083 | -0.110 |
| -.197* | -0.038 | .343** | .276** | .274** | 0.113 | -0.101 | -0.021 | 0.144 |
| 0.038 | -0.137 | .253* | 0.075 | 0.130 | .466** | 0.159 | 0.091 | -0.181 |
| -.312** | 0.064 | .359** | .300** | .259** | 0.183 | 0.033 | 0.060 | 0.160 |
| -0.157 | 0.080 | 0.140 | .337** | .323** | 0.053 | -0.081 | 0.078 | 0.133 |
| -.399** | -.699** | 0.136 | 0.123 | -0.059 | 0.027 | -0.047 | 0.056 | -0.138 |
| 1 | -.376** | -0.180 | -0.120 | -0.089 | 0.046 | 0.079 | -0.004 | -0.098 |
| -.376** | 1 | 0.003 | -0.030 | 0.129 | -0.063 | -0.014 | -0.053 | .216* |
| -0.180 | 0.003 | 1 | .314** | .260** | .374** | -0.023 | -0.094 | -0.018 |
| -0.120 | -0.030 | .314** | 1 | .825** | .342** | 0.151 | -0.073 | -0.132 |
| -0.089 | 0.129 | .260** | .825** | 1 | .428** | 0.169 | -0.060 | -0.128 |
| 0.046 | -0.063 | .374** | .342** | .428** | 1 | .233* | 0.000 | -.291** |
| 0.079 | -0.014 | -0.023 | 0.151 | 0.169 | .233* | 1 | 0.093 | -0.136 |
| -0.004 | -0.053 | -0.094 | -0.073 | -0.060 | 0.000 | 0.093 | 1 | 0.015 |
| -0.098 | .216* | -0.018 | -0.132 | -0.128 | -.291** | -0.136 | 0.015 | 1 |

**B-3. Relativities Table for the data collected from the
Emergency Room Utilization Survey**

Individual Question Reliability Statistics
Cronbach's Alpha Measures

Question 1

- Frequency: 1 dimensional
- No Cronbach's Alpha recorded

Question 2

- Age of User: 1 dimensional
- No Cronbach's Alpha recorded

Question 3

- When Arrived: 1 dimensional
- No Cronbach's Alpha recorded

Question 4

- How Arrived: 1 dimensional
- No Cronbach's Alpha recorded

Question 5

- Which of these items influenced your decision to go to the ER
- Strongly Disagree – Strongly Agree Likert Scale, 1-5

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .762 | .764 | 12 |

Question 6

- Explores cost, quality, and trust of ER use, prior to education
- Strongly Disagree – Strongly Agree Likert Scale, 1-6
- Due to low reliability, this question is not used in the analysis

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .560 | .561 | 4 |

Question 7

- Familiarity of UCC/ER/TMD/PCP
- Not Familiar – Familiar Likert Scale, 1-5

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .641 | .638 | 4 |

Question 8

- Pre ER and post DX, was your issue a medical emergency
- Strongly Disagree to Strongly Agree Likert Scale, 1-5

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .824 | .833 | 2 |

Question 9-11, ER (9a,10a,11a)

- Education Impacts for Cost and Quality for ER Only
- Strongly Disagree to Strongly Agree Likert Scales (1-6)

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .878 | .879 | 3 |

Question 9-11, UCC (9b,10b,11b)

- Education Impacts for Cost and Quality for UCC Only
- Strongly Disagree to Strongly Agree Likert Scales (1-6)

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .911 | .913 | 3 |

Question 9-11, TMD (9c,10c,11c)

- Education Impacts for Cost and Quality for TMD Only
- Strongly Disagree to Strongly Agree Likert Scales (1-6)

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .895 | .897 | 3 |

Question 12

- Trust rankings for PCPs, ERs, TMDs, and UCCs
- Strongly Disagree to Strongly Agree Likert Scale (1-5)

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .756 | .756 | 4 |

Question 13:

- Rank the following providers by your preference for future use
- Rank facilities (1, 2, or 3) in order of preferred
- No Cronbach's Alpha recorded

Question 15:

- Indicate influence of cost, quality, trust, and education on your decision to use an alternative facility
- Strongly Disagree to Strongly Agree Likert Scale (1-6)
- Due to low reliability, this question is not used in the analysis

Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|------------------|--|------------|
| .656 | .654 | 4 |

Question 16

- Gender: 1 dimensional
- No Cronbach's Alpha recorded

Question 17

- Age: 1 dimensional
- No Cronbach's Alpha recorded

Question 18

- Location: 1 dimensional
- No Cronbach's Alpha recorded