

Article

Consumption of Healthcare Services in the United States: The Impact of Health Insurance

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Abstract: Over the past few decades, healthcare expenditures in the United States have increased due to a variety of different factors. Depending on their insurance plans, Americans have varying levels of health insurance coverage and may need to make co-payments or pay fully for specific health services. According to multiple studies, health insurance does appear to increase the utilization of healthcare services, except emergency services. Demographic factors such as age, citizenship, and race/ethnicity, as well as the type of health service demanded, all appear to influence the consumption of healthcare in the United States. However, many existing studies conducted in this area are not experimental or randomized, which may result in a lack of validity of the estimated relationship between insurance and healthcare utilization due to confounding variables. A new experimental study, similar to the RAND HIE study, is needed to provide insight into the current relationships between insurance and healthcare utilization, taking into consideration changes in legislation.

Keywords: health insurance; RAND HIE; cost sharing; healthcare; out-of-pocket costs; hospitalizations; emergency medicine



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1. Introduction

How does health insurance impact the consumption of healthcare in the United States? Contrary to popular perceptions, the relationship between health insurance and the utilization of healthcare services is not simple to explain. An increase or expansion of health insurance coverage in the population does not necessarily mean that utilization of healthcare services also increases in all situations. Healthcare services are usually categorized into hospital, emergency, outpatient, specialty, and preventative care (Freeman et al. 2008). There is evidence that the relationship between utilization of care and insurance varies between different categories of healthcare services; for example, the use of mental health services may differ from emergency department use, even at similar levels of insurance coverage (Brewster et al. 2001; Ku and Matani 2001). Moreover, demographic factors such as age, citizenship status, and race/ethnicity impact the consumption of healthcare services.

Health insurance has become a hot topic of debate in the United States for many reasons including rising healthcare costs (Kumar et al. 2011), varied access to care (Lillie-Blanton and Hoffman 2005), comparisons made between universal healthcare models in Europe and the system implemented in the US (McKee et al. 2013), as well as changes in legislation passed by policymakers over the years to expand insurance (Hacker 2019). Healthcare expenditures in the US are among the highest in the world, a possible driver of these increased expenditures is the presence of insurances in healthcare markets; therefore, the relationship between insurance and utilization of services is of interest (Shrank et al. 2019). The purpose of this paper is to study the aforementioned relationship as well as additional factors that influence a patient's decision when it comes to the consumption of healthcare in the United States. This fits in well both with the general literature (Carraher et al. 2004, 2005), Chapter 5 of Evaluating Challenges and Opportunities for Healthcare Reform (Haas et al. 2020), and (Carraher et al. 2008; Vojinović et al. 2022; Yu et al. 2022;

Kamath et al. 2023; Sullivan 1999; Sullivan et al. 2009), as well as the literature of the journal (Courbage and Nicolas 2021; Nobanee et al. 2021; Stype 2022; Sibindi 2022; Al Rahahleh 2022; Hamin et al. 2022; Kyriakopoulos et al. 2022; Leightner 2022). The Journal of Risk and Financial Management's scope is based in finance and economics. Previous JRFM articles address healthcare economics and related topics, and this paper fits in to the JRFM because it discusses healthcare expenditures, costs, demand for and utilization of health-related services (Guo and Huang 2023; Pacifico 2023; Agarwal et al. 2023; Sato et al. 2022; Broughel and Baxter 2022; Haces-Fernandez 2022).

Why are rising healthcare costs relevant? A 2005 study found that medical debt has grown due to high out-of-pocket costs, accounting for nearly half of personal bankruptcies (Doty et al. 2005; Himmelstein et al. 2005). While the impact of medical debt is striking, it illustrates the role of socioeconomic status in influencing consumer behavior in healthcare markets. Additionally, there is evidence that the income and wealth of Americans influences the type of insurance they obtain. For instance, whether an individual has private insurance appears to be highly correlated with economic resources, such as having a higher income and wealth (Hurd and McGarry 1997).

A key finding of the RAND HIE is that patients utilize less healthcare services when out-of-pocket costs are higher (Keeler and Rolph 1988). Economic incentives, in terms of insurance, are important in the utilization of health services. However, the RAND HIE excluded elderly patients and the experimental design was constrained by its given budget (Aron-Dine et al. 2013). Freeman et al.'s 2008 systemic review found a relationship between having more comprehensive insurance coverage and increased use of physician services; yet several studies within the review were unable to establish a consistent relationship between cost-sharing and hospital or emergency service utilization (Freeman et al. 2008; Johnson and Crystal 2000; Sudano and Baker 2003; Trude 2003). Ackley (2022) shows that the utilization of care among patients undergoing gastrointestinal endoscopic procedures responded to tiered out-of-pocket prices but not to traditional deductibles or coinsurance rates (Ackley 2022). The question as to how health insurance impacts consumption of services in light of specific demographic factors is not addressed by the above studies. This paper focuses on a demand-side analysis, specifically on healthcare services utilization by looking into not only how insurance coverage has an effect but also how demographic factors play a role.

2. RAND Health Insurance Experiment

Do costs influence the utilization of healthcare services, and if so, what is its impact? Many argue that since healthcare is unique and unlike other goods individuals consume, financial incentives do not influence healthcare consumption (Folland et al. 2016). However, data from the 1970s RAND Health Insurance Experiment demonstrates that economic incentives, in terms of insurance, are important in the utilization of health services—higher prices will decrease the demand for care (Keeler and Rolph 1988; Folland et al. 2016). While these findings are logical, there is evidence that demand and access to care are influenced by a variety of other factors.

The RAND Health Insurance Experiment (RAND HIE) was a randomized experiment that assigned 5809 people from about 2000 households to different insurance groups with varying cost-sharing schedules between the years of 1974 and 1981 (Freeman et al. 2008; Aron-Dine et al. 2013; Newhouse 1996; Keeler 1992; Brook et al. 1983). Furthermore, the sample included individuals from six different locations in the United States, and the adult participants were under the age of 62 (Aron-Dine et al. 2013). The families participating in the experiment were assigned to one of six possible coinsurance rates, and they were randomly assigned to varying out-of-pocket maximums within the six plans (Aron-Dine et al. 2013). The assignment of participants to the insurance plans was not a simple random assignment, instead, a stratified random assignment was used along with a finite selection model to maximize sample variation while satisfying the budget constraints of the experiment (Aron-Dine et al. 2013).

The purpose of the RAND HIE was to document relationships between insurance and the use of health services for the non-elderly population as well as the effect on patient outcomes (Newhouse and The Insurance Experiment Group 1993). The RAND HIE results showed that if the patient had greater liability for health care services, meaning the patient needed to pay more to consume those health services, then their health expenditures decreased significantly (Hurd and McGarry 1997; RAND Center for the Study of Aging/National Institute on Aging and the Social Security Administration 2004). In other words, patients utilize less services when out-of-pocket costs are higher. The results of the experiment were that if cost-sharing was increased, then the use of physician, hospital, and prescription services was also reduced (Freeman et al. 2008). The other major findings of the experiment include that the cost-sharing did not significantly impact the quality of care that participants received; additionally, while cost-sharing did not adversely influence the health outcomes of participants, the study documented that free care improved hypertension, dental and vision health, and specific symptoms affecting the sickest and poorest patients of the sample (Brook et al. 2006). Even though the improvement of health outcomes was limited to the three main categories mentioned, the results are relevant. For instance, the indirect costs due to dental disease in 2010 was estimated to have a global impact of \$442 billion—dental disease alone had such a profound financial impact (Listl et al. 2015; L. Narita 2023). Therefore, any improvement in health can possibly have a financial benefit down the line.

The RAND HIE's experimental design helps control for potential confounding variables by assigning individuals to specific insurance groups and provides an effective analysis of how insurance coverage impacts the utilization of services in that other studies with a non-experimental design are not able to control for or reduce the influence of adverse selection (Rothschild and Stiglitz 1976; Wilson 1977). In healthcare, adverse selection is the process where those who are insured will decide whether or not to purchase insurance using private knowledge of their personal health risks (Siegelman 2004). Adverse selection and risk in the broader insurance market can also be tied to the concept of moral hazard, which is heavily related to health insurance and the demand for health services. There exists a tradeoff between the societal benefits of health insurance lowering risk for consumers and the financial losses caused by the increased demand for healthcare services once insured (Manning and Marquis 1996; Arrow 1976; Zeckhauser 1970). Whereas the tradeoff concerning moral hazard implies that as the out-of-pocket costs patients pay decrease, the demand for medical care increases (Folland et al. 2016; Manning and Marquis 1996). Certain medical services are very expensive and thus, consumers would normally not purchase additional care if they had to carry the full burden of the cost (Manning and Marquis 1996). Participants of the RAND HIE could not choose their policies, so the study controlled for moral hazard. Therefore, the RAND HIE results of reduction in expenditures might be a result of adverse selection—healthy people picking policies with higher co-payments.

RAND HIE continues to have a profound impact on public policy; in fact, according to the Congressional Budget Office in 2006, its findings continue to be relevant, especially with regard to demand elasticities (Congressional Budget Office 2006; Newhouse 2023). The study also described a simulation model to estimate how different levels of copayments impact demand, requiring the translation of copayment rates to coinsurance rates (Newhouse 2023). This is relevant because in the 1970s and 1980s, the most prominent method of cost sharing was coinsurance; while today, the most commonly used cost sharing mode is a copayment. A co-payment, also referred to as cost-sharing and co-insurance, charges a patient directly at the time that the service is rendered, sometimes as a way to control rising healthcare costs (Copay et al. 2007). The results of RAND HIE introduce the idea that cost sharing paired with managed care, might help contain costs without lowering quality of care or health outcomes (Brook et al. 2006). One of the takeaways of the study that could potentially be implemented at the public policy level is that cost sharing should be very low or nonexistent for poor individuals suffering from chronic diseases (Brook et al. 2006).

The RAND HIE research design has many strengths. The study's rejection of its null hypothesis, that health spending is not responsive to out-of-pocket price, is robust (Aron-Dine et al. 2013). Additionally, the study has a multi-armed design, meaning that the experiment randomly assigns members of the sample from a common pool of candidates to all treatment groups as well as the control group (Orr and Gubits 2023). The multi-armed design allows for an efficient method of testing more than one policy approach to a social problem at the same time, to measure the effects of each approach separately and compare them (Orr and Gubits 2023). Also, a multi-armed design can be used to estimate the effects of separate or combined components of a discrete program (Orr and Gubits 2023). However, the RAND HIE study also has weaknesses within its research design. The study may suffer from substantial bias in the original estimates on account of systemically differential participation and reporting across the experiment (Aron-Dine et al. 2013). Another weakness is that spreading the sample over multiple treatment groups results in a loss of power associated with the experiment (Orr and Gubits 2023). The economist, Newhouse who designed the experiment, wrote a retrospective article about the RAND HIE and mentioned several changes he would have implemented if he could redo the experiment (Newhouse 2023). A few of these changes would be (1) oversampling of the sick poor group of individuals, (2) studying value-based insurance designs due to the changes that healthcare has gone through over the past decades, and (3) including Medicare beneficiaries in the study (Newhouse 2023; Chernew et al. 2008; Lee et al. 2013). Additionally, Newhouse would have liked to add a second or third HMO to the HMO arm of the experiment; however, due to budgeting restraints, they were unable to accommodate this in the experiment (Newhouse 2023). These changes to the design, suggested by Newhouse himself, indicate that despite much of the literature citing the study when drawing conclusions on insurance and healthcare utilization, RAND HIE was conducted in the 1970s and its results may be outdated.

If trying to estimate whether or not the RAND HIE results are outdated, the elasticity of medical spending should be considered, estimated by RAND regarding its out-of-pocket price, which is -0.2 (Aron-Dine et al. 2013). Then it would be important to look at observational studies and their estimate for the income elasticity of demand for healthcare services, which typically range from 0.0 to 0.2; however, there are some studies that estimate income elasticity using different data (time-series or aggregated state or country-level), finding a range of income elasticity of 0.2 to 1.5 (Liu and Chollet 2006). For the purpose of this sample calculation, let's assume the income elasticity to be 0.2; however different values within these ranges could also be used (e.g., 0.4, 0.6, 0.8 . . .). From 1980 to 2018, the net national healthcare spending per capita in the United States increased 250 percent (Nunn et al. 2020). Also, the median income of the overall population from 1980 to 2020 increased an estimated 40 percent (Dohrman and Fallick 2020). Therefore, the predicted the change of the quantity component of healthcare expenditures would be approximately -30 percent with per capita healthcare expenditures of 220 percent. In this example, the observed deviation from the increase in healthcare expenditures, based on the income elasticity of 0.2, would indicate that the RAND HIE is outdated. However, changing the income elasticity would subsequently result in a different percentage deviation.

RAND HIE was not the only study that approached the relationship of cost-sharing and utilization of healthcare services. A paper published in 2022 by Ackley studied a tiered plan design to cost sharing using data from New Hampshire and specifically focusing on gastrointestinal endoscopic procedures (Ackley 2022). Ackley found that tiered plans did contribute to the reduction of mean spending by 4.5% on common gastrointestinal endoscopic procedures (Ackley 2022). Another major finding was that there was evidence to suggest that patients responded to tiered out-of-pocket prices but did not respond to traditional deductibles or coinsurance rate (Ackley 2022). Additionally, a systemic review conducted by Freeman et al. in 2008 assesses the relationship between insurance and healthcare service utilization as well as health outcomes; this review is discussed in a later section. Future research studies should take into consideration the design changes

Newhouse proposed in his 2023 retrospective article and using these changes, re-construct the RAND-HIE experiment. However, it is relatively important to note that one of the reasons as to why the RAND experiment was not replicated is due to the fact that it cost approximately \$295 million in 2011 dollars (Aron-Dine et al. 2013; Greenberg and Shroder 2004).

3. The Influence of Out-of-Pocket Cost on the Utilization of Services

Healthcare expenditures seem to influence how often a patient will visit a physician, especially if the patient's insurance plan covers less out-of-pocket costs than other plans. Increased physician visits are correlated with decreased hospitalizations (Berger and Messer 2002; Levy and Meltzer 2008). A possible explanation for this trend is the increased use of preventative treatments and management of chronic conditions (Kumar et al. 2011; Whelan 2002). There has been a significant increase in patient demand for high quality in the healthcare services they receive, including preventative care, which will be described in the following section on the overuse of services (Kumar et al. 2011). The increased demand for quality services increases healthcare expenditures and places a heavier burden on emergency departments (EDs). Healthcare expenditures increase due to demand for high quality services since patients demand more advanced diagnostics, the newest, cutting-edge technology, newer and more costly vaccines, as well as more costly drugs (Kumar et al. 2011).

To explain the rising healthcare expenditures, we must first address major US cost drivers. These cost drivers are distributed in six different categories: provider costs, hospital costs, technology costs, insurance costs, consumer behavior, and flawed management pertaining to issues like medical errors and recording errors (Kumar et al. 2011; Kaiser Family Foundation 2009). For example, excessive use of new imaging systems, in part caused by consumer behavior in the United States to obtain the best, highest quality technology possible, may increase healthcare costs as clinics rush to install this newest imaging system to remain competitive in the healthcare industry. The cost of medical technology has increased, and the growth of defensive and preventative medicine has driven up costs of prescription drugs and diagnostic costs (Kumar et al. 2011). All these factors may drive up insurance premium costs and even out-of-pocket costs for consumers.

4. Overuse of Services and Rise of Healthcare Costs

Rising healthcare costs in the United States are a growing concern, and overuse of services are among the factors contributing to these costs. In 2021, healthcare spending increased by 2.7% in the US, reaching \$4.3 trillion (American Medical Association 2023). Rising medical costs can also be attributed to increasing patient demand for the most current technology, costly drugs, new vaccines, and advanced diagnostics (Kumar et al. 2011). There is evidence that since the early 2000s, preventative care and increased quality of services have positively impacted health outcomes (Kumar et al. 2011; Kilbourne et al. 2006). However, they have also led to patient overuse of services, which has also contributed to lost productivity and rising healthcare costs (Kumar et al. 2011). This conclusion ties back to the cost drivers mentioned earlier in terms of consumer behavior. Overuse of healthcare services can partly be attributed to the shift from acute to chronic care, especially in using diagnostic tests and preventative treatments and drugs (Kumar et al. 2011; Whelan 2002).

A cross-sectional study, using Medicare fee-for service data and completed at 3351 hospitals in the United States, found that for-profit and teaching hospitals in the South had the highest rates of overuse (Chalmers et al. 2021). The study measured overuse by using a composite overuse score from 0 to 1, where 0 meant no overuse of services and 1 meant a relatively high overuse of services (Chalmers et al. 2021). The overuse rates were calculated using twelve algorithms and then aggregated to the composite score, and a multivariable regression was used to compare hospital characteristics (Chalmers et al. 2021). This study shows that overuse of services, with regard to Medicare data, is not uniform across the US. While overuse of services is cited as being one of the contributors

for increase in medical expenditures (Kumar et al. 2011); the studies that assessed overuse of services did not quantify how overuse of services has changed over from the 1980s to the early 2020s (Kumar et al. 2011; Chalmers et al. 2021).

Increased demand for outpatient services also has some unintended consequences, causing shifts in utilization of other categories of healthcare. In an analysis of patients in the United States, the Emergency Department (ED) attributed increased demand for EDs to increases in the number of uninsured and constrained capacity for outpatient care (Brewster et al. 2001). An increase in uninsured people would increase ED demand partly because uninsured patients cannot afford or access outpatient care. Then this high level of demand for outpatient services has strained outpatient clinics, making it more difficult to schedule appointments with these physicians, which further increases the strain on EDs—as will be mentioned in a later section. Patients are essentially using Emergency Departments as an affordable, easily accessible replacement for outpatient care.

5. Elderly Population and Consumption of Services

In the introduction section, this paper asserted that factors such as age could impact the consumption of healthcare services. How does age influence an individual's utilization of healthcare services? Based on data from the Asset and Health Dynamics Survey, for the elderly population ages 70 or over, the more heavily insured someone is, the more health services they consume (Hurd and McGarry 1997). These results are, in part, the effect of Medicare insurance and its incentives. Medicare covers more than 95% of elderly individuals ages 65 and up, and in combination with private insurance, Medicare deductibles and co-payments are significantly reduced or even eliminated (Hurd and McGarry 1997). This increases healthcare expenditures due to the dynamic moral hazard effect, which causes costly medical technology to be adopted without a reduction of co-payment (Chandar and Skinner 2012). A deductible is the annual monetary amount the patient needs to pay before the insurance steps in to cover any additional costs (Dickman et al. 2017).

Since Medicare covers almost all elderly individuals and significantly reduces the amount of money the patient would have to pay out of pocket, it seems elderly patients are more likely to utilize healthcare services. However, a potential confounding variable is that elderly patients may need more healthcare because of medical issues that arise with age. For instance, Alzheimer's is a medical condition only the elderly face and among individuals ages 65 and up is the most prevalent form of dementia (López and DeKosky 2008). Frailty correlates to the progression of many age-related diseases and put elderly individuals at risk for physical and cognitive decline (Fulop et al. 2010; K. Narita 2023). With age, hearing loss and loss of eyesight also occur, which may also be a reason why these individuals access more healthcare services (Crews and Campbell 2004). A significant concern related to these medical conditions that affect the elderly is that by 2030, more than 20% of US residents are expected to be above the age of 65 while considering an increase in the US population (K. Narita 2023; Ortman et al. 2014).

Near-Elderly Women Subgroup

If individuals aged 70 and up have increased utilization of healthcare, what about the near-elderly? Near-elderly adults in healthcare are considered ages 55 to 64 (Jensen 1992). In a study using publicly released Health and Retirement Survey (HRS) data from 2002, it was found that near-elderly women with public insurance coverage—if their insurance covered a specific service, then there was a significant increase in the likelihood that the service would be used compared to the group of women lacking coverage for services—running from dental and physician visits to hospital stays and use of prescription medicine (Xu et al. 2006). In essence, if a near-elderly woman's public insurance covers a service, she will be more likely to use that service than a woman whose public insurance does not cover the service. Also worth noting, between the ages of 55 and 64, there is an increased risk of health issues such as diabetes and heart disease, which places the near elderly at a higher

risk of medical expenditures compared to younger groups (Holahan 2004; McWilliams et al. 2004; National Center for Health Statistics (US) 2002).

6. Mental Health Services

An example of how the type of healthcare service might influence its utilization is with regard to mental health services. A study focused on the mental health care needs of children in the United States found that publicly insured children used services more often than uninsured children and even privately insured children (Kataoka et al. 2002). Another mental health study mentioned later in the paper found that immigrants' access to healthcare care and insurance differed in service use between Hispanic and Caucasian children, more specifically that Hispanic children received a lower level of care compared to Caucasian children (Ku and Matani 2001). The number of children not receiving necessary care is extremely high, despite any discrepancy noticed between both groups. This finding might be attributed to the stigma toward mental health and the fact that a large number of American families in 2001 did not utilize mental health services because of that stigma. However, mental health stigma was not something this study looked at, and therefore, it is not possible to draw any certain conclusion about this based on the study's results. A potential area for future research would be to measure the impact of mental health stigma in relation to racial disparities in mental health.

Mental health stigma continues to impact individuals and whether or not they access this type of healthcare. A more recent UK study discussing mental health stigma across different ages and genders found that the entire sample, both young people and adults aged 40 and above, had more negative attitudes towards mental health disorders like schizophrenia relative to other mental health disorders such as generalized anxiety disorder (Bradbury 2020). Another US study by Chatmon in 2020 looked at mental health stigma based on gender norms, finding that men were less likely to pursue mental health services than women (Chatmon 2020). Mental health stigma persisting into the 2020s is still important because this negatively influence the utilization of mental health services, in a way that other healthcare services are not impacted.

7. Freeman et al.'s Review of US Studies (2008)

A review of the existing literature on health insurance research indicates a variety of results and conclusions, showing that health insurance impacts the use of physician and preventative services in the sense that health insurance increases the consumption of these services (Freeman et al. 2008). This 2008 study included a literature review and meta-analysis of 9701 studies, further narrowing it down to 14 studies that fulfilled specific screening criteria. Out of these 14 studies, five asserted findings that there was an 8–40% increase in utilization of outpatient health services in the presence of health insurance (Freeman et al. 2008; Johnson and Crystal 2000; Sudano and Baker 2003; Meer and Rosen 2004; Carlson et al. 2006; Kwack et al. 2004; Steiner et al. 2002; Busch and Duchovny 2005).

Of the fourteen studies, three honed in on the relationship between insurance and the consumption of preventative services (Freeman et al. 2008; Meer and Rosen 2004; Busch and Duchovny 2005). Preventative services include vaccinations, HIV testing, cholesterol measurement, etc. (Wolters Kluwer Health 2010). A study by Sudano and Baker compared individuals who lost insurance with those who were continuously insured and reported that individuals who lost insurance had a smaller likelihood to utilize preventative measures, with the flu vaccine being an exception to this finding (Sudano and Baker 2003). Busch and Duchovny's study found that the state expansion of Medicaid in twenty states resulted in an increase in breast exams and pap smears by 29% (Busch and Duchovny 2005).

There is no consensus on the relationship between health insurance and the broad utilization of healthcare due to differing research results. A study that looked at the effect of managed care on ED use reported no significant difference in the use of ED services between individuals with insurance and those without (Freeman et al. 2008; Kwack et al. 2004). However, other studies, like the one conducted by Johnson and Crystal, looked at

uninsured status and out-of-pocket costs and found that having health insurance increased the use of hospital services by around 7% (Johnson and Crystal 2000). Another study by Meer and Rosen found similar results, seeing that health insurance was correlated with increased utilization of most healthcare services (Meer and Rosen 2004).

This systemic review of the existing literature shows many results consistent with RAND HIE, though the review also shows some results contradicting it. In support of RAND HIE's conclusions, there are multiple studies that have found a relationship between insurance and the use of physician services (Johnson and Crystal 2000; Sudano and Baker 2003; Meer and Rosen 2004; Busch and Duchovny 2005). However, in contrast to RAND HIE's conclusions, there are several studies that have not found a consistent relationship between insurance and hospital or emergency service utilization (Freeman et al. 2008; Johnson and Crystal 2000).

8. Demographic Factors Influencing Healthcare Utilization

8.1. The Impact of Citizenship

In the United States, citizenship status influences the utilization of healthcare services. Noncitizen families tend to have a lower level of insurance coverage. A study of noncitizen families in the United States found that the likelihood of noncitizens using health maintenance organizations and private doctors was lower than for citizens (Ku and Matani 2001). Health Maintenance Organizations, also known as HMOs, are a form of managed care structured to insure members for healthcare by coordinating medical care financing with the elements of care provision (Martello 2008). Controlling for other factors that may influence the consumption of healthcare, including social and economic factors, the study still found that noncitizen adults or children had significantly less access to physician visits and had fewer emergency visits, relative to citizens (Ku and Matani 2001). Decreased access to care for noncitizens and their children lowered their level of healthcare consumption in the United States (Ku and Matani 2001).

8.2. The Impact of Race/Ethnicity

Race and ethnicity appear to influence consumption of services due to health disparities. Health disparities can be explained as significant health outcomes and healthcare differences between vulnerable and not as vulnerable groups that cannot be explained by selection bias (Kilbourne et al. 2006). Vulnerable populations include minorities or other groups that have been systematically discriminated against over the course of history.

A study conducted by Kataoka et al. in 2002 remains relevant to the topic of health disparities as researchers found that a higher percentage of Hispanic children (88%) did not receive care compared to Caucasian children (76%) (Kataoka et al. 2002). While there are multiple factors involved in racial health disparities, the care received by Hispanic children may be due to lower insurance coverage or less access to care for the Hispanic population relative to other racial groups. Uninsured African American and Hispanic populations in the United States often have worse access to care than uninsured Caucasian Americans (Lillie-Blanton and Hoffman 2005). Moreover, lower rates of health insurance exist amongst racial and ethnic minorities compared with Caucasian Americans in part because minorities are not as likely to have employer-sponsored health coverage (Lillie-Blanton and Hoffman 2005; Hoffman and Wang 2004).

Individuals with a regular source of care are more likely to obtain certain healthcare services, including preventative, primary, and specialty care; however, differences regarding sources of care between Hispanics, Caucasians, and African Americans can be reduced if all groups are insured at comparable levels (Lillie-Blanton and Hoffman 2005; Weinick and Beauregard 1997; Sox et al. 1998). These findings are relevant in terms of future policy implications and government spending. Three suggested ways of ameliorating this issue are by expanding outreach to ensure children are enrolled in Medicaid and SCHIP (State Children's Health Insurance Program), expanding health coverage to parents of these

children, and covering adults who are low-income and without children (Lillie-Blanton and Hoffman 2005).

While there are measurable disparities affecting minority groups and their access to specific healthcare services, these disparities were not always observed for emergency services. A 2006 study looks at the level of use of the emergency department (ED) and its relationship with uninsurance and minority groups who may have reduced access to healthcare (Cunningham 2006). The analysis of EDs found variation in use depending on the specific case study city, and contrary to popular belief, the communities having higher levels of emergency service usage did not always have more uninsured, racial minorities, or immigrant residents, for example, Cleveland and Boston (Cunningham 2006). These examples provide evidence of the variety of factors that influence the utilization of healthcare services beyond insurance or racial/ethnic minorities.

8.3. Other Confounding Variables

Beyond citizenship and race/ethnicity, other factors act to influence consumption of health services, making it difficult to distinguish between their effects and the effect of insurance on service utilization. The individuals who utilize healthcare the highest level, including the ED, tend to be Medicare and Medicaid beneficiaries (Brewster et al. 2001; Cunningham 2006; McCaig and Nawar 2005). However, Medicare beneficiaries may have higher utilization of healthcare services and ED services because they are older and therefore are more vulnerable to medical emergencies. Additionally, increased ED use can be attributed to factors outside of age and socioeconomic status, such as constraints in the health system capacity. For instance, physician practices might struggle to meet the rising demand for medical services and are therefore unable to provide all patients with appointments in a prompt and timely fashion (Trude 2003; Cunningham 2006; Strunk and Cunningham 2002).

Another prospective confounding variable relates to how the influence of insurance on the demand for and utilization of healthcare services may vary based on the healthcare service. For example, a 2003 study found that uninsured individuals had about the same number of ED visits as privately insured people—a finding that may run contrary to popular belief (Cunningham 2006; American Hospital Association 2002; Health Resources and Services Administration 2002). Similarly, disparities in ED utilization are seen between racial and ethnic groups. African Americans had higher utilization of the ED than Caucasians and Hispanics in 2003 (Cunningham 2006).

9. Issues with Previously Mentioned Studies

While the studies mentioned throughout this paper have significant results, a few issues pertaining to timeliness and accuracy need to be addressed. The RAND HIE study took place in the 1970s, and massive societal change has occurred since. While existing literature considers RAND HIE to still be a guiding principle shaping contemporary thought on US health insurance, its findings are outdated; after all, there have been significant changes to the United States healthcare system since then (Freeman et al. 2008). Even in the 1980s, states expanded Medicaid to include children with disabilities, Diagnostic Related Groups (DRGs) were introduced, Emergency Medical Treatment and Active Labor Act (EMTALA) was passed, and the Consolidated Omnibus Budget Reconciliation Act (COBRA) was passed (Kaiser Family Foundation n.d.). Since 2010, notable legislation such as the Affordable Care Act, the 21st Century Cures Act, the Coronavirus Aid, Relief, and Economic Security Act (CARES) were all passed. The United States healthcare system has changed dramatically in the years since its original publication and healthcare expenditures have also increased significantly. According to the earlier calculation that accounted for the elasticity of medical spending, income elasticity of demand for healthcare services, etc., there was an observed deviation from the increase in healthcare expenditures that indicated the RAND HIE results are outdated. Also, many of the prominent studies on these topics were published prior to the year 2008, meaning their results are likely somewhat outdated.

Given the dramatic change in the US healthcare environment over the last few decades, there is room for future research to establish a modern, *experimental* study.

Furthermore, the aforementioned confounding variables such as citizenship status, race/ethnicity, and other demographic factors address additional weaknesses in many of these studies—for example, the study of near elderly women conducted by Xu et al. in 2006. There was an oversampling of Florida residents as well as African Americans and Hispanics individuals in this study (Xu et al. 2006). The United States shows vast variation in racial and ethnic groups by geographic location, and as a result of the oversampling, the results are not representative of the entire United States. There were other confounding variables in this study as well. When looking at near-elderly women who need to take prescription medications, they were more likely to adhere to their medication if they had better or more expensive healthcare coverage (Xu et al. 2006). However, healthcare coverage would not necessarily be the only reason someone adheres to their medication—this study established correlation between the variables but did not determine causality. An individual may choose not to adhere to their medication due to their faith, the drug's side effects, or a multitude of other subjective factors. It is difficult to isolate the variable of insurance when observing the utilization of healthcare services without doing a randomized experiment based on the results of the many studies referenced in this paper.

10. Discussion of Healthcare Equity and Equality

While health disparities have been documented in the United States for the past decades, they have come into focus in recent years as researchers seek to understand their scale and effects (Williams et al. 2016). Vast disparities in public health continue to exist in the 2020s, as minorities suffer from worse health status and outcomes for chronic conditions such as diabetes, ESRD (end-stage renal disease), cardiovascular disease, and other similar medical issues (Williams et al. 2016). For instance, diabetes remains the seventh leading cause of death for Americans in the 2020s; and there are varying rates of diabetes diagnoses between racial and ethnic groups in the United States.

Approximately, 13.2% of Non-Hispanic black Americans and 12.8% of Hispanics are diagnosed with diabetes, whereas only 7.6% of Non-Hispanic white Americans receive the same diagnosis (Williams et al. 2016). As mentioned in the section addressing the impact of race/ethnicity on the consumption of healthcare, minorities often received or utilized less healthcare than Caucasian Americans, which may also be influenced by socioeconomic factors such as not having employer-sponsored health insurance coverage (Lillie-Blanton and Hoffman 2005).

During 2020 and 2021, COVID-19 exposed massive limitations and challenges within the healthcare system, magnifying health inequalities. The initial data collected from China during the early stages of the pandemic indicated that older individuals as well as people with pre-existing health conditions were disproportionately vulnerable to the COVID-19 virus (Jensen et al. 2021). As the pandemic progressed, African Americans and minority ethnic backgrounds had a disproportionately high infection and mortality rate in both the United Kingdom and the United States (Jensen et al. 2021). Despite attempts to improve these health inequalities, there is no evidence supporting that government programs targeting vulnerable groups are successful in all countries. A study using data collected from PubMed, Web of Science, EconLit, and Google Scholar, assessed insurance enrollment for vulnerable populations in low-and middle-income countries (Osei Afriyie et al. 2022). Specifically, the study looked at governments in that have enacted programs to provide better insurance access to these underserved populations; however, there is no evidence of these programs successfully reaching the most vulnerable groups in these countries (Osei Afriyie et al. 2022). As seen in the difficulty of improving insurance access for vulnerable populations, the structure of health insurance needs to be carefully designed because health insurance is a complex system with multi-faceted and unpredictable effects. Even when targeting vulnerable groups with positive intent, the outcomes are unpredictable, due to downstream effects that lead to varying impacts between different groups. Closely related

to insurance access for vulnerable populations is the notion of inequality which expresses itself in a few different ways. Inequality in healthcare consumption refers to individuals receiving differing amounts of medical care, yet inequality in healthcare demand implies that differing amounts of medical care are needed based on varying individual needs (Morris et al. 2005). Both forms of inequality in healthcare, between consumption and demand, further reinforce the point that utilization of healthcare, whether or United States or in other countries, depends on many factors other than just insurance.

11. Conclusions

This paper provided a demand-side analysis of how insurance coverage and demographic factors affect consumption of healthcare services. The RAND HIE experiment implies a relationship between insurance and the utilization of healthcare. Many studies conducted after the RAND HIE, including the Freeman et al.'s 2008 Systemic Review, reinforce this relationship; however, the contemporary literature has shown that there are many other factors that influence the utilization of healthcare services. The difficulty in drawing a firm conclusion on how insurance impacts the consumption of healthcare lies in the many confounding variables. The RAND HIE study controlled for several of these variables due to it being a randomized experiment. Yet, the RAND HIE study is very old and does not account for changes to health insurance legislation and the overall healthcare field. Therefore, as a suggestion for future research, despite the large cost associated with it, an experiment similar to RAND HIE should be sponsored by the government and conducted in the next few years. Participants should be randomly assigned to different cost-sharing schedules, the sample group should be diverse in order to avoid demographic factors, such as age, race/ethnicity, and immigration status, from having significant influence as confounding variables. The experiment should also account for the changes Newhouse suggested in the retrospective article he published in 2023. An extensive list of suggestions for future research is included below.

12. Suggestions for Future Research

Beyond conducting a new RAND HIE study, there are many additional areas of potential research. For instance, regarding the studies that look at mental health and the impact of insurance on the utilization of these services, the influence of stigma on demand for mental health should be measured (Ku and Matani 2001). Another potential area for future research would be to measure the impact of mental health stigma in relation to racial disparities in mental health. Such a study should be adjusted to survey participants' views on their ability to access and utilize mental health services, to assess for negative biases. Additionally, since many current studies have seen differences in consumption of care depending on the type of health services, future studies can focus on a breakdown of utilization based on a spectrum of health services and departments: emergency, oncology, cardiology, surgery, pharmacy, psychiatry, etc. (Freeman et al. 2008; Brewster et al. 2001; Ku and Matani 2001).

Another suggestion for future research is looking into Medicare and elderly individuals' healthcare usage. Are elderly individuals using more healthcare because they are more likely to have medical conditions due to age, or do the benefits and coverage of Medicare have an added impact on their healthcare utilization (Doty et al. 2005)? Furthermore, current studies seem to focus on very specific demographics, for instance, near-elderly women, but have failed to cover the full demographic spectrum (Xu et al. 2006). Future research can look at a more extensive breakdown of healthcare consumption based on age and gender across the entire demographic spectrum.

One of the studies cited in this paper looked at healthcare use based on citizenship status; however, this study did not investigate in detail the diversity of immigrants from outside the United States (Ku and Matani 2001). Therefore, future research should study the relationship between participants' healthcare usage and the governmental structure of their country of origin. For instance, if an immigrant to the United States came from

a communist dictatorship, would their healthcare service consumption differ from those who left a democratic or socialist country? Race and ethnicity form another promising area of future research in relation to health insurance and consumption of services. Major racial/ethnic groups seem to be studied more frequently than others, for instance, there is a focus on African Americans, Hispanics, and Asian Americans, and often other groups do not get as much attention, such as American Indians, Pacific Islanders, etc. (Lillie-Blanton and Hoffman 2005). Therefore, another idea for future research is to focus on more cohesive studies about all racial/ethnic minorities.

There also needs to be further studies on healthcare costs in the United States. Since high premiums place a financial burden on patients, future research should investigate whether utilization decreases with increased premium costs (Kaiser Family Foundation 2021). Several papers have looked at the utilization of emergency services, claiming that emergency departments (EDs) are strained in the United States (Brewster et al. 2001; Trude 2003; Cunningham 2006; Strunk and Cunningham 2002; Guttman et al. 2003). The reasons for this strain on the EDs are relevant to hospital managers and administrators. One of the hypothesized reasons for ED strain is that patients who lack the financial means to pay for a physician or specialist visit use the emergency room (ER) as a replacement for those services (Trude 2003; Cunningham 2006; Strunk and Cunningham 2002). While another hypothesized reason for ED strain is that increased demand for healthcare services has made it more difficult to book an appointment with a physician or specialist (Trude 2003; Cunningham 2006; Strunk and Cunningham 2002). Therefore, even individuals who can afford healthcare services may be driven to use the ED. Future research should attempt to analyze the reason for people who use the ED as a replacement for other medical services and determine percentages to find the cause of greater ED strain. These findings may help provide insight to healthcare administrators and policymakers so that proper action is taken to make a greater impact on alleviating the pressure put on Emergency Departments.

Studies have also investigated the relationship between insurance and improved health outcomes; however, as of now, there is no consensus in the literature (Freeman et al. 2008; Johnson and Crystal 2000; Levy and Meltzer 2008). Despite certain studies suggesting that insurance does improve health outcomes, no randomized, experimental studies have investigated this relationship on a large scale other than the decades-old RAND HIE study (Freeman et al. 2008; Hurd and McGarry 1997). A new experimental study, taking into consideration the contemporary healthcare system and various forms of government regulation, should aim to determine whether there is a relationship between insurance and health. The results of this study would help policymakers determine the best way forward in improving health outcomes for individuals in the United States.

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