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A Comparative Multiyear Assessment Of Care Utilization Between Existing And Newly Enrolled Medicaid Populations Within Washington State

Preston M. Simmons
University of Alabama at Birmingham

A COMPARATIVE MULTIYEAR ASSESSMENT OF CARE UTILIZATION BETWEEN EXISTING AND NEWLY ENROLLED MEDICAID POPULATIONS WITHIN WASHINGTON STATE

by

PRESTON M. SIMMONS

S. ROBERT HERNANDEZ, COMMITTEE CHAIR
JEFF M. SZYCHOWSKI
ALLYSON G. HALL
NATHANIEL W. CARROLL

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ABSTRACT

The study looks at 2012 through June of 2016 Medicaid data from the Washington State Health Care Authority, comparing claims utilization for newly enrolled patients each calendar year to continuously enrolled members. Mean number of emergency department, hospital, and ambulatory (office) claims per Medicaid member are compared to ascertain if they are the same or different between the groups. Differences in the mean number of ambulatory care sensitive conditions (ACSC) were additionally assessed between those continuously and newly enrolled. The results of this study provided an early baseline indication of utilization differences for the expansion population in Washington State to see if those newly enrolled are utilizing care differently than those continuously enrolled.

For all categories, mean claims using t-test comparisons for those continuously enrolled versus newly enrolled were significantly different at the ($p<.001$) level, with the exception of ACSC in the first half year of 2016 and hospice claims in years 2013 and 2016. A linear regression analysis on claims and ACSC counts was performed. The independent variables of new enrollee, age, sex, program type and race were utilized for the analysis. The regression indicated that there was a collectively significant effect ($p<.001$) of those independent variables on the emergency department, inpatient, and ambulatory (office) claims as well for ACSC in the inpatient and emergency department

(ED). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$), and direction is consistent (negative coefficient, new enrollees lower) in all regressions except for ACSC inpatient in 2016, which was not significant.

The study found that, on average, those newly enrolled have utilized services to a lesser degree in the ED and ambulatory (office) settings, but more in the inpatient setting. New members also have lower mean counts of ACSC in both the ED and inpatient setting.

Keywords: Medicaid, emergency department, utilization, Affordable Care Act, social ecological model, ambulatory

DEDICATION

This dissertation is dedicated to my wife Jill and sons PJ and Connor for their support, love and understanding while I spent many long weekends and nights in pursing this degree, and to my parents, who instilled in me the values of hard work, love of a challenge, higher education, and service to others.

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CHAPTER 1

INTRODUCTION

Introduction and Purpose

The Affordable Care Act (ACA) of 2010 was designed to expand the number of United States citizens and legal residents covered by health insurance, and to improve quality at a lower cost. The intent was to bend down the federal health spending cost curve, while at the same time driving more value (improved quality at lower cost). As part of the ACA, many states implemented exchange programs to expand coverage to those below 138% of the federal poverty level in 2014, as well as subsidize insurance for those up to 400% of the federal poverty level. Washington State was one of the expansion states. In Washington State there were 1.14 million Medicaid enrollees under existing and expansion rules at the end of the year. In January 2014, enrollment sharply increased, and by the end of 2014, Washington's Medicaid program increased approximately 50% with 541,282 individuals added, for a total enrollment of 1.68 million (Yen & Mounts, 2016).

As of July 2016, Washington has enrolled 1,775,882 individuals in Medicaid and the Children's Health Insurance Program (CHIP)--a net increase of 58.90% since October 2013, with the first open enrollment period and related Medicaid program changes (CMS, 2016).

The purpose of this research is to ascertain, through analysis of claims data, whether the rates of emergency department (ED) utilization and inpatient utilization differ between newly enrolled Medicaid recipients in the health insurance exchange and continuously enrolled Medicaid recipients within Washington State. If early and proper primary care access is not available, affordable, or easy to access for the exchange expansion population, then patients will likely utilize the emergency department for intermittent care (DeLeire, Dague, Leininger, Voskuil, & Friedsam, 2013). When patients do seek care, they are likely to be sicker and costlier to care for. This deferral of care may subsequently increase inpatient admissions and overall cost of care for Washington State. There is very little research to date on patient behavior around the actual exchange implementation, due to the relatively new nature of the exchanges. Studies looking at demonstration programs and previous state-level reforms have shown both increases and decreases in ED and hospital utilization post Medicaid expansion (Medford-Davis, Eswaran, Shah, & Dark, 2015), because each state and geographic region is affected by a unique set of factors, including clinician to population ratios, built environments, and programs. Thus, it is not possible to generalize from state to state. If new enrollees are behaving differently and accessing care in higher cost settings or when sicker, it will be important to think about how to design community, structural, educational, policy and social systems to bring about patient behavioral change in how the Medicaid Population accesses and receives care. Otherwise, the ACA may not have its desired effect of improving access to care for the uninsured, while reducing the cost of providing that care. Researchers of ED utilization have noted the specific importance of tracking non-emergent ED utilization after Medicaid expansions under the ACA (Gandhi,

Grant, & Sabik, 2014), and specifically for non-emergent conditions to help ensure appropriate ambulatory access and thus improve patient care at a lower cost.

The results of this study will provide an early baseline indication of emergency, ambulatory and hospital services utilization rates for the expansion population of those newly entering the exchange in Washington, and should be an important marker for the Washington State Health Care Authority (WSHCA), the agency that has budget and operational responsibility for Washington's Medicaid program.

Background

Before the federal and state exchanges started in 2014, several demonstration projects around the country for Medicaid managed plan expansions attempted to study Medicaid utilization. The results were mixed. Policymakers designed the ACA to provide increased access to primary care, assuming this would decrease utilization of high cost sporadic care which is often a byproduct of care provided in the ED when used as a source of primary care. Research shows that fewer than half of all Americans have access to primary care after normal business hours, when many ED visits are made (Medford-Davis et al., 2015). For newly insured patients, there is also a difference in access to care by type of insurance. Results show that primary care availability is 84.7% for the new privately insured, and only 57.9% for those covered by Medicaid (Medford-Davis et al., 2015). Logic would normally lead one to conclude that when access to primary care is more limited for Medicaid patients than it is for the privately insured, Medicaid patients would be incentivized to utilize the ED as their source of care, as EDs are convenient and more available, including after hours (Janke et al., 2015). So far, very

little is understood about the long-term effect of the exchanges, and many researchers also state that a run-out period needs to occur before accurate results may be obtained (Medford-Davis et al., 2015). Now that several years' worth of data is becoming available, it is important that researchers begin to evaluate the many unknown questions on this topic. Findings from studies such as this one on the Washington State Medicaid population will be important to help inform providers, insurers, and policy makers on any needed modifications to support the ACA's intended outcomes around access to care, affordability, and sustainability, and to improve the population's health.

Several pilot and early adopter programs from other states expanding Medicaid have shown both increases and decreases in ED utilization and admissions, depending on the study and design of the program. Increases in admissions and ED utilization run counter to the objectives of the ACA. Furthermore, they could make the financial sustainability of the exchanges questionable. In Washington State, the Washington State Health Care Authority (WSHCA) purchases health care for more than 2 million Washingtonians through two programs—Washington State Apple Health (WSAHP; Medicaid), and the Public Employees Benefits Board (PEBB) Program (http://www.hca.wa.gov).

The Washington Health Benefit Exchange was established in 2011, along with its online marketplace, *Healthplanfinder*. It is used for both qualified health plan (QHP) enrollment as well as for Medicaid/WSHCA enrollment. In 2012, nearly 16 percent of Washingtonians were uninsured (Henry J. Kaiser Family Foundation [KFF], 2014), and by 2015 that was reduced to about 6.4% (WSHCA, 2016). The QHP is a program that provides either subsidized insurance or tax credits up to 400% of the federal poverty level

(FPL). The Healthplanfinder online marketplace is used to enroll both WSAHP and QHP enrollees.

One potential limitation of the study was a possible high coverage churn rate, defined as moving between the WSAHP and the QHP. A recent study of churn between WSAHP and QHP (Cambria Solutions, 2016) showed it was relatively small. The study looked at the period April 2014 to March 2015 and found that approximately 30,000 patients moved between the programs. Churn impacted only 8.5 percent of the QHP and only 0.7 percent of the Medicaid population during the study period. Most individuals only churned once (93.9%) and most went from the QHP to the WSAHP rather than the reverse.

In Washington, the three main enrollment programs are (a) the WSAHP Alternative Benefit Plan, created in 2014 as the state expansion program and covers adults up to 138% of the FPL: (b) the Categorically Needy program which is the traditional women's and children's program, and which has the broadest enrollment; and (c) the Qualified program covering Medicare low income and disabled workers. By 2017, 618,000 new enrollees were receiving WSAHP coverage for adults (WSHCA, 2016).

This research focuses on the WSAHP program. It is important for the WSHCA and Apple Health plans to understand how new enrollees access health care, and if their mode of access is different from that of existing enrollees. In June 2017, Washington State signed a CMS Section 1115 waiver and is actively designing program elements of a 5-year Delivery System Reform Incentive Payment (DSRIP) program. The state has developed a tool kit for this process to reform care, and nine Accountable Communities of Health (ACH) have been formed across the state to work on designated focus areas.

One of the eight projects is implementing diversion strategies to promote more appropriate use of emergency care services and person-centered care through increased access to primary care and social services, especially for medically underserved populations. Whether increased ED utilization is found to occur in Washington State for ACSC, where efforts to reduce overutilization of EDs by Medicaid patients has previously been focused, or it is found that newly enrolled members are sicker when admitted, new efforts and programs will need to be undertaken to once again reduce overutilization of EDs, and connect members to appropriate primary care. Continuity of care for patients through primary care will help improve health status and reduce costs by reducing care in higher-cost settings over time.

One such state effort to mitigate inappropriate ED utilization was the "ER is for Emergencies" initiative started in 2012 (Washington State Hospital Association [WSHA], n.d.). This program was created after a long policy debate between the State of Washington and several provider associations: the Washington State Medical Association, the Washington State Hospital Association, and the Washington Chapter of the American College of Emergency Physicians. These associations were eventually successful in getting the state to abandon a policy that would have denied payment for certain types of Medicaid emergency visits. They based their argument on presenting symptoms that, in the medical profession's opinion, were often associated with serious medical conditions, and opposed cuts to hospital and physician payments for these conditions. A compromise was reached and Washington State enacted the "7 Best Practices" (WSHA, n.d.) program after stopping an initial plan to deny payments for more than three unnecessary Medicaid ED visits per year, and a second plan to deny

payments for treating any Medicaid ED visits the state deemed unnecessary. The "ER is for Emergencies" program is outlined in Figure 1.

ER is for Emergencies 7 Best Practices

1. Track emergency department visits to reduce "ED shopping";
2. Implement patient education efforts to re-direct care to the most appropriate setting;
3. Institute an extensive case management program to reduce inappropriate emergency department utilization by frequent users;
4. Reduce inappropriate ED visits by collaborative use of prompt (72 hour) visits to primary care physicians and improving access to care;
5. Implement narcotic guidelines that will discourage narcotic-seeking behavior;
6. Track data on patients prescribed controlled substances by widespread participation in the state's Prescription Monitoring Program (PMP); and
7. Track progress of the plan to make sure steps are working.

Figure 1. List of Washington State 7 Best Practices. Adapted from "ER is for Emergencies," n.d., Washington State Hospital Association (WSHA). Retrieved from http://www.wsha.org/quality-safety/projects/er-is-for-emergencies
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As a result of the "7 Best Practices" and the "ER is for Emergencies" campaign, there were significant cost reductions and decreases in ED utilization. The "ER is for Emergencies" initiative reached its targeted savings goal of $33.6 million in fee-for-service emergency care costs. Results of the initiative are shown in Figure 2. However, when the exchanges went live after 2014, ED volumes generally have been observed to rise again across the state, and have continued to rise. The resurgence in ED use is likely related to primary care access not keeping pace with growth, new patients not getting primary care access, and private clinics restricting access due to low reimbursement for Medicaid and other worsening revenue pressures.

The ER is for Emergencies report showed that during Fiscal Year 2013:

- The rate of emergency department visits declined by 9.9 percent.
- The rate of "frequent visitors" (five or more visits annually) dropped by 10.7 percent.
- The rate of visits resulting in a scheduled drug prescription fell by 24 percent.
- The rate of visits with a low-acuity (less serious) diagnosis decreased by 14.2 percent.

Figure 2. Results of Washington State ER is for Emergencies Campaign. Adapted from "ER is for Emergencies," n.d., WSHA. Retrieve from http://www.wsha.org/quality-safety/projects/er-is-for-emergencies/

CHAPTER 2: LITERATURE REVIEW

Management Theory

A model and theory that may help to inform new (and existing) enrollee's behavior, and how to design structures to support better and lower cost choices for care over time, is the social ecological model. This model may help identify factors affecting behavior and provide guidance for developing successful interventions through social environments. The model covers multiple levels of influence, such as individual, interpersonal, organizational, community, and public policy, with the idea that behaviors both shape and are shaped by the social environment. The model suggests that creating an environment conducive to change is important to facilitate adoption of healthy behaviors (Glanz & Bishop, 2010). If it is found that newly enrolled Medicaid patients are utilizing the ED's differently and having higher admissions than the rest of the population due to being sicker or more acute when seeking care, then this study's results may help stimulate the creation of program interventions to mitigate higher ED utilization, and substitute more appropriate care environments. Incentives, programs, or infrastructure supporting patients using and connecting to alternative care sites providing continuity of care at lower cost are a better alternative for both the patient and the care system. In Washington State, we have seen how special program interventions such as the "ER is for Emergencies" program have previously been successful.

The original premise for the social ecological model developed by Urie Bronfenbrenner, is that behavior is a product of multiple levels of influence from mesosystems (individual system interactions) to exosystems (larger social systems) interactions (Bronfenbrenner, 1979). A variation to Bronfenbrenner's model is the ecological model for health promotion developed by McLeroy, Bibeau, Steckler, and Glanz (1988). In McLeroy et al.'s (1988) model, patterned behavior is the outcome of interest, and behavior is viewed as being determined by interpersonal factors, interpersonal processes and primary groups, institutional factors, community factors and public policy. These five factors are the range of strategies for health promotion programing under the Ecological Model for Health Promotion. Traditionally, and especially in clinical settings, strategies to change health behaviors have focused on individual-level factors such as knowledge, beliefs, and skills. As ecological thinking gained currency, intervention strategies broadened to target factors at other levels of influence, such as organizational policies and the built environment (Glantz, n.d.). Figure 3 shows an adaption of Bronfenbrenner's social ecological model.

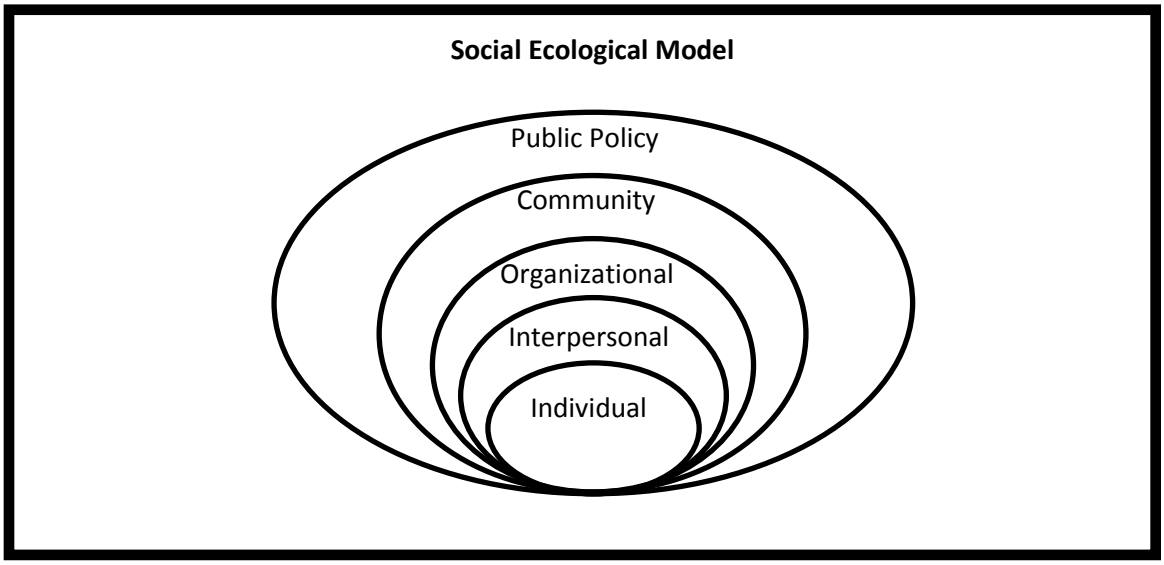

Figure 3. Social Ecological Model. Adapted from "Toward an experimental ecology of human development," Bronfenbrenner, U., 1977, *American Psychologist, 32*(7), pp. 513-531 and Glantz, Karen, e-source, Behavioral and Social Sciences Research, http://www.esourceresearch.org/Portals/0/Uploads/Documents/Public/Glanz_FullChapter.pdf

There is growing awareness of the social determinants of health. The traditional medical care only accounts for about 20% of what determines health, while social determinants account for the other 80% (Booske, Athens, Kindig, Park, & Remington, 2010), as shown in Figure 4.

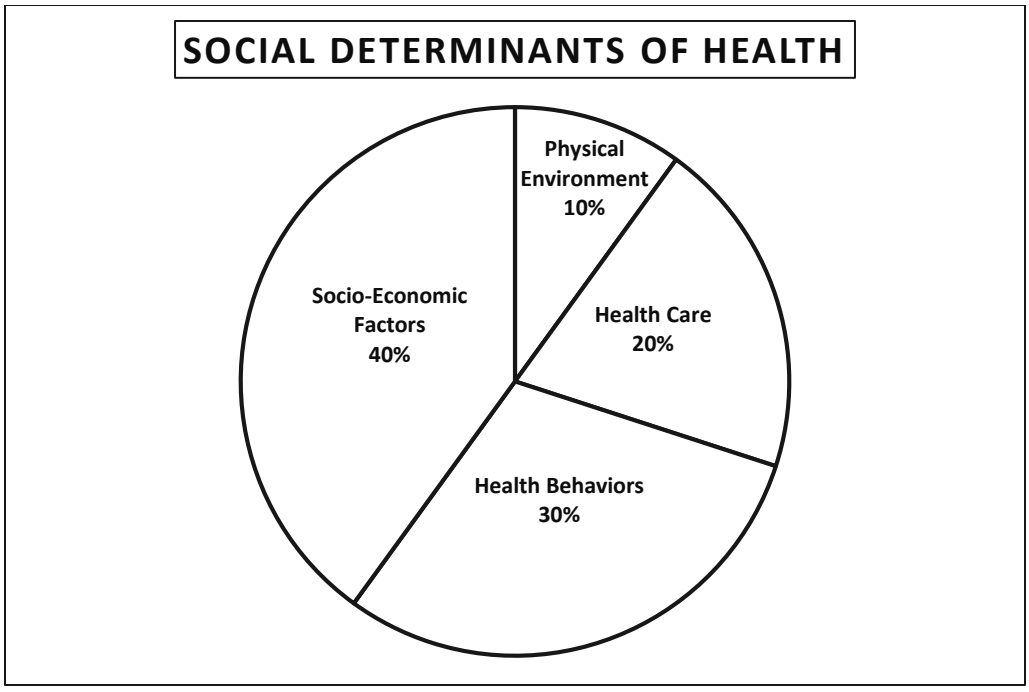

Figure 4. Social Determinants of Health. Adapted from "Different perspectives for assigning weights to determinants of health," Booske et al., 2010, University of Wisconsin Population Health Institute. Retrieved from https://uwphi.pophealth.wisc.edu/publications/other/different-perspectives-for-assigning-weights-to-determinants-of-health.pdf

Thoughts on using this framework to reduce ED utilization, where appropriate, along with hospital admissions, include setting up the right environments to promote alternatives to ED utilization, making it easier to access care through other means, self-care education, supportive structures, and consistent access to primary and ambulatory care. These work together to keep patients healthy.

Marmot (1998, 2005) states that to improve health, there is need to improve the social determinants of health and environment, along with reducing the social inequalities of health. If there are differences in ED utilization patterns, are they due to learned behavior such as: (a) the ED has the most convenient hours; (b) it is easiest to get to via transportation; (c) the patient not feeling comfortable going to another setting and feeling

welcomed; (d) the patient postponing care until it is a crisis; (e) patient employment status; (f) having sustainable housing; or (g) other determinants such as where the patient lives? All these possible reasons, and many more, can ultimately be factors that drive inappropriate ED utilization, and can perhaps be addressed by beginning to understand utilization patterns as a first step. Integrating behavioral change and enhancement of the environment is seen as a major strength in social ecological approaches (Stokols, 1996). The social ecological perspective also emphasizes the value of evaluating interventions longitudinally, such as pre and post assessments of a person's health practices and overall wellbeing (Stokols, 1996). This seems to align well with studying the pre and post implementation of the ACA and patient's utilization patterns in relation to the environment in which they live and access care.

Cohen, Scribner and Farley (2000) describe four factors in a model of health behavior in the context of ecological theory. They state that in ecological theory, environmental (structural) factors are critical determinants of individual behavior (Cohen et al., 2000). The theory suggests that by adjusting the conditions and environment in which people live, it is possible to influence health behavior and thus population outcomes (Cohen et al., 2000). The four factors described are availability, physical structures, social structures, and cultural and media messages. Using this framework, ED utilization and admissions can be longitudinally influenced by programs and built structures that better avail and educate towards primary care and access, better living conditions and behaviors. Increasing evidence (Glanz & Bishop, 2010) suggests that health interventions that are based on social and behavioral sciences theories are more effective than those lacking a theoretical base. As Glanz and Bishop (2010) state, "The

most often mentioned theoretical model that has not been fully applied in research and practice is the social ecological model. There are many needs to better articulate, apply and evaluate this important and promising model."

Another theory most often used to explain utilization in healthcare is the Anderson Model. Utilization in the model is driven by three elements: predisposing factors, enabling factors, and need (Anderson, 1995). Predisposing factors are such characteristics as race, age, and beliefs that if health services are effective they will be more likely to be used. Enabling factors are items such as family support, insurance, and the individual's community. Need is both perceived need and real need for services (Anderson, 1995). Anderson notes that inequitable access occurs when social structures, health beliefs and enabling sources such as income determines who gets medical care. Under the Anderson model, primary determinants of utilization are population characteristics, health care systems, and the external environment. Health behavior is driven by personal health practices, and use of services and health outcomes are driven by perceived status, evaluated status, and consumer satisfaction (Anderson, 1995).

The Anderson model works well with the social ecological model because they are both based in community, built environments, and personal health practices that drive utilization. I chose the social ecological model for this study because it provides deeper insights for explaining utilization differences from a behavior aspect. Ultimately, policy and programmatic changes need to focus on creating different utilization patterns for long-term health. If a new enrollee has a behavioral framework of not using healthcare, relying on self-care, only going to seek care when very sick, and so forth, their utilization outcomes will likely be very different. Through programmatic changes, built

environments, and structures, health promotion programs, utilization of health services and their appropriate stratification of right time, right place, and right treatment over time health status may likely be optimized. These types of changes will be long-term efforts, but living with limited to no access to continuity of care has likely created long-term negative, ingrained health and utilization behaviors that will take time to reverse.

One of this proposed study's hypothesis states that utilization by the newly enrolled Medicaid population will be higher than the existing population. The social ecological model states that an individual is influenced by their environment and its inherent structures. As noted previously (Medford-Davis et al., 2015), some studies showed that new Medicaid enrollees tend to have pent-up health needs and demand for services. If patients are using the ED as their only access point because it is the one they are used to, and because it's available at all hours, that would be the route of care they have been conditioned to seek. This would be counter to the behavior the WSHCA, providers, and managed care organizations would want. The social ecological model would be an informative theory under which to create policies, organizational models, and support structures, to change that ingrained behavior. This can be done by creating education, organizational, and incentive structures to utilize other sources of more appropriate care that may overtime improve health and reduce cost of care to the population on a per capita basis.

A recent quantitative study by Capp et al. (2016) analyzed 100 patient summary reports from Medicaid frequent ED utilizers. The patients describe barriers that go beyond timely primary care access issues, including socio-determinants of health, and lack of trust in primary care providers and the health system (Capp, et al., 2016). Such

issues of homelessness, parental status, and food access were higher priority than healthcare. These patients also had significant mental and disease burdens.

In another article supporting the importance of the social ecology model relationship, Ndumele et al. (2014) find that Medicaid enrollees usually report greater access problems to care than other insured populations, and that the increase in new enrollees may further exacerbate this issue. This study looked at 10 states that expanded access between 2000 and 2009. They found in the period following expansion, new enrollees reported worse access to care than those who were previously enrolled, although the difference was not statistically significant. Several studies pointed out a specific concern related to a growing trend of new enrollees reporting worse access, coupled with a concern that many providers are not accepting new Medicaid enrollees in panels (Ndumele et al., 2014; Decker, 2012; Sommers, Paradise, & Miller, 2011).

Health Sector Research

The following section reviews literature related to emergency department utilization and admission impacts before and after ACA implementation, along with the effect of the exchanges going in 2014.

Prior to the ACA, several states ran managed Medicaid demonstration programs. Researchers have looked at periods before and after the demonstration programs were implemented to see how utilization factors changed for the Medicaid enrollees. This research, along with other insurance expansion studies, showed considerable variation in how patients from different states and programs behaved, helping to inform the hypotheses for this current study of utilization in the Washington State exchange

expansion. The underlying characteristics of the Medicaid populations and the environments in which they lived were different in each of the studies. While these studies may help us better understand potential utilization patterns based on the socioeconomic status of Washington State enrollees and their built environments, until we actually study the Washington State population, we will not have a good understanding of patterns of utilization. It is being observed that Washington State is seeing a very recent shift in independent physician groups starting to consciously restrict the number of Medicaid patients they see in some markets, which will likely influence the macro-environmental construct of ease of access to non-ED care. ED visits per 1000 population, as well as inpatient admissions per 1000 population, are often used as study outcome variables. Several research studies reviewed also looked at acuity of ED visits to see if there was a related increase in admissions to hospitals via the ED for the newly enrolled populations. Several studies suggested an increase in inappropriate utilization of emergency departments by new enrollees for ambulatory care-sensitive visits. An ambulatory care-sensitive visit is one that is non-emergent, primary care treatable, or avoidable with proper primary care. One such study looked at 2008-2009 Wisconsin data (DeLeire, Dague, Leininger, Voskuil, & Friedsam, 2013), in the twelve months following plan enrollment, finding that outpatient visits increased 29%, emergency department visits increased 46%, inpatient hospitalizations declined 59%, and preventable hospitalizations fell 48%. The ED visits were broken down into ambulatory sensitive and non-sensitive visits; ambulatory care–sensitive visits (non-emergent, primary care treatable, or avoidable), visits that were not ambulatory care–sensitive (emergent, not primary care treatable, and not preventable), and other visits (including injuries; visits for

mental health, drug, or alcohol treatment; and other unclassified visits). The increase in ED visits was primarily driven by increases in ambulatory care–sensitive visits that could have been handled in a lower cost setting. These types of visits increased 38.7% when the individuals in the sample became covered by the core Medicaid plan. The results showed no increase in the number of visits that were not ambulatory care–sensitive as well as no increase in visits due to injuries (DeLeire et al., 2013).

Lau, Adams, Boscardin, & Irwin, Jr., 2014 studied young adult (18-25 years of age) utilization of EDs prior to their being eligible for insurance under their parents' commercial insurance, and thereafter. When the results were compared with the control group, the dependent coverage provision showed no statistically significant changes in health care use and generally low utilization. Chau and Sommers (2014) analyzed 2002-2011 data through the Medical Expenditure Panel Survey that also showed no significant change for young adults. Hernandez-Boussard, Burns, Wang, Baker, & Goldstein, (2014) in their study of young adult ED utilization in three states during the 2009-2011 ACA expansion provision showed a decrease in the number of ED visits, but a minimal decrease in the rate of ever using the ED

An article by Lo et al. (2014), for when California expanded Medicaid in 2011, showed that when initially insured, newly enrolled Medicaid recipients increased their visits, and then visit rates fell in line with the other Medicaid plan enrollee's utilization rates after approximately 18 months. Lo et al., in reviewing California's Medicaid expansion findings, found that early and significant investments in infrastructure and in improving the process of care delivery can effectively address the demand for health care

services of previously uninsured populations. Their conclusions were based on the temporal increase in ED volumes seen due to apparent pent-up demand.

Baker & Hsia, (2014) in their study of California counties between 2005 and 2010, analyzed the relationship between insurance coverage and ED utilization per 1,000 population. The results here were contrary to other studies in that an inverse relationship was shown between insurance and ED utilization. They found that, if rate of insurance jumped from the 10^{th} to the 90^{th} percentile, an estimated two fewer ED visits would occur per 1000 adults. They looked at all insurance types as a group, not breaking out Medicaid. Noted in the study is the need to evaluate how changes in specific insurance types, such as the safety net populations, affect utilization at the community level.

There were several studies reviewing the experience of the Massachusetts expansion. A study by Wharam, Zhang, Landon, B. E., Soumerai, and Ross-Degnan, (2013) looked at the relationship of high deductible plans to reduction in high severity emergency care. They found that low socioeconomic status enrollees with high deductible coverage reduced inappropriately (avoided) ED visits, which may have subsequently increased the need for hospitalizations. A study by Smulowitz, O'Malley, Yang and Landon (2014) that evaluated reform expansion in Massachusetts between 2004 and 2009, showed that increasing insurance coverage increased ED utilization across all age groups. Specifically, rates increased 0.2% to 1.2% within reform to 1.2% to 2.2% post reform compared to the pre-reform period. The reasons for the increases were not studied. A study by Lee et al. (2015) during the similar time frame of 2004-2008, looking instead at the Massachusetts commonwealth care plan for low income individuals. They found that the outcomes were mixed depending on if a patient was

previously insured. Results showed the odds of a visit were 12% higher post enrollment among newly ensured, and 18% lower among those previously enrolled in a safety net program. Results were not studied over time nor were data on utilization of other outpatient services.

In the 2008 Oregon experiment, the state implemented a limited Medicaid expansion through a lottery system (Taubman, Allen, Wright, Baicker, and Finkelstein 2014) which studied the impact on ED utilization, and found that ED utilization by the 25,000 enrollees increased significantly during the 18 months post expansion by 0.41 visits per person, showing a 40% increase over the control group of 1.02 visits. The increase was across all visit types, including those ambulatory sensitive visits that could be treated in alternative care settings.

A health plan study by Bayliss et al. (2015) reviewing an 11-question questionnaire administered to new enrollees of a Kaiser Permanente plan in Colorado showed that the Medicaid population newly enrolling is generally less healthy than the new exchange population, or new commercial enrollees, and have more self-reported emergency department visits, hospital admissions, and chronic conditions.

A 2014 article by Collins, Rasmussen, Doty, and Beutel, (2015) reviewing the 2014 Biennial Health Insurance Survey showed that access issues among adults with low incomes remain high, and causes individuals with low to moderate incomes but high deductible plans to avoid or delay needed care. Abraham (2014) studied 2008 to 2010 data in the Medical Panel Expenditure Survey, and found the ACA target population is likely to be younger and male. They note that rates of hospitalizations and ED use among the newly insured could vary widely, and that results also suggest a moderate increase in

ambulatory care (Abraham, 2014). The conclusion is that with the expected increase in utilization under the ACA expansion, stakeholders should monitor local system capacity and respond with policy and/or market-based innovations as appropriate (Abraham, 2014).

Freidman, Saloner and Hsia (2015) argue that there are two ways to influence ED utilization by Medicaid patients. One is to make the ED costlier to access, and the other is to create better alternatives for ambulatory care than the ED. They note that of the eight states that had imposed copayments at the time of the article, none had reduced utilization compared to other states.

While each of these prior studies are informative in helping to understand future ED and inpatient utilization, they are quite variable and dependent on regional characteristics of the health care and social support systems. It will be important to understand the patterns of the Washington State Medicaid enrollees as a unique ecosystem.

The literature review offered no specific theories to predict the effect of enrollment in a health insurance exchange on Medicaid recipient behavior. The most prevalent outcome reasoning in the articles is that initially with expansions there would likely be some pent-up demand for services that would eventually return to levels of utilization in line with other enrolled members, but that was not uniformly seen in the results. There were several environmental factors discussed that may also be driving higher ED utilization in this population. Factors pointed out in an article by Lazano et al. (2015) noted that EDs are very convenient in terms of location, are open 24 hours, seven days a week, and are known locations where Medicaid patients know to receive services.

Additionally, due to poor reimbursement, many primary care clinics are not accepting new Medicaid enrollees. Many primary care clinics also do not have convenient hours or locations. Hence, the ED tends to be the default choice for care. Several articles (Friedman et al., 2015; McClelland et al., 2014) noted that emergency departments should consider a model change to better stratify their services, such as offering a lower cost walk-in or urgent care setting. This would likely require legislative changes so not to conflict with existing EMTALA laws around ED access and triage. Another alternative suggested is that states should design better reimbursement systems (Friedman et al., 2015) to encourage providers to see more Medicaid patients, or enhance the number of community health centers to better serve the expanding enrolled patient population.

In general, the articles seem to illustrate that where coverage has expanded, if early and proper care access is not built in, then patients will utilize the emergency department for intermittent care. Additionally, when patients seek care via the ED, they likely will be much sicker and costlier to take care of, which subsequently increases inpatient admissions and increases overall cost of care. Given these relationships, it will be important to think about how to design community and social systems to change how the Medicaid population accesses and receives care. If these changes are not made, the ACA may not have its desired effect of improving access to care for the uninsured, and bending the national medical expenditure cost curve through better management of care.

Conceptual Framework and Hypothesis

Constructs

Based on the literature review of articles covering Medicaid expansion demonstration projects around the implementation of the ACA of 2010 and preliminary review of the exchange expansion, the construct in Figure 5 was developed for this study. The study looks at data from the WSHCA and compares utilization patterns for newly enrolled patients to existing enrollees using 2012 as a base year. The goal is to determine if ED claims utilization, hospital admission claims, ambulatory visit claims, and ambulatory care sensitive conditions for inpatient and ambulatory primary diagnosis are the same or different between the existing and new enrollees. The study additionally assesses the moderating influence of age, sex, race, and Medicaid program type.

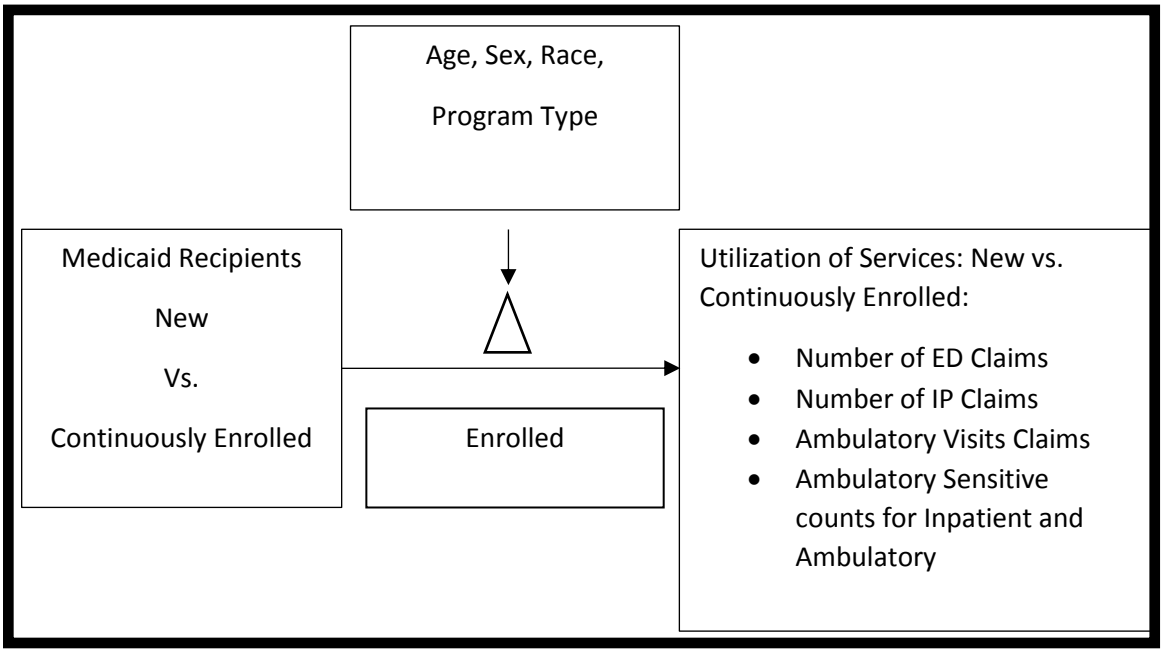

Figure 5. Model of Study Design and Construct

Relations Hypothesized

The following hypothesis are put forth regarding care utilization for the Medicaid expansion population:

Hypothesis 1: Newly enrolled Medicaid patients will have a higher level of emergency department utilization than the continuously enrolled population in Washington State.

Hypothesis 2: Newly enrolled Medicaid patients will have a higher level of inpatient utilization than the continuously enrolled population in Washington State.

Hypothesis 3: Newly enrolled Medicaid patients will have a lower level of ambulatory utilization than the continuously enrolled population in Washington State.

Hypothesis 4: Newly enrolled Medicaid patients will have a higher level Ambulatory Care Sensitive Condition claims than the continuously enrolled population in Washington State.

CHAPTER 3

METHODOLOGY

Data Source

Data from the WSHCA were utilized for the study. The data came from the Medicaid eligibility records and claim encounter records which provide client by month data for all Medicaid patients within the State of Washington. Each client record contained in the dataset was assigned a unique identifier to render it non-identifiable to any specific person. The research was determined as exempt by both the University of Alabama, Birmingham Institutional Review Board (IRB) as well as the State of Washington IRB (exemptions attached in appendixes A and B). The original data consisted of 10 separate data sets, five claims and five demographics, for calendar years 2012, 2013, 2014, 2015 and 2016 (half year).

Measures, Variables and Study Assumptions

This study looks at the dependent variables of emergency department, admission and ambulatory (designated as office in table output) claims comparing new enrollees versus those continuously enrolled. For the study, claims represent activity counts for each of the variables. It is assumed for this study that the underlying demographic characteristics of the Washington State population generally remain consistent over the time period studied. The study includes all Medicaid members for 2014, 2015 and 2016

(half year) within Washington State, along with data on Medicaid members for the 2 years preceding the exchange years 2012 and 2013. The databases used for this study were created from the original 10 data sets obtained from the WSHCA. The study databases were structured and configured to allow for comparison of those newly enrolling during a given year to those enrolled continuously. For those unique enrollees entering in 2016, their new enrollee ED, ambulatory and admission claim counts are compared to those unique members that had been enrolled continuously in 2012, 2013, 2014, 2015 and still enrolled in 2016. Newly enrolled members in 2015 were then compared to those members that had been enrolled in 2012, 2013, 2014 and 2015 continuously, and so forth. To be defined as continuously enrolled you had to have utilization in each of the preceding years as well as the current year. For the 2012 data set, any patients with claims were retained, while those without claims were removed because previous histories were unknown. The rationale was that the number of continuously enrolled members would be overstated if unique IDs with no activity were left in the base year. Removing the members creates a clean base year in which every member had utilization of some sort of formalized healthcare. Using this criterion, 376,454 patients were deleted. Each dataset for new patients in a specific year did not include utilization in any preceding year. Continuous patients for a specific year had utilization in each preceding year back to 2012, and only their utilization in the matched year to where they are being compared to the new enrollees was counted. Hence, the unique member IDs for newly enrolled in a given year are not duplicated in the continuously enrolled matched panel year; they are mutually exclusive. See Table of

Panel Comparisons (Table 1) showing the data in table form. The table also shows counts of unique IDs by year for new enrollees and those continuously enrolled.

Table 1: Panel Comparisons

New Enrollees Year	Unique ID's added compared to subsequent years	Member ID not in: Year(s)
2013	242,912	2012
2014	583,374	2012, 2013
2015	323,382	2012, 2013, 2014
2016	133,086	2012, 2013, 2014, 2015
Continuously Enrolled Year	**ID's continuously enrolled from baseline year 2012**	**Member ID in: Year(s)**
2013	1,010,633	2013, 2012
2014	904,362	2014, 2013, 2012
2015	834,480	2015, 2014, 2013, 2012
2016	777,875	2016, 2015, 2014, 2013, 2012

The ED and inpatient claims were classified into an ambulatory sensitive (1) or not Ambulatory sensitive (0) binary variable by utilizing the New York University Algorithm run against the primary diagnosis using the 4 categories of (a) non-emergent,(b) emergent but primary care treatable, (c) emergent but preventable or avoidable if appropriate ambulatory care had been received, equals 1 for ambulatory sensitive and (d) emergent ED care required and not avoidable and not preventable (Gandhi & Sabik, 2014). Categories 1 through 3 are assigned a binary value of 1. This

categorization of ED visits has been validated in the national Hospital Ambulatory Medical Care Survey as well as with Medicare and private patients, and shows as a strong predictor of mortality and hospital admissions (Gandhi & Sabik, 2014; Ballard et al., 2010). For this study, the Ambulatory Sensitive percentage for the ICD-9CM codes (ICD-10CM for year 2016) was set at 50% or higher to assign a count of 1 as being an Ambulatory Sensitive condition, otherwise the ambulatory sensitive condition was set to 0 (refer to table 2). All the key variables utilized for this study are listed in Table 2 along with how they were operationalized.

Study Analysis and Model

The objective of the study analysis is to gain a baseline understanding if any differences exist for new enrollees vs. existing enrollees in the Medicaid program for Washington State in how care is accessed and utilized in the year of enrollment. The primary focus of the research is to examine usage between new and continuously enrolled members in the dataset years. This was done by looking at ED, ambulatory and acute care claims. Additionally, there was a look to see if there are changes from year to year in access patterns and types of visits (ED versus ambulatory versus inpatient). By looking at year by year comparisons comparing those newly enrolled to those continuously enrolled, we should be able to identify any initial patterns.

The comprehensive data set consists of claims related to approximately 1,776,851 Medicaid enrollees as of June 2016. Washington State saw a rapid increase in Medicaid enrollment from Fall of 2013 to June of 2016, during which time 659,275 enrollees were added (a 56% increase).

It is important to note that the 2012 panel and the 2013 panel will be different, as Medicaid would be highly oriented to women and children prior to ACA expansion. In Washington State, Medicaid expansion for 2014 offered new comprehensive coverage to all adults with incomes up to 138% of the FPL, as well as further expansions to include more low-income families.

The dependent variables of interest are Medicaid ED claims, ambulatory claims (non-hospital office), acute care Medicaid claims and ambulatory care sensitive condition claim mean counts. The primary independent variable of interest is the status of the enrollee (either new or continuously enrolled). The patient characteristics examined include age, sex (assume constant), Medicaid eligibility category, and race (Table 2).

Data grouped in this way allows for comparing the patient characteristics and outcomes using t-tests for comparison of continuous variables and Pearson's chi-square test of association for categorical variables. When comparing the mean counts of each outcome (Ambulatory, ED, and Admissions), we can identify whether new enrollees coming into the exchange have activity levels that are statistically different than those continuously enrolled.

After the initial analysis, the independent variable effects of new enrollee, age, sex, program type and race on the four dependent variables of interest were evaluated for any significant differences through regression analysis by the enrollment year between those continuously enrolled and the newly enrolled. STATA was utilized to generate the datasets and to analyze the data. An example of equation for ED visits is as follows:

$$\text{ED visits} = B_0 + B_1 \text{ x new enrollee} + B_2 \text{ x age} + B_3 \text{ x sex} + B_4 \text{ x program} + B_5 \text{ x race}$$

Table 2 Study Data Elements

Dependent Variables	**Variable Type**	**Operationalization**
ED Claims		
Part B XO	continuous	count 1 for each claim and sum by unique ID
Professional	continuous	count 1 for each claim and sum by unique ID
Admission Claims		
Hospice	continuous	count 1 for each claim and sum by unique ID
Inpatient	continuous	count 1 for each claim and sum by unique ID
Part A XO Claims	continuous	count 1 for each claim and sum by unique ID
Part B XO Claims	continuous	count 1 for each claim and sum by unique ID
Professional	continuous	count 1 for each claim and sum by unique ID
Ambulatory (Office) Claims		
Part B XO	continuous	count 1 for each claim and sum by unique ID
Professional	continuous	count 1 for each claim and sum by unique ID
ACSC		
Inpatient	continuous	count 1 = primary diag. when ACSC and sum by unique ID
Emergency Depart.	continuous	count 1 = primary diag. when ACSC and sum by unique ID
Independent Variables		
Age	continuous	mean of age in calendar year
New Enrollee	categorical	continuous = 0, new = 1
Sex		
Male	categorical	male = 0, female = 1
Female	categorical	male = 0, female = 1
Race		
American Indian	categorical	1 if specific Race, 0 if not
Asian	categorical	1 if specific Race, 0 if not
Black	categorical	1 if specific Race, 0 if not
Not Provided	categorical	1 if specific Race, 0 if not
Other	categorical	1 if specific Race, 0 if not
White	categorical	1 if specific Race, 0 if not
Program Type		
Alternate Benefit	categorical	1 if specific Program, 0 if not
Categorically Needy	categorical	1 if specific Program, 0 if not
Qualified	categorical	1 if specific Program, 0 if not
Medicare/caid	categorical	1 if specific Program, 0 if not
Other	categorical	1 if specific Program, 0 if not

CHAPTER 4: RESULTS

Study Population Characteristics

Tables 3, 4, 5 and 6 outline the demographic characteristics of those continuously enrolled vs. newly enrolled. The variables compared for each year include mean age, sex, race, and member's enrolled program type. For those continuously enrolled, the mean age goes up in each subsequent year. In the newly enrolled column, the mean age increases considerably to 33.358 in the first year of ACA enrollment (2014) and then goes down in 2015 and 2016 to 27.992 and 26.765 respectively. The t-test for the difference in mean age between newly and continuously enrolled was significant at the $p<.001$ level in all years.

Chi square tests on the other table variables frequencies (sex, race and program type) were significant in each category and year 2013 through 2016 at the $p<.001$ level for those newly enrolled versus continuously enrolled. For continuously enrolled patients, females outnumber males each year 2013 through 2016. In the newly enrolled category the females outnumber the males in 2013, but in 2014, 2015 and 2016, there are more males than the females. The alternate benefit program count dropped after the 2014 initial enrollment year in subsequent years 2015 and 2016. Continuously enrolled counts dropped in all subsequent years for all program types. Qualified Medicare-Medicaid

plans dropped in each subsequent year 2013 through 2016 for both newly enrolled and continuously enrolled. In looking for any trends in race, it is difficult to ascertain any meaningful consistent percentage change in race from year to year in the makeup of the enrollees.

Table 3: Demographic Results 2013

2013 Calendar Year *Characteristic*	*Continuously*	*New Enrollees*	*Total*	*p-value*
Age, mean +/- sd	22.307 +/- .021	23.323 +/- .043	22.504 +/- .019	<.001
Sex, n (%)				<.001
Female	588,866 (46.98%)	140,069 (11.17%)	728,935 (58.15%)	
Male	421,764 (33.65%)	102,819 (8.20%)	524,583(41.85%)	
Race, n (%)				<.001
American Indian	30,486 (2.45%)	5,697 (.46%)	36,183 (2.90%)	
Asian	36,174 (2.90%)	9,473 (.76%)	45,647 (3.66%)	
Black	62,067 (4.98%)	13,462 (1.08%)	75,529 (6.06%)	
Not Provided	149,344 (11.99%)	45,242 (3.63%)	194,586 (15.62%)	
Other	215,904 (17.33%)	36,943 (2.97%)	252,847 (20.29%)	
White	515,950 (41.41%)	125,227 (18.94%)	641,177 (51.46%)	
Program Type n (%)				
Alternative Benefit	n/a	n/a	n/a	<.001
Categorically Needy	893,431 (71.27%)	194,017 (15.48%)	1,087,448	
Qual. Medicare/caid	18,133 (1.45%)	3,127 (.25%)	21,260 (1.70%)	
Other	99,064 (7.90%)	45, 727 (3.65%)	144,791 (11.55%)	

Table 4: Demographic Results 2014

2014 Calendar Year *Characteristic*	*Continuously*	*New Enrollees*	*Total*	*p-value*
Age, mean +/- sd	22.902 +/- .022	33.358 +/- .025	27.002 +/- .017	<.001
Sex, n (%)				<.001
Female	521,671 (35.06%)	285,935 (19.22%)	807,606 (54.28%)	
Male	382,691 (25.72%)	297,432 (19.99%)	680,123 (45.72%)	
Race, n (%)				<.001
American Indian	28,422 (1.92%)	12,461 (.84%)	40,883 (2.76%)	
Asian	36,211 (2.44%)	37,690 (2.54%)	73,901 (4.99%)	
Black	64,406 (4.35%)	36,384 (2.46%)	100,790 (6.80%)	
Not Provided	100,705 (6.80%)	68,282 (4.61%)	168,987 (11.4%)	
Other	189,393 (12.78%)	74,073 (5.00%)	263,466 (17.78%)	
White	484,872 (32.72%)	348,924 (23.55%)	833,796 (56.27%)	
Program Type n (%)				<.001
Alternative Benefit	64,397 (4.33%)	384,750 (25.86%)	449,147 (30.19%)	
Categorically Needy	779,773 (52.41%)	183,719 (12.35%)	963,492 (64.76%)	
Qual. Medicare/caid	18,012 (1.21%)	2,859 (.19%)	20,871 (1.40%)	
Other	42,180 (2.84%)	12,039 (.81%)	54,219 (3.64%)	

Table 5: Demographic Results 2015

2015 Calendar Year *Characteristic*	*Continuously*	*New Enrollees*	*Total*	*p-value*
Age, mean +/- sd	23.583 +/- .023	27.992 +/- .036	24.814 +/- .019	<.001
Sex, n (%)				<.001
Female	478,716 (41.35%)	159,600 (13.78%)	638,316 (55.13%)	
Male	355,764 (30.73%)	163, 776(14.14%)	519,540 (44.87%)	
Race, n (%)				<.001
American Indian	27,050 (2.34%)	6,684 (.58%)	33,734 (2.92%)	
Asian	35,244 (3.05%)	16,411 (1.42%)	51,666 (4.47%)	
Black	65,833 (5.70%)	19,835 (1.72%)	85,668 (7.42%)	
Not Provided	70,067 (6.07%)	53,924 (4.67%)	123,991 (10.73%)	
Other	174,296 (15.09%)	40,791 (3.53%)	215,087 (18.62%)	
White	461,668 (39.97%)	183,283 (15.87%)	644,951 (55.84%)	
Program Type n (%)				<.001
Alternative Benefit	88,648 (7.66%)	160,014 (13.82%)	248,662 (21.48%)	
Categorically Needy	709,027 (61.24%)	150,253 (12.98%)	859,280 (74.21%)	
Qual. Medicare/caid	17,005 (1.47%)	2,148 (.19%)	19,153 (1.65%)	
Other	19,800 (1.71%)	30,761 (.95%)	30,761 (2.66%)	

Table 6: Demographic Results 2016

2016 Calendar Year *Characteristic*	*Continuously*	*New Enrollees*	*Total*	*p-value*
Age, mean +/- sd	24.14 +/- .023	26.765 +/- .059	24.523 +/- .022	<.001
Sex, n (%)				<.001
Female	444,804 (48.83%)	65,979 (7.24%)	510,783 (56.07%)	
Male	333,071 (36.56%)	67,106 (7.37%)	400,177 (43.93%)	
Race, n (%)				<.001
American Indian	25,795 (2.84%)	2,714 (.30%)	28,509 (3.13%)	
Asian	33,201 (3.65%)	6,741 (.74%)	39,942 (4.39%)	
Black	62,704 (6.89%)	8,221 (.90%)	70,925 (7.80%)	
Not Provided	59,973 (6.59%)	25,970 (2.86%)	85,943 (9.45%)	
Other	163,941 (18.02%)	16,701 (1.84%)	180.642 (19.86%)	
White	431, 962 (47.49%)	71,698 (7.88%)	503, 660 (55.37%)	
Program Type n (%)				<.001
Alternative Benefit	96,045 (10.54%)	59,914 (6.58%)	155,959 (17.12%)	
Categorically Needy	649,293 (71.28%)	67,096 (7.37%)	716,389 (78.64%)	
Qual. Medicare/caid	16,117 (1.77%)	1,000 (.11%)	17,117 (1.88%)	
Other	16,420 (1.80%)	5,075 (.56%)	21,495 (2.36%)	

Tables 7 and 8 compare newly enrolled versus continuously enrolled using the t-test statistic. The tables list the means and standard deviations (sd) for claim type consisting of emergency room, inpatient, office along with Ambulatory care sensitive condition claims count (ACSC) for inpatient and ED for years 2013 through 2016 (half year).

Table 7: Claims Count of Means and Standard Deviations 2013-2014

2013	Continuously Enrolled	New Enrolled	p value
Emergency Room mean +/- sd			
Part B XO	.2680 +/- 2.0069	.0497 +/- 0.7235	<.001
Professional	1.0498+/- 3.2446	.6890 +/- 2.3693	<.001
Inpatient mean, +/- sd			
Hospice	.0009 +/- 0.0795	.0007+/- 0.0495	0.077
Inpatient	.0664+/- 0.4120	.1639+/- 0.5309	<.001
Part A XO Inpatient	.0098+/- 0.1960	.0026+/- 0.0793	<.001
Part B XO Professional	.4106+/- 4.7950	.1027+/- 1.977	<.001
Professional	.6347+/- 5.4042	1.5067+/- 8.7423	<.001
Office			
Part B XO	1.8765+/- 9.9482	.2877+/- 3.6040	<.001
Professional	8.3313+/-21.2220	4.6975+/- 10.3961	<.001
ACSC			
Inpatient	.2343+/- 1.9752	.1991+/- 1.7863	<.001
Emergency Department	.6123+/- 1.9642	.3317+/- 1.2962	<.001
2014			
Emergency Room mean +/- sd			
Part B XO	.2835+/- 2.1218	.0204+/- 0.4577	<.001
Professional	1.1224+/- 3.5036	.8277+/- 2.5994	<.001
Inpatient mean, +/- sd			
Hospice	.0008+/- 0.0710	.0005+/- 0.0538	0.023
Inpatient	.0589+/- 0.3942	.0811+/- 0.3888	<.001
Part A XO Inpatient	.0043+/- 0.0995	.0009+/- 0.0516	<.001
Part B XO Professional	.4132+/- 4.6694	.0415+/- 1.4662	<.001
Professional	.5786+/- 5.4151	.8626+/- 6.1348	<.001
Office			
Part B XO	1.8875+/- 10.1127	.1132+/- 2.1562	<.001
Professional	8.4072+/- 21.5048	5.5952+/- 2.4521	<.001
ACSC			
Inpatient	.2263+/- 1.9845	.1554+/- 1.4577	<.001
Emergency Department	.6647+/- 2.1130	.3937+/- 1.4147	<.001

Table 8: Claims Count of Means and Standard Deviations 2015-2016

2015	Continuously Enrolled	New Enrolled	p value
Emergency Room mean +/- sd			
Part B XO	.3232+/- 2.4125	0.0349+/- 0.6696	<.001
Professional	1.1572+/- 3.5796	.7200+/- 2.3008	<.001
Inpatient mean, +/- sd			
Hospice	.0006+/- 0.0606	.0009+/- 0.0646	0.018
Inpatient	.0537+/- 0.3597	.1092+/- 0.4782	<.001
Part A XO Inpatient	.0043+/- 0.1086	.0015+/- 0.0644	<.001
Part B XO Professional	.4358+/- 5.007	.0733+/- 1.9508	<.001
Professional	.5635+/- 5.2435	1.0671+/- 7.1673	<.001
Office			
Part B XO	1.7972+/- 9.4995	.1347+/- 2.1834	<.001
Professional	8.0856+/- 21.0980	3.8869+/- 9.9628	<.001
ACSC			
Inpatient	.1700+/- 1.6243	.1043+/- 1.2290	<.001
Emergency Department	.5400+/- 1.7859	.2149+/- 0.9630	<.001
2016			
Emergency Room mean +/- sd			
Part B XO	.1912+/- 1.6095	.0207+/- 0.4121	<.001
Professional	.5951+/- 2.0706	.4790+/- 1.6751	<.001
Inpatient mean, +/- sd			
Hospice	.0003+/- 0.0424	.0003+/- 0.0274	0.654
Inpatient	.0280+/- 0.2417	.1016+/- 0.3727	<.001
Part A XO Inpatient	.0027+/- 0.0672	.0015+/- 0.0484	<.001
Part B XO Professional	.2367+/- 3.3796	.0505+/- 1.5641	<.001
Professional	.2901+/- 3.4721	.9442+/- 6.2068	<.001
Office			
Part B XO	.9275+/- 5.2833	.0736 +/- 1.3391	<.001
Professional	4.0852 +/- 10.7438	2.3245 +/- 5.9932	<.001
ACSC			
Inpatient	.1098 +/- 1.2479	.1047+/- 1.1593	0.141
Emergency Department	.3559 +/- 1.3434	.2028 +/- .8519	<.001

In all claims categories comparing continuously enrolled versus newly enrolled, the means were higher for continuously enrolled and significantly different at the $p<.001$ level, except for inpatient ACSC in year 2016 and hospice in years 2013 and 2016. Hospice is significant at $p< 0.05$ in 2014 and 2015. The higher means for the continuously enrolled is consistent in the regression models adjusting for the member's characteristics.

Multivariate Analysis

A linear regression analysis on claims and ACSC counts was performed. The independent variables of new enrollee, age, sex, program type and race were utilized for the analysis. Tables 9,10,11,12 and 13 show the results for year 2013. The Alternative Benefit Program was omitted in the STATA output since it did not exist in 2013. The remaining data for years 2014, 2015, and 2016 are in Appendix D. The regression indicated that there was a collectively significant effect ($p<.001$) of those independent variables on the emergency department, inpatient, and ambulatory (office) claims dependent variables as well for ACSC in the inpatient and emergency department. The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$), and direction is consistent (negative coefficient, new enrollees lower) in all regressions except for ACSC inpatient in 2016, which was not significant.

Table 9: Demographic Regression 2013 Emergency

2013 Emergency Claims

Number of obs = 1245958

note: prog1 omitted because of collinearity

F(10,1245947) = 1970.61

Prob > F = 0.0000

R-squared = 0.0156

Adj R-squared = 0.0156

Root MSE = 3.071

	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
New Enrollee	-0.335	0.007	-47.27	0.001	-0.349	-0.321
Continuous Enrollee	Reference					
Age	0.011	0.000	80.87	0.001	0.011	0.012
Female	0.024	0.006	4.32	0.001	0.013	0.036
Male	Reference					
Alternative Benefit	0.000	(omitted)				
Categorically Needy	0.477	0.009	52.68	0.001	0.459	0.495
Qualified Medicare/caid	-0.924	0.023	-40.38	0.001	-0.969	-0.879
Other	Reference					
American Indian	0.480	0.017	28.94	0.001	0.448	0.513
Asian	-0.784	0.015	-52.52	0.001	-0.813	-0.754
Black	0.377	0.012	31.89	0.001	0.354	0.400
Not Provided	-0.181	0.008	-22.23	0.001	-0.197	-0.165
Other	-0.240	0.007	-32.85	0.001	-0.255	-0.226
White	Reference					
_cons	0.443	0.011	40.33	0.001	0.422	0.465

Table 10: Demographic Regression 2013 Inpatient

2013 Inpatient Claims

note: Alternate Benefit omitted because of collinearity

Number of obs = 1245958
F(10,1245947) = 1671.35
Prob > F = 0.0000
R-squared =0.0132
Adj R-squared= 0.0132
Root MSE= .43574

	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
New Enrollee	0.103	0.001	102.66	0.001	0.101	0.105
Continuous Enrollee	Reference					
Age	0.000	0.000	24.13	0.001	0.000	0.001
Female	0.050	0.001	62.91	0.001	0.049	0.052
Male	Reference					
Alternative Benefit	0.000	(omitted)				
Categorically Needy	0.060	0.001	46.41	0.001	0.057	0.062
Qualified Medicare/caid	-0.043	0.003	-13.26	0.001	-0.049	-0.037
Other	Reference					
American Indian	-0.013	0.002	-5.46	0.001	-0.017	-0.008
Asian	-0.037	0.002	-17.32	0.001	-0.041	-0.033
Black	0.011	0.002	6.82	0.001	0.008	0.015
Not Provided	0.007	0.001	5.87	0.001	0.005	0.009
Other	0.001	0.001	0.86	0.392	-0.001	0.003
White	Reference					
_cons	-0.026	0.002	-16.7	0.001	-0.029	-0.023

Table 11: Demographic Regression 2013 Ambulatory

2013 Ambulatory Claims

Number of obs = 1245958

note: Alternate Benefit omitted because of collinearity

F(10,1245947) = 2615.65

Prob > F = 0.0000

R-squared = 0.0206

Adj R-squared = 0.0206

Root MSE = 19.476

	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
New Enrollee	-3.387	0.045	-75.45	0.001	-3.475	-3.299
Continuous Enrollee	Reference					
Age	0.091	0.001	102.03	0.001	0.090	0.093
Female	1.186	0.036	33.05	0.001	1.115	1.256
Male	Reference					
Alternative Benefit	0.000	(omitted)				
Categorically Needy	3.849	0.057	67.01	0.001	3.737	3.962
Qualified Medicare/caid	-5.212	0.145	-35.92	0.001	-5.497	-4.928
Other	Reference					
American Indian	1.454	0.105	13.81	0.001	1.248	1.661
Asian	-3.639	0.095	-38.46	0.001	-3.824	-3.453
Black	-0.172	0.075	-2.29	0.022	-0.319	-0.025
Not Provided	-1.347	0.052	-26.08	0.001	-1.448	-1.246
Other	-1.540	0.046	-33.22	0.001	-1.631	-1.449
White	Reference					
_cons	2.921	0.070	41.92	0.001	2.785	3.058

Table 12: Demographic Regression 2013 ACSC Emergency Department

2013 ED ACSC

Number of obs = 1245958

note: Alternate Benefit omitted because of collinearity

F(10,1245947) = 3330.51

Prob > F = 0.0000

R-squared = 0.0260

Adj R-squared = 0.0260

Root MSE = 1.8339

	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
New Enrollee	-0.261	0.004	-61.788	0.001	-0.269	-0.253
Continuous Enrollee	Reference					
Age	0.012	0.000	139.584	0.001	0.012	0.012
Female	0.075	0.003	22.104	0.001	0.068	0.081
Male	Reference					
Alternative Benefit	0.000	(omitted)				
Categorically Needy	0.299	0.005	55.19	0.001	0.288	0.309
Qualified Medicare/caid	0.112	0.014	8.179	0.001	0.085	0.139
Other	Reference					
American Indian	0.208	0.010	21.018	0.001	0.189	0.228
Asian	-0.447	0.009	-50.211	0.001	-0.465	-0.430
Black	0.236	0.007	33.397	0.001	0.222	0.250
Not Provided	-0.088	0.005	-18.091	0.001	-0.098	-0.078
Other	-0.114	0.004	-26.116	0.001	-0.123	-0.105
White	Reference					
_cons	0.073	0.007	11.109	0.001	0.060	0.086

Table 13: Demographic Regression 2013 ACSC Inpatient

2013 IP ACSC

Number of obs = 1245958

note: Alternate Benefit omitted because of collinearity

F(10,1245947) = 2230.23

Prob > F = 0.0000

R-squared = 0.0176

Adj R-squared = 0.0176

Root MSE = 1.9225

	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
New Enrollee	-.037	.004	-8.38	0.000	-.046	-.028
Continuous Enrollee	Reference					
Age	.013	.001	141.60	0.000	.012	.013
Female	-.068	.004	-19.23	0.000	-.075	-.061
Male	Reference					
Alternative Benefit	0.000	(omitted)				
Categorically Needy	.120	.006	21.19	0.000	.109	.131
Qualified Medicare/caid	-.005	.014	-0.33	0.743	-.033	.023
Other	Reference					
American Indian	.065	.010	6.22	0.000	.044	.084
Asian	-.182	.009	-19.48	0.000	-.200	-.164
Black	.017	.007	2.31	0.021	.003	.032
Not Provided	.019	.005	3.75	0.000	.009	.029
Other	-.042	.005	-9.15	0.000	-.051	-.033
White	Reference					
_cons	-.102	.007	-14.79	0.000	-.115	-.088

Trends

In assessing trends within the data, in each year 2013 through 2016, the mean number of ED claims for Medicaid and Part B XO members is lower for newly enrolled versus continuously enrolled. Inpatient hospice claims in 2013 and 2014 are lower for newly enrolled, higher for the year 2015 and same for 2016 (although 2016 was not statistically significant). In each year 2013 through 2016 for Medicaid inpatients, the average claims per member are higher for new enrollees than for continuously enrolled but not for Part A XO members, where the opposite is true for each year, the mean claims are lower. For office claims in each year 2013 through 2016, newly enrolled mean claims are lower than continuously enrolled for both Medicaid/Medicare XO claims. Ambulatory care sensitive condition counts for both ED and inpatient are lower in all years for newly enrolled as well, although difference is not significant in 2016.

Mean ED claims went up in each year 2013 through 2016 for continuous when compared year to year, assuming the doubling of the 2016 number. ED XO claims went up through 2016 for continuously enrolled (with year 2016 doubling). Since 2016 is a half year with incomplete data, any comparisons of trend in that year compared to previous year should be interpreted cautiously. If the mean number is doubled, the trend would hold. Year by year comparisons for continuously enrolled using hospice, each subsequent year is lower than the previous year 2013 through 2015. Hospice mean claims are not significantly different in years 2013 and 2016 between newly enrolled and continuously enrolled at $p<0.001$.

Resolution of Hypothesis

Hypothesis 1

Newly enrolled Medicaid patients will have a higher level of emergency department utilization than the continuously enrolled population in Washington State:

For 2013, the mean number of emergency department claims for newly enrolled in the Medicaid program, 0.6890, was significantly lower than those continuously enrolled, 1.0498 ($p<.001$).

For 2014, the mean number of emergency department claims for newly enrolled in the Medicaid program, 0.8277, was significantly lower than those continuously enrolled, 1.1224 ($p<.001$).

For 2015, the mean number of emergency department claims for newly enrolled in the Medicaid program, 0.7200, was significantly lower than those continuously enrolled, 1.1572 ($p<.001$).

For 2016, the mean number of emergency department claims for newly enrolled in the Medicaid program, 0.4790 was significantly lower than those continuously enrolled, 0.5951 ($p<.001$).

For 2013, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F (10, 1,245,947) = 1970.61$, $p < .001$, $R^2 = .0156$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2014, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F (11, 1,481,811) =$

2547.03, $p < .001$, $R^2 = .0186$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2015, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 1,155,085) = 2268.28, $p < .001$, $R^2 = .0211$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2016, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 909,609) = 1454.13, $p < .001$, $R^2 = .0173$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

Hypothesis 2

Newly enrolled Medicaid patients will have a higher level of inpatient utilization than the continuously enrolled population in Washington State:

For 2013, the mean number of inpatient claims for newly enrolled in the Medicaid program, 0.1639 was significantly higher than those continuously enrolled, 0.0664 ($p<.001$).

For 2014, the mean number of inpatient claims for newly enrolled in the Medicaid program, 0.0811, was significantly higher than those continuously enrolled, 0.0589 ($p<.001$).

For 2015, the mean number of inpatient claims for newly enrolled in the Medicaid program, 0.1092 was significantly higher than those continuously enrolled ($p<.001$).

For 2016, the mean number of inpatient claims for newly enrolled in the Medicaid program, 0.1016 was significantly higher than those continuously enrolled, 0.0280 ($p<.001$).

For 2013, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 1,245,947) = 1671.35, $p < .001$, $R^2 = .0132$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2014, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 1,481,811) = 919.631, $p < .001$, $R^2 = .0068$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2015, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 1,155,085) = 914.33, $p < .001$, $R^2 = .0086$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2016, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 909,609) = 1034.39, $p < .001$, $R^2 = .0124$). The new enrollee coefficient remains statistically

significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

Hypothesis 3

Newly enrolled Medicaid patients will have a lower level of ambulatory visits than the continuously enrolled population in Washington State:

For 2013, the mean number of office claims for newly enrolled in the Medicaid program, 4.6975 was significantly lower than those continuously enrolled, 8.3313 ($p<.001$).

For 2014, the mean number of office claims for newly enrolled in the Medicaid program, 5.595 was significantly lower than those continuously enrolled, 8.4072 ($p<.001$).

For 201, the mean number of office claims for newly enrolled in the Medicaid program, 3.8869 was significantly lower than those continuously enrolled, 8.0856 ($p<.001$).

For 2016, the mean number of office claims for newly enrolled in the Medicaid program, 2.3245 was significantly lower than those continuously enrolled, 4.0852, ($p<.001$).

For 2013, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (10, 1,245,947) = 2615.65, $p < .001$, $R^2 = .0206$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2014, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 1,481,811) = 3890.57, $p < .001$, $R^2 = .0281$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2015, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 1,155,085) = 2865.32, $p < .001$, $R^2 = .0266$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2016, the linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type (F (11, 909,609) = 1692.96, $p < .001$, $R^2 = .0201$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

Hypothesis 4

Newly enrolled Medicaid patients will have a higher level ambulatory care sensitive visits than the continuously enrolled population in Washington State:

For 2013, the mean number of ACSC emergency department visits for newly enrolled in the Medicaid program, 0.3317 was significantly lower than those continuously enrolled, 0.6123 ($p<.001$).

For 2014, the mean number of ACSC emergency department visits for newly enrolled in the Medicaid program, 0.3937 was significantly lower than those continuously enrolled, 0.6647 ($p<.001$).

For 2015, the mean number of ACSC emergency department visits for newly enrolled in the Medicaid program, 0.2149 was significantly lower than those continuously enrolled, 0.5400 ($p<.001$).

For 2016, the mean number of ACSC emergency department visits for newly enrolled in the Medicaid program, 0.2028 was significantly lower than those continuously enrolled, 0.3559 ($p<.001$).

For 2013, the ACSC emergency department linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(10, 1{,}245{,}947) = 3330.51$, $p < .001$, $R^2 = .0260$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2014, the ACSC emergency department linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(11, 1{,}481{,}811) = 3272.49$, $p < .001$, $R^2 = .0237$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2015, the ACSC emergency department linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(11, 1{,}155{,}085) = 3016.40$, $p < .001$, $R^2 = .0279$). The new enrollee coefficient

remains statistically significant even after covariate adjustment (p<.001) and direction is consistent (negative coefficient, new enrollees lower).

For 2016, the ACSC emergency department linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(11, 909{,}609) = 1935.78$, $p < .001$, $R^2 = .0229$). The new enrollee coefficient remains statistically significant even after covariate adjustment (p<.001) and direction is consistent (negative coefficient, new enrollees lower).

For 2013, the ACSC inpatient for newly enrolled in the Medicaid program, 0.1991 was significantly lower than those continuously enrolled, 0.2343 (p<.001).

For 2014, the ACSC inpatient for newly enrolled in the Medicaid program, 0.1554 was significantly lower than those continuously enrolled, 0.2263 (p<.001).

For 2015, the ACSC inpatient for newly enrolled in the Medicaid program, 0.1043 was significantly lower than those continuously enrolled, 0.1700 (p<.001).

For 2016, the ACSC inpatient for newly enrolled in the Medicaid program, 0.1047 was not statistically different than those continuously enrolled, 0.1098 (p >0.001).

For 2013, the ACSC inpatient linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(10, 1{,}245{,}947) = 2230.23$, $p < .001$, $R^2 = 0.0176$). The new enrollee coefficient remains statistically significant even after covariate adjustment (p<.001) and direction is consistent (negative coefficient, new enrollees lower).

For 2014, the ACSC inpatient linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(11, 1{,}481{,}823) = 1875.29$, $p < .001$, $R^2 = 0.0137$). The new enrollee coefficient

remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2015, the ACSC inpatient linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(11, 1{,}155{,}085) = 1472.83$, $p < .001$, $R^2 = 0.0138$). The new enrollee coefficient remains statistically significant even after covariate adjustment ($p<.001$) and direction is consistent (negative coefficient, new enrollees lower).

For 2016, the ACSC inpatient linear regression indicated that there was a collectively significant effect between the new enrollee, age, sex, race and program type ($F(11, 909{,}609) = 1019.53$, $p < .001$, $R^2 = 0.0122$). The new enrollee coefficient was not statistically significant.

General Summary of Findings

The following is a general overview of the findings on the study hypotheses.

Hypothesis 1: Newly enrolled Medicaid patients will have a higher level of Emergency Department utilization than the continuously enrolled population in Washington State. The hypothesis was not supported. The newly enrolled population had a significantly lower level of claims in all years studied ($p<0.001$).

Hypothesis 2: Newly enrolled Medicaid patients will have a higher level of Inpatient utilization than the continuously enrolled population in Washington State. The hypothesis was supported. The newly enrolled populations had a significantly higher level of claims in all years studied ($p< 0.01$).

Hypothesis 3: Newly enrolled Medicaid patients will have a lower level of Ambulatory utilization than the continuously enrolled population in Washington State. The hypothesis was supported. The newly enrolled populations had a significantly lower level of claims in all years studied ($p<0.01$).

Hypothesis 4: Newly enrolled Medicaid patients will have a higher level Ambulatory Care Sensitive Condition claims than the continuously enrolled population in Washington State. The hypothesis was not supported. The newly enrolled population had a significantly lower level of ACSC in all years studied ($p<0.001$) for both ED and IP with the exception of IP in 2016 which was not significant ($p>0.001$).

CHAPTER 5

SUMMARY AND CONCLUSIONS

Discussion of Study Findings

The results of the study show that newly enrolled Medicaid patients are utilizing services differently than those continuously enrolled.

No matter if patients are newly enrolled or continuously enrolled, utilizing consistent primary care versus using the ED for episodic care is better, for both to improve the Medicaid member's health, and to reduce cost for the overall healthcare system. The key to decreasing inappropriate ED utilization is to assure Medicaid patients have better and consistent access to primary care, which will require removing real or perceived barriers to ED alternatives, coupled with the right incentives/support structures. The lack of appropriate access may be a reason why the newly enrolled had higher levels of inpatient claims and lower levels of ED and office utilization, because they may have been avoiding care altogether and are not used to accessing care unless very sick. This study likely corroborated the general understanding that if patients do not get good access to primary care, and access care only sporadically through EDs when they are sicker with higher acuity, then when admitted they will be costlier to treat (Lozano et al., 2015).

Previous studies showed a variety of outcomes. The results in Washington did not show an initial sharp increase in ED utilization like the Wisconsin study by DeLeire et al. (2008). Mean professional ED claims went up for new enrollees in the expansion year,

but the rate of .8277 was 35.6% lower than the mean number of ED claims for those continuously enrolled. The trend is up for mean professional ED claims for those continuously enrolled each year (assuming the 2016 half year will be double the half year number) which perhaps may be a byproduct of the known issue in Washington State of private providers starting to significantly cap and downsize the number of Medicaid patients seen due to economic constraints. While the Washington State exchange was very successful in expanding coverage due to considerable statewide push, the access channels have not commensurately increased and, in all likelihood, have constricted, driving patients to seek care in the EDs as an ambulatory office alternative for those continuously enrolled, constituting a potential barrier for those newly enrolled seeking any care. Those who didn't have care coverage previously (the newly enrolled) likely are following prior practice of not seeking care unless absolutely necessary, which explains the lower mean count of ACSC when compared to the continuously enrolled. The fact that the new enrollees were also more likely to be male, and tend to seek care less often, may also be a factor. A report by the Kaiser Family Foundation (KFF, 2015) highlighted the differences between men and women's utilization and access of care. Men are less likely to have seen a physician during the last 2 years, are less likely to identify with a provider for care, less likely to get screening services, and less likely to have a place to go to when sick or to ask medical advice. This may help explain some of the differences, because males were a larger proportion of the expansion population.

Strengths and Limitations

A potential limitation in the study is that Medicaid enrollment historically tends to change from year to year. Medicaid populations have a 20% turnover rate on average (Ellwood & Kell, 2003). The sample size was large enough to account for the level of turnover, but assumed that the underlying characteristics of the remaining cohort over the years studied did not appreciably change. The study also took place over a relatively short time period, in effect looking at three and one-half years. It would be worthwhile to repeat the analysis in the future with a longer time frame. However, should the current ACA be significantly altered, Medicaid patient behaviors and outcomes may change significantly as well. This study was designed to supply baseline information. However, much more can be evaluated related to the ACA Medicaid expansion population. Since this study was exempt, the moderating variables were very limited. However, there is now an opportunity for future studies to dive deeper into why specifically those newly enrolled were utilizing services at a lower rate and had lower mean counts of ACSC when in the hospital or ED on average. Rerunning the analysis with monthly enrollment data would add greatly to the specificity of new versus continuous enrollment and would be an effective way to verify these initial findings.

This analysis of new enrollee utilization may serve as a unique contribution to the managed care organizations as well as to the 1115 ACH program development teams looking at the expansion population for program design, especially in the program areas of high cost healthcare setting diversion (ED and inpatient) and care management.

Future Research Recommendations

There are many opportunities for future studies to better understand the characteristics, socioeconomic drivers, and care utilization patterns of the Medicaid population under the ACA, and what systems and structures should be designed to best meet their needs most economically and effectively. As the Washington State 1115 waiver and programs to redesign the Medicaid Program go into effect over the next several years, studies that dive deeper into what motivates and supports Medicaid patients to seek better care relationships and health focus would be worthwhile. Research is also needed to see if the programs developed through the 1115 waiver are having the desired outcomes. Looking into effects of clinic and provider density, and the availability of programs that address the social determinants of health, would also be informative. This would require being able to use zip code-level data and more specificity around site of service. Additionally, a comparison of outcomes for patients utilizing Federally Qualified Healthcare Centers (FQHC) for care in comparison to traditional clinics would also be interesting, to see if their model is engaging patients better. FQHCs often integrate physical and behavioral health services and may additionally provide oral health programs. A comparison of reasons for admission between the new enrollees and those continuously enrolled to see if there are any patterns in diagnosis would also be a good follow-up study.

In evaluating other statistical models, a Poisson regression as an alternative modeling method is warranted for future research.

Final Conclusion

If early and proper primary care is not available or easy to access for the exchange expansion population, then patients will likely utilize the emergency department for intermittent care, and when patients seek care they likely will be much sicker and costlier to take care of. This deferral of care will then subsequently increase inpatient admissions and cost of care for Washington State. Given these relationships, it will be important to think about how to design community, structural, educational and social systems to change how the Medicaid population accesses and receives care or the ACA may not have its desired effect of improving access to care for the uninsured while at the same time reducing the cost of providing that care. The results of this study provided an early baseline indication of the utilization rates for the expansion population and those newly enrolled who were found to be utilizing care differently than those continuously enrolled.

The study found that those newly enrolled have utilized services to a lesser degree on average in the ED and ambulatory (office) settings but were hospitalized more on average. New enrollees also have lower mean counts of ACSC in both the ED and Inpatient setting.

Both the higher level of utilization among the continuously enrolled for the ED or the higher level inpatient rate, and lower ED utilization of the newly enrolled, perhaps from avoiding care altogether, supports making sure the Medicaid members have strong connections to primary care to improve health and lower costs over the longer term. Hopefully this study encourages and informs those designing program interventions to have providers or managed care organizations reach out early and connect positively upon Medicaid enrollment with the new enrollees. It is vital that they will be able to

assess, engage and improve the members health earlier, and to substitute more appropriate incentives, programs, or infrastructure in the use of primary care similar to the "ER is for Emergencies" program, as well as investing in care systems designed for this patient population such as the FQHC system. This is especially important in the context of the rapid expansion of Medicaid enrollment of over 50% since 2014 in Washington, coupled with declining access in the private sector and intense state economic pressures of which Medicaid is a significant budget component. Under the newly signed Washington State 1115 Medicaid waiver the state has set the following program goals (WSHCA, n.d.) which should, if designed properly, create programs that address this specific issue as part of the overall Washington State Medicaid reforms in the areas of:

Health systems capacity building—workforce development; system infrastructure technology and tools; and system supports to assist providers in adopting value-based purchasing and payment.

Care delivery redesign—integrated delivery of physical and behavioral health services; care focused on specific populations; alignment of care coordination and case management to serve the whole person; and outreach, engagement, and recovery supports.

Prevention and health promotion—prevention activities for targeted populations and regions.

Using the context of the social ecological model that helps to demonstrate potential effects on utilization patterns through behavior, both policy changes and community structures through programmatic responses could change the supportive structures and outcomes for the Medicaid population over time to utilize care in more appropriate ways and for better health.

LIST OF REFERENCES

Abraham, J. M. (2014). How might the Affordable Care Act's coverage expansion provisions influence demand for medical care? *Milbank Quarterly, 92*(1), 63-87.

Anderson, R. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior, 36*(1), 1-10.

Baker, L. C., & Hsia, R. Y. (2014). The association between community-level insurance coverage and emergency department use. *Med Care, 52*(6), 535-540.

Bayliss, E. A., Ellis, J. L., Strobel, M. J., McQuillan, D. B., Petsche, I. B., Barrow, J. C., & Beck, A. (2015). Characteristics of newly enrolled members of an integrated delivery system after the Affordable Care Act. The *Permanente Journal, 19*(3), 4-10

Booske, B., Athens, J., Kindig, D., Park, H. & Remington, P. (2010). Different perspectives for assigning weights to determinants of health. University of Wisconsin Population Health Institute. Retrieved from https://uwphi.pophealth.wisc.edu/publications/other/different-perspectives-for-assigning-weights-to-determinants-of-health.pdf

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Cambria Solutions. (2016). Churn between Washington Apple Health and Qualified Health Plan: A data analysis. Retrieved from http://stateofreform.com/wp-content/uploads/2016/01/Churn-Analysis-Report-Final.pdf

Capp, R., Kelly, L., Ellis, P., Carmona, J., Lofton, A., Cobbs-Lomax, D., & D'Onofrio, G. (2016). Reasons for frequent emergency department use by Medicaid enrollees: A qualitative study. *Academic Journal of Emergency Medicine*. Doi: 10.1111/acem.12952.

Centers for Medicare & Medicaid Services. (CMS). (2016, September) Medicaid & CHIP: July 2016 Monthly Applications,

Eligibility Determinations and Enrollment Report. Retrieved from https://www.medicaid.gov/.../downloads/july-2016-enrollment-report.pdf

Chua, K., & Sommers, B. D. (2014). Changes in health and medical spending among young adults under health reform. *Journal of the American Medical Association 311*(23), 2437-2439.

Cohen, D., Scribner, R., & Farley, T. (2000). A structural model of health behavior: A pragmatic approach to explain and influence health behaviors at the population level. *Preventive Medicine, 30,* 146-154.

Collins, S. R., Rasmussen, P. W., Doty, M. M., & Beutel, S. (2015). The rise in health care coverage and affordability since health reform took effect: Findings from the Commonwealth Fund Biennial Health Insurance Survey, 2014. *Issue Brief (Commonwealth Fund), 2*, 1-16.

Decker, S. L. (2012). In 2011 nearly one-third of physicians said they would not accept new Medicaid patients, but rising fees may help. *Health Affairs 31*(8), 1673-1679.

DeLeire, T., Dague, L., Leininger, L., Voskuil, K., & Friedsam, D. (2013). Wisconsin experience indicates that expanding public insurance to low-income childless adults has health care impacts. *Health Affairs, 32*(6), 1037-1045.

Ellwood, M., & Kell, M. (2003). Using MSIS data to analyze Medicaid eligibility: Managed care enrollment patterns in 1999. Retrieved from https://aspe.hhs.gov/system/files/pdf/72756/msisdata.pdf

Friedman, A. B., Saloner, B., & Hsia, R. Y. (2015). No place to call home—policies to reduce ED use in Medicaid. *New England Journal of Medicine, 372*(25), 2382-2385.

Gandhi, S. O., Grant, L. P., & Sabik, L. M. (2014). Trends in nonemergent use of emergency departments by health insurance status. *Medical Care Research and Review, 71*(5), 496-521.

Gandhi, S. O., & Sabik, L. (2014). Emergency department visit classification using the NYU algorithm. *The American Journal of Managed Care, 20*(4), 315-320.

Ginde, A. A., & Lowe, R. A. (2012). Health insurance status change and emergency department use among us adults. *Archives of Internal Medicine, 172*(8), 642-647.

Glanz, K., & Bishop, D. B. (2010). The role of behavioral science theory in development and implementation of public health interventions. *Annual Review of Public Health, 31*, 399-418.

Glanz, K., Rimer, B., & Viswanath, K. (2008). Health behavior and health education, theory, research, and practice, In J. Sallis, N. Owen, & E. Fisher (Eds.) *Ecological Models of Health Behavior*, 4th Ed. (465-485). San Francisco, CA: Jossey-Bass

Glanz, K. (n.d.) e-Source, Behavioral and Social Sciences Research. Retrieved from http://www.esourceresearch.org/Portals/0/Uploads/Documents/Public/Glanz_FullChapter.pdf

Henry J. Kaiser Family Foundation (KFF). (2014). The Washington State health care landscape. Retrieved from http://www.kff.org/health-reform/fact-sheet/the-washington-state-health-care-landscape/

Henry J. Kaiser Family Foundation (KFF). (2015). Gender differences in health care, status, and use: Spotlight on men's health. Retrieved from http://www.kff.org/womens-health-policy/fact-sheet/gender-differences-in-health-care-status-and-use-spotlight-on-mens-health/

Hernandez-Boussard, T., Burns, C. S., Wang, N. E., Baker, L. C., & Goldstein, B. A. (2014). The Affordable Care Act reduces emergency department use by young adults: Evidence from three States. *Health Affairs*, *33*(9), 1648-1654.

Janke, A. T., Brody, A. M., Overbeek, D. L., Bedford, J. C., Welch, R. D., & Levy, P. D. (2015). Access to care issues and the role of EDs in the wake of the Affordable Care Act. *The American Journal of Emergency Medicine*, *33*(2), 181-185.

Lau, J. S., Adams, S. H., Boscardin, W. J., & Irwin, C. E., Jr. (2014). Young adults' health care utilization and expenditures prior to the Affordable Care Act. *Journal of Adolescent Health*, *54*(6), 663-671.

Lee, J., Ding, R., Zeger, S. L., McDermott, A., Habteh-Yimer, G., Chin, M., . . . McCarthy, M. L. (2015). Impact of Subsidized Health Insurance Coverage on Emergency Department Utilization by Low-income Adults in Massachusetts. *Medical Care*, *53*(1), 38-44.

Lo, N., Roby, D. H., Padilla, J., Chen, X., Salce, E. N., Pourat, N., & Kominski, G. F. (2014). Increased service use following Medicaid expansion is mostly temporary: Evidence from California's low income health program. *eScholarship, Policy brief, UCLA Center for Health Policy Research*, PB2014-7.

Lozano, K., Ogbu, U. C., Amin, A., Chakravarthy, B., Anderson, C. L., & Lotfipour, S. (2015). Patient Motivators for Emergency Department Utilization: A Pilot

Cross-Sectional Survey of Uninsured Admitted Patients at a University Teaching Hospital. *Journal of Emergency Medicine,*

Marmot, M. (1998). Viewpoint: Improvement of social environment to improve health. *Lancet, 351*, 57-60.

Marmot, M. (2005). Social determinants of health inequalities. *Lancet* volume *365,* 1099-1105.

McClelland, M., Asplin, B., Epstein, S. K., Kocher, K. E., Pilgrim, R., Pines, J., . . . Rathlev, N. K. (2014). The Affordable Care Act and emergency care. *American Journal of Public Health, 104*(10), e8-e10.

McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly, 15*(4), 351-377.

Medford-Davis, L. N., Eswaran, V., Shah, R. M., & Dark, C. (2015). The Patient Protection and Affordable Care Act's effect on emergency medicine: A synthesis of the data. *Annals of Emergency Medicine,* 1-11

Ndumele, C. D., Mor, V., Allen, S., Burgess, J. F., Jr., & Trivedi, A. N. (2014). Effect of expansions in state Medicaid eligibility on access to care and the use of emergency department services for adult Medicaid enrollees. *Journal of the American Medical Association Internal Medicine 174*(6), 920-926.

Sommers, A. S., Paradise, J., & Miller, C. (2011). Physician willingness and resources to serve more Medicaid patients: perspectives from primary care physicians. *Medicare & Medicaid Research Review, 1*(2), e1-18

Stokols, D.,] (1996). Translating Social Ecological Theory into Guidelines for Community Health Promotion. *American Journal of Health Promotion,* 10(4), 282-298

Smulowitz, P. B., O'Malley, J., Yang, X., & Landon, B. E. (2014). Increased use of the emergency department after health care reform in Massachusetts. *Annuals of Emergency Medicine, 64*(2), 107-115, 115 e101-103.

Taubman, S. L., Allen, H. L., Wright, B. J., Baicker, K., & Finkelstein, A. N. (2014). Medicaid increases emergency-department use: evidence from Oregon's health insurance experiment. *Science, 343*(6168), 263-268.

Washington State Heath Care Authority. (WSHCA). (2017, April). Eligibility overview: Washington Apple Health (Medicaid) Programs. Retrieved from https://www.hca.wa.gov/assets/free-or-low-cost/22-315.pdf

Washington State Heath Care Authority. (WSHCA). (2016, January). Apple Health Update - Senate Ways & Means Committee. Retrieved from https://www.hca.wa.gov/about-hca/legislative-reports#2016-legislative-reports-and-presentations

Washington State Heath Care Authority. (WSHCA). (n.d). Healthier Washington Goals. Retrieved from https://www.hca.wa.gov/about-hca/healthier-washington

Washington State Hospital Association. (WSHA). (n.d.). ER is for Emergencies. Retrieve from http://www.wsha.org/quality-safety/projects/er-is-for-emergencies/

Wharam, J. F., Zhang, F., Landon, B. E., Soumerai, S. B., & Ross-Degnan, D. (2013). Low-socioeconomic-status enrollees in high-deductible plans reduced high-severity emergency care. *Health Affairs, 32*(8), 1398-1406.

Yen, W., Mounts T., (2016, April). Medicaid Growth Under the ACA: A Game-Changer in Reducing Washington's Uninsured in 2014. Retrieved from www.ofm.wa.gov/researchbriefs/2016/brief076.pdf

APPENDIX A

Regression Result Tables 2014-2016

Emergency Room 2014

-> clndr_year = 2014

Source	SS	df	MS
Model	278532.121	11	25321.1019
Residual	14731305.51481811	9.94141997
Total	15009837.61481822	10.1293122

Number of obs = 1481823
F(11,1481811) = 2547.03
Prob > F = 0.0000
R-squared = 0.0186
Adj R-squared = 0.0185
Root MSE = 3.153

EMERROOM2PROFESSIONAL~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-.7043402	.0068663	-102.58	0.000	-.717798	-.6908824
mbr_age	.0084512	.0001424	59.35	0.000	.0081721	.0087303
Alternative_Benefit	1.211468	.0152704	79.33	0.000	1.181538	1.241397
Categorically_Needy	.7048686	.0144743	48.70	0.000	.6764995	.7332377
Qualified_Medicare_caid	-.5252721	.0259312	-20.26	0.000	-.5760963	-.4744479
Female	.0894464	.0052599	17.01	0.000	.0791372	.0997556
American_Indian	.5067241	.0159883	31.69	0.000	.4753875	.5380607
Asian	-.7366255	.0121348	-60.70	0.000	-.7604093	-.7128418
Black	.3710937	.0105277	35.25	0.000	.3504597	.3917276
Not_Provided	-.1661421	.0085876	-19.35	0.000	-.1829734	-.1493108
Other_R	-.2244757	.0071512	-31.39	0.000	-.2384918	-.2104596
_cons	.2459049	.0157026	15.66	0.000	.2151284	.2766814

Inpatient 2014

-> clndr_year = 2014

Source	SS	df	MS
Model	1543.15794	11	140.287086
Residual	226045.4281481811		.152546734
Total	227588.5861481822		.153586994

Number of obs = 1481823
F(11,1481811) = 919.63
Prob > F = 0.0000
R-squared = 0.0068
Adj R-squared = 0.0068
Root MSE = .39057

INPATIENTHOSPINPATIEN~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	.0550554	.0008506	64.73	0.000	.0533884	.0567225
mbr_age	.0004385	.0000176	24.86	0.000	.0004039	.0004731
Alternative_Benefit	-.0180944	.0018916	-9.57	0.000	-.0218018	-.0143869
Categorically_Needy	.044821	.001793	25.00	0.000	.0413069	.0483352
Qualified_Medicare_caid	-.0409625	.0032122	-12.75	0.000	-.0472583	-.0346668
Female	.0341656	.0006516	52.44	0.000	.0328886	.0354427
American_Indian	-.0027012	.0019805	-1.36	0.173	-.006583	.0011806
Asian	-.0410624	.0015032	-27.32	0.000	-.0440086	-.0381163
Black	.0044741	.0013041	3.43	0.001	.0019181	.0070301
Not_Provided	.0096784	.0010638	9.10	0.000	.0075935	.0117634
Other_R	-.0115868	.0008858	-13.08	0.000	-.013323	-.0098505
_cons	-.0046384	.0019451	-2.38	0.017	-.0084507	-.000826

Ambulatory 2014

-> clndr_year = 2014

Source	SS	df	MS
Model	14322190.7	11	1302017.34
Residual	4959028761481811		334.660004
Total	5102250661481822		344.322777

Number of obs = 1481823
F(11,1481811) = 3890.57
Prob > F = 0.0000
R-squared = 0.0281
Adj R-squared = 0.0281
Root MSE = 18.294

OFFICEPROFESSIONAL_co~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-4.856775	.0398385	-121.91	0.000	-4.934857	-4.778693
mbr_age	.0978548	.0008262	118.44	0.000	.0962355	.0994742
Alternative_Benefit	7.424685	.0885986	83.80	0.000	7.251035	7.598335
Categorically_Needy	6.034069	.0839798	71.85	0.000	5.869471	6.198667
Qualified_Medicare_caid	-3.587592	.1504527	-23.85	0.000	-3.882474	-3.29271
Female	1.641113	.0305178	53.78	0.000	1.581299	1.700927
American_Indian	2.004248	.0927643	21.61	0.000	1.822433	2.186063
Asian	-2.899495	.070406	-41.18	0.000	-3.037488	-2.761502
Black	-.4731934	.0610818	-7.75	0.000	-.5929115	-.3534752
Not_Provided	-.9944141	.049825	-19.96	0.000	-1.092069	-.8967588
Other_R	-1.650886	.0414912	-39.79	0.000	-1.732207	-1.569565
_cons	.1036523	.0911064	1.14	0.255	-.074913	.2822177

ACSC ED 2014

-> clndr_year = 2014

Source	SS	df	MS
Model	123648.939	11	11240.8126
Residual	5089927.161481811	3.43493682	
Total	5213576.11481822	3.51835517	

Number of obs = 1481823
F(11,1481811) = 3272.49
Prob > F = 0.0000
R-squared = 0.0237
Adj R-squared = 0.0237
Root MSE = 1.8534

AmbSensitive_count_al~D	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-.4287955	.0040361	-106.24	0.000	-.4367061	-.4208849
mbr_age	.009753	.0000837	116.52	0.000	.009589	.0099171
Alternative_Benefit	.3912338	.008976	43.59	0.000	.3736411	.4088265
Categorically_Needy	.2879347	.0085081	33.84	0.000	.2712591	.3046103
Qualified_Medicare_caid	.171897	.0152425	11.28	0.000	.1420222	.2017719
Female	.1132506	.0030918	36.63	0.000	.1071907	.1193104
American_Indian	.199346	.0093981	21.21	0.000	.1809261	.2177659
Asian	-.4009233	.0071329	-56.21	0.000	-.4149036	-.386943
Black	.2381442	.0061883	38.48	0.000	.2260154	.2502729
Not_Provided	-.0927716	.0050478	-18.38	0.000	-.1026652	-.082878
Other_R	-.1156367	.0042035	-27.51	0.000	-.1238755	-.1073979
_cons	.1237115	.0092301	13.40	0.000	.1056208	.1418022

Emergency Room 2015

-> clndr_year = 2015

Source	SS	df	MS
Model	262716.557	11	23883.3234
Residual	12162213.41155085	10.52928	
Total	12424929.91155096	10.756621	

Number of obs = 1155097
F(11,1155085) = 2268.28
Prob > F = 0.0000
R-squared = 0.0211
Adj R-squared = 0.0211
Root MSE = 3.2449

EMERROOM2PROFESSIONAL~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-.6780734	.0076014	-89.20	0.000	-.6929719	-.6631749
mbr_age	.0101007	.0001606	62.91	0.000	.009786	.0104155
Alternative_Benefit	1.24097	.0203464	60.99	0.000	1.201092	1.280848
Categorically_Needy	.7158021	.0199633	35.86	0.000	.6766748	.7549295
Qualified_Medicare_caid	-.5777532	.0302085	-19.13	0.000	-.6369607	-.5185456
Female	.1253843	.0061154	20.50	0.000	.1133983	.1373702
American_Indian	.5084614	.0181385	28.03	0.000	.4729105	.5440122
Asian	-.769181	.0148765	-51.70	0.000	-.7983384	-.7400237
Black	.3563995	.0118157	30.16	0.000	.3332412	.3795578
Not_Provided	-.141034	.0103011	-13.69	0.000	-.1612238	-.1208441
Other_R	-.2134497	.0081906	-26.06	0.000	-.2295029	-.1973964
_cons	.1629674	.0213517	7.63	0.000	.1211188	.2048159

Inpatient 2015

-> clndr_year = 2015

Source	SS	df	MS
Model	1573.06148	11	143.005589
Residual	180661.7811155085	.156405616	
Total	182234.8431155096	.157765972	

Number of obs = 1155097
F(11,1155085) = 914.33
Prob > F = 0.0000
R-squared = 0.0086
Adj R-squared = 0.0086
Root MSE = .39548

INPATIENTHOSPINPATIEN~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	.0728373	.0009264	78.62	0.000	.0710215	.0746531
mbr_age	.0001903	.0000196	9.72	0.000	.0001519	.0002287
Alternative_Benefit	.0004857	.0024798	0.20	0.845	-.0043746	.005346
Categorically_Needy	.04567	.0024331	18.77	0.000	.0409012	.0504388
Qualified_Medicare_caid	-.0277938	.0036818	-7.55	0.000	-.0350099	-.0205776
Female	.0353079	.0007453	47.37	0.000	.0338471	.0367687
American_Indian	-.0130233	.0022107	-5.89	0.000	-.0173562	-.0086904
Asian	-.0385537	.0018131	-21.26	0.000	-.0421074	-.0350001
Black	.005141	.0014401	3.57	0.000	.0023185	.0079635
Not_Provided	.0136827	.0012555	10.90	0.000	.011222	.0161434
Other_R	-.0095071	.0009983	-9.52	0.000	-.0114636	-.0075505
_cons	-.0068267	.0026023	-2.62	0.009	-.0119271	-.0017263

Ambulatory 2015

-> clndr_year = 2015

Source	SS	df	MS
Model	10820516.6	11	983683.33
Residual	3965488751155085	343.307094	
Total	4073693911155096	352.671459	

Number of obs = 1155097
F(11,1155085) = 2865.32
Prob > F = 0.0000
R-squared = 0.0266
Adj R-squared = 0.0266
Root MSE = 18.529

OFFICEPROFESSIONAL_co~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-4.718395	.0434046	-108.71	0.000	-4.803467	-4.633323
mbr_age	.0847391	.0009169	92.42	0.000	.0829421	.0865361
Alternative_Benefit	6.457809	.1161797	55.58	0.000	6.230101	6.685517
Categorically_Needy	6.010347	.1139918	52.73	0.000	5.786927	6.233767
Qualified_Medicare_caid	-2.989898	.1724926	-17.33	0.000	-3.327977	-2.651818
Female	1.378921	.0349193	39.49	0.000	1.31048	1.447362
American_Indian	2.552451	.1035722	24.64	0.000	2.349453	2.755449
Asian	-3.25253	.0849459	-38.29	0.000	-3.419021	-3.086039
Black	-.6335775	.0674684	-9.39	0.000	-.7658133	-.5013417
Not_Provided	-.8563527	.0588202	-14.56	0.000	-.9716383	-.7410671
Other_R	-1.628695	.0467687	-34.82	0.000	-1.72036	-1.53703
_cons	.0831725	.1219198	0.68	0.495	-.1557862	.3221312

ACSC ED 2015

-> clndr_year = 2015

Source	SS	df	MS		
Model	83269.0056	11	7569.9096	Number of obs =	1155097
Residual	2898784.251155085	2.50958523		F(11,1155085) =	3016.40
				Prob > F =	0.0000
				R-squared =	0.0279
				Adj R-squared =	0.0279
Total	2982053.261155096	2.58164971		Root MSE =	1.5842

AmbSensitive_count_al~D	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-.3803238	.003711	-102.48	0.000	-.3875973	-.3730503
mbr_age	.0090142	.0000784	114.99	0.000	.0088605	.0091678
Alternative_Benefit	.2450544	.0099332	24.67	0.000	.2255856	.2645231
Categorically_Needy	.1720943	.0097461	17.66	0.000	.1529922	.1911964
Qualified_Medicare_caid	.0686346	.0147479	4.65	0.000	.0397292	.0975399
Female	.1008928	.0029856	33.79	0.000	.0950412	.1067444
American_Indian	.1493309	.0088553	16.86	0.000	.1319748	.166687
Asian	-.3291365	.0072628	-45.32	0.000	-.3433713	-.3149017
Black	.1680983	.0057685	29.14	0.000	.1567923	.1794043
Not_Provided	-.0538819	.0050291	-10.71	0.000	-.0637387	-.0440252
Other_R	-.0849159	.0039987	-21.24	0.000	-.0927532	-.0770787
_cons	.1139734	.010424	10.93	0.000	.0935427	.134404

Emergency 2016

-> clndr_year = 2016

Source	SS	df	MS		
Model	63737.5924	11	5794.32658	Number of obs =	909621
Residual	3624549.94909609	3.98473404		F(11,909609) =	1454.13
				Prob > F =	0.0000
				R-squared =	0.0173
				Adj R-squared =	0.0173
Total	3688287.54909620	4.05475642		Root MSE =	1.9962

EMERROOM2PROFESSIONAL~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-.2402439	.0063713	-37.71	0.000	-.2527314	-.2277563
mbr_age	.0066545	.0001097	60.67	0.000	.0064395	.0068695
Alternative_Benefit	.7987809	.0149457	53.45	0.000	.7694879	.8280738
Categorically_Needy	.4407653	.0145072	30.38	0.000	.4123316	.4691989
Qualified_Medicare_caid	-.2567543	.0206256	-12.45	0.000	-.2971798	-.2163287
Female	.071754	.0042525	16.87	0.000	.0634192	.0800888
American_Indian	.289118	.0121607	23.77	0.000	.2652834	.3129525
Asian	-.4507234	.0104155	-43.27	0.000	-.4711374	-.4303094
Black	.1636025	.0080137	20.42	0.000	.147896	.179309
Not_Provided	-.0821428	.0075507	-10.88	0.000	-.0969419	-.0673437
Other_R	-.104217	.0055479	-18.79	0.000	-.1150906	-.0933433
_cons	-.0433953	.0153969	-2.82	0.005	-.0735727	-.0132179

Inpatient 2016

-> clndr_year = 2016

Source	SS	df	MS		
Model	794.329239	11	72.211749	Number of obs =	909621
Residual	63500.4235909609	909609	.069810681	F(11,909609) =	1034.39
				Prob > F =	0.0000
				R-squared =	0.0124
				Adj R-squared =	0.0123
Total	64294.7527909620	909620	.07068309	Root MSE =	.26422

INPATIENTHOSPINPATIEN~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	.0765858	.0008433	90.82	0.000	.0749329	.0782387
mbr_age	.0000531	.0000145	3.66	0.000	.0000246	.0000815
Alternative_Benefit	.0115176	.0019782	5.82	0.000	.0076404	.0153949
Categorically_Needy	.0246309	.0019202	12.83	0.000	.0208674	.0283945
Qualified_Medicare_caid	-.0119057	.00273	-4.36	0.000	-.0172564	-.0065549
Female	.0188844	.0005629	33.55	0.000	.0177812	.0199876
American_Indian	-.0045882	.0016096	-2.85	0.004	-.007743	-.0014334
Asian	-.0232235	.0013786	-16.85	0.000	-.0259256	-.0205215
Black	.0040258	.0010607	3.80	0.000	.0019469	.0061048
Not_Provided	.0178565	.0009994	17.87	0.000	.0158977	.0198154
Other_R	-.0076669	.0007343	-10.44	0.000	-.0091061	-.0062276
_cons	-.0047184	.002038	-2.32	0.021	-.0087128	-.0007241

Ambulatory 2016

-> clndr_year = 2016

Source	SS	df	MS		
Model	1903373.41	11	173033.946	Number of obs =	909621
Residual	92969496909609	909609	102.208197	F(11,909609) =	1692.96
				Prob > F =	0.0000
				R-squared =	0.0201
				Adj R-squared =	0.0201
Total	94872869.4909620	909620	104.299454	Root MSE =	10.11

OFFICEPROFESSIONAL_co~l	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-2.015838	.032268	-62.47	0.000	-2.079082	-1.952594
mbr_age	.0432352	.0005555	77.83	0.000	.0421464	.0443241
Alternative_Benefit	3.895155	.0756934	51.46	0.000	3.746798	4.043511
Categorically_Needy	3.306047	.073473	45.00	0.000	3.162043	3.450052
Qualified_Medicare_caid	-1.325329	.1044601	-12.69	0.000	-1.530068	-1.120591
Female	.706522	.0215373	32.80	0.000	.6643095	.7487345
American_Indian	1.125406	.0615887	18.27	0.000	1.004695	1.246118
Asian	-1.91432	.0527501	-36.29	0.000	-2.017708	-1.810931
Black	-.2516502	.0405859	-6.20	0.000	-.3311972	-.1721031
Not_Provided	-.4897852	.0382411	-12.81	0.000	-.5647365	-.4148339
Other_R	-.9408013	.0280976	-33.48	0.000	-.9958716	-.8857309
_cons	-.2740844	.0779788	-3.51	0.000	-.4269202	-.1212486

ACSC ED 2016

-> clndr_year = 2016

Source	SS	df	MS
Model	34317.3187	11	3119.75625
Residual	1465953.99909609	1.61163092	
Total	1500271.31909620	1.64933853	

Number of obs	909621
F(11,909609)	1935.78
Prob > F	0.0000
R-squared	0.0229
Adj R-squared	0.0229
Root MSE	1.2695

AmbSensitive_count_al~D	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
newenrollee	-.1799238	.0040519	-44.40	0.000	-.1878655	-.1719822
mbr_age	.0079069	.0000698	113.35	0.000	.0077702	.0080437
Alternative_Benefit	.1570091	.0095049	16.52	0.000	.1383798	.1756384
Categorically_Needy	.1021391	.0092261	11.07	0.000	.0840563	.1202219
Qualified_Medicare_caid	.019375	.0131172	1.48	0.140	-.0063342	.0450843
Female	.0730923	.0027045	27.03	0.000	.0677917	.078393
American_Indian	.1146924	.0077338	14.83	0.000	.0995345	.1298504
Asian	-.2497138	.0066239	-37.70	0.000	-.2626964	-.2367312
Black	.0975872	.0050964	19.15	0.000	.0875984	.107576
Not_Provided	-.0383967	.004802	-8.00	0.000	-.0478084	-.028985
Other_R	-.0493525	.0035282	-13.99	0.000	-.0562678	-.0424373
_cons	.0304792	.0097919	3.11	0.002	.0112874	.0496709

APPENDIX B

University of Alabama IRB Approval

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Institutional Review Board for Human Use

DATE: February 20, 2017

MEMORANDUM

TO: Preston Simmons
Principal Investigator

FROM: Margie Lawson, CIP
Assistant Director
Institutional Review Board for Human Use (IRB)

RE: Request for Determination – Not Human Subjects Research
IRB Protocol **N170210004 - A Comparative Multiyear Assessment of Emergency Department, Inpatient and Ambulatory Care Utilization Between Existing and Newly Enrolled Medicaid Populations Within Washington State**

A member of the Office of the IRB has reviewed your Application for Not Human Subjects Research Designation for above referenced proposal.

The reviewer has determined that this proposal is **not** subject to FDA regulations and is **not** Human Subjects Research. Note that any changes to the project should be resubmitted to the Office of the IRB for determination.

Cc: Robert Hernandez, DrPH

470 Administration Building
701 20th Street South
205.934.3789
Fax 205.934.1301
irb@uab.edu

The University of
Alabama at Birmingham
Mailing Address:
AB 470
1720 2ND AVE S
BIRMINGHAM AL 35294-0104

APPENDIX C

State of Washington IRB Approval

STATE OF WASHINGTON
DEPARTMENT OF SOCIAL AND HEALTH SERVICES
WASHINGTON STATE INSTITUTIONAL REVIEW BOARD
P.O. Box 45205 ●Olympia, Washington 98504-5205●360.902.8075●wsirb@dshs.wa.gov

January 30, 2017

Preston Simmons
University of Alabama
12322 217th ST SE

Re: Project E-112316-A: A Comparative Multiyear Assessment of Care Utilization between Existing and Newly Enrolled Medicaid Populations Within Washington State

Dear Mr. Simmons:

WSIRB has reviewed your Exempt Determination Request for the activity identified above.

This opinion is based on federal regulation 45 CFR 46 and associated guidance and the Washington State Agency Policy on Protection of Human Research Subjects, Chapter IV, and associated guidance.

In accordance with the regulation and guidance, the use of coded information is not research involving human subjects and thus does not require IRB review. The following is the basis for this opinion.

Federal regulation 45 CFR 46.102(f) defines a human subject as:

Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains

(1) Data through intervention or interaction with the individual, or
(2) Identifiable private information.

In guidance entitled, *Guidance on Research Involving Coded Private Information or Biological Specimens*, OHRP explains when research involving coded private information or biological specimens would not be considered to involve human subjects.

For example, OHRP does not consider research involving only coded private information or specimens to involve human subjects as defined under 45 CFR 46.102(f) if the following conditions are both met:

(1) the private information or specimens were not collected specifically for the currently proposed research project through an interaction or intervention with living individuals; and

(2) the investigator(s) cannot readily ascertain the identity of the individual(s) to whom the coded private information or specimens pertain because, for example:

(a) the investigators and the holder of the key enter into an agreement prohibiting the release of the key to the investigators under any circumstances, (note that HHS regulations do not require the IRB to review and approve this agreement);

(b) there are IRB-approved written policies and operating procedures for a repository or data management center that prohibit the release of the key to the investigators under any circumstances, until the individuals are deceased; or

(c) there are other legal requirements prohibiting the release of the key to the investigators, until the individuals are deceased.

This protocol meets these requirements. This project intends to ascertain whether the rates of emergency department utilization and inpatient admissions differed between newly enrolled Medicaid recipients in the health insurance exchange, and continuously enrolled Medicaid recipients within Washington State. The data that will be involved in this research was not collected specifically for the currently proposed project; rather the data collected is routinely collected by Health Care Authority. The Principle Investigator has confirmed that the investigators and the holder of the key to the coded data have entered into an agreement prohibiting the release of the key to the investigators under any circumstances. Therefore WSIRB has determined this is not research involving "human subjects".

This determination that this research does not involve human subjects can apply to multiple sites, but it does not apply to any institution that has an institutional policy of requiring an entity other than WSIRB (such as an internal IRB) to make such determinations. WSIRB cannot provide a determination that overrides the jurisdiction of a local IRB or other institutional mechanism for making such determinations. You are responsible for ensuring that each site to which this determination applies can and will accept WSIRB's determination.

Please note that any future changes to the project may affect its status as research, and you may want to contact WSIRB about the effect these changes may have on the status before implementing them. WSIRB does not impose an expiration date on its determinations of research.

Sincerely,

Josie Glenn

Digitally signed by Josie Glenn
DN: cn=Josie Glenn, o=Washington State Institutional Review Board (WSIRB), ou, email=glennj@dshs.wa.gov, c=US
Date: 2017.01.31 11:18:03 -08'00'

Josie Glenn
Compliance Specialist
Human Research Review Section

cc: Washington State Institutional Review Board

APPENDIX D

Washington State Healthcare Authority Data Agreement

Washington State Health Care Authority	**Data Share Agreement Category 1 and 2**	HCA Contract Number: K2283 Receiving Party Contract Number: _____

This Data Share Agreement ("Agreement" or "DSA") is made by and between the state of Washington Health Care Authority ("HCA") and the party whose name appears below ("Receiving Party")

Receiving Party Name	*Receiving Party doing business as (DBA)*
Preston Simmons	
Receiving Party Address	*Receiving Party Contact Name, Title*
12322 217th Street SE **Snohomish, WA 98296**	**Preston Simmons**
Receiving Party Contact Telephone	*Receiving Party Contact Email Address*
(206) 852-9008	**prestons@uab.edu**

HCA Program	*HCA Division/Section*
ProviderOne	**P1OS**
HCA Contact Name, Title	*HCA Contact Address*
Autumn Sharpe **Manager, Enterprise Data Management and Analytics**	**626 8th Avenue SE, PO Box** **Olympia, WA 98504-**
HCA Contact Telephone	*HCA Contact Email Address*
(360) 725-2054	autumn.sharpe@hca.wa.gov

The parties signing below warrant that they have read and understand this Agreement, and have authority to execute this Agreement. This Agreement will be binding on HCA only upon signature by HCA.

Receiving Party Signature	*Printed Name and Title*	*Date Signed*
DocuSigned by: Preston Simmons	Preston Simmons PS	3/31/2017
HCA Signature	*Printed Name and Title*	*Date Signed*
DocuSigned by: Melanie Anderson	Melanie Anderson Contracts Administrator	4/4/2017

Table of Contents

1. Purpose of the DSA

The purpose of this Data Share Agreement (DSA) is to identify, describe and protect the data being provided by HCA to the Receiving Party. The purpose for sharing the Data is for the Receiving Party to conduct Research Project E-112316-A: A Comparative Multiyear Assessment of Care Utilization between Existing and Newly Enrolled Medicaid Populations within Washington State (Research Project).

Receiving Party will not share, publish, or otherwise release any findings or conclusions derived from analysis of Data without first providing HCA with such findings and conclusions for review and comment.

2. Justification and Authority for Data Sharing

The Data to be shared under this DSA have been granted an Exempt Determination by Washington State Institutional Review Board (IRB). The Data is de-identified by HIPAA standards. The Data will only be used for the Purpose identified in this Agreement. The Data will not be linked with any other data sources.

3. Definitions

"Agreement" means this Data Share Agreement.

"Breach" means the unauthorized acquisition, access, use, or disclosure of Data shared under this Agreement that compromises the security, confidentiality or integrity of the Data.

"CFR" means the Code of Federal Regulations. All references in this Data Share Agreement to CFR chapters or sections will include any successor, amended, or replacement regulation. The CFR may be accessed at http://www.ecfr.gov/cgi-bin/ECFR?page=browse

"Contract Administrator" means the individual designated to receive legal notices and to administer, amend, or terminate this Agreement.

"Data" means the information that is disclosed or exchanged as described by this Data Share Agreement.

"Disclosure" means the release, transfer, provision of, access to, or divulging in any other manner of information outside the entity holding the information.

"DSA" means this Data Share Agreement.

"HCA" means the state of Washington Health Care Authority, any section, unit or other entity of HCA, or any of the officers or other officials lawfully representing HCA.

"ProviderOne" means the Medicaid Management Information System, which is the State's Medicaid payment system managed by HCA.

"RCW" means the Revised Code of Washington. All references in this Agreement to RCW chapters or sections will include any successor, amended, or replacement statute. Pertinent RCW chapters can be accessed at: http://apps.leg.wa.gov/rcw/.

"Regulation" means any federal, state, or local regulation, rule, or ordinance.

"Receiving Party" means the entity that is identified on the cover page of this DSA and is a party to this Agreement, and includes the entity's owners, members, officers, directors, partners, trustees, employees, and Subcontractors and their owners, members, officers, directors, partners, trustees, and employees.

"Subcontract" means any separate agreement or contract between the Receiving Party and an individual or entity ("Subcontractor") to perform any duties that give rise to a business requirement to access the Data that is the subject of this DSA.

"Subcontractor" means any separate agreement or contract between the Receiving Party and an individual or entity ("Subcontractor") to provide services or perform any duties that give rise to a business requirement to access the Data that is the subject of this DSA.

"USC" means the United States Code. All references in this Data Share Agreement to USC chapters or sections will include any successor, amended, or replacement statute. The USC may be accessed at http://uscode.house.gov/

"Use" includes the sharing, employment, application, utilization, examination, or analysis, of Data.

"WAC" means the Washington Administrative Code. All references in this Agreement to WAC chapters or sections will include any successor, amended, or replacement regulation. Pertinent WAC chapters or sections can be accessed at: http://apps.leg.wa.gov/wac/.

4. Description of Data to be Shared

The Data to be shared is set out in attached Schedule 1: *Description of Shared Data*.

The Data will be provided one time, in Excel format, by secure email.

5. Data Classification

The State classifies data into categories based on the sensitivity of the data pursuant to the Security policy and standards promulgated by the Office of the state of Washington Chief Information Officer. (See Section 4, *Data Security*, of *Securing IT Assets Standards* No. 141.10 in the *State Technology Manual* at https://ocio.wa.gov/policies/141-securing-information-technology-assets/14110-securing-information-technology-assets.) Section 4 is hereby incorporated by reference into this Agreement.

The Data that is the subject of this DSA is classified as indicated below:

☒ Category 1 – Public Information

Public information is information that can be or currently is released to the public. It does not need protection from unauthorized disclosure, but does need integrity and availability protection controls.

☒ Category 2 – Sensitive Information

Sensitive information may not be specifically protected from disclosure by law and is for official use only. Sensitive information is generally not released to the public unless specifically requested.

☐ Category 3 – Confidential Information

Confidential information is information that is specifically protected from disclosure by law. It may include but is not limited to:

a. Personal Information about individuals, regardless of how that information is obtained;
b. Information concerning employee personnel records;
c. Information regarding IT infrastructure and security of computer and telecommunications systems;

☐ Category 4 – Confidential Information Requiring Special Handling

Confidential information requiring special handling is information that is specifically protected from disclosure by law and for which:

a. Especially strict handling requirements are dictated, such as by statutes, regulations, or agreements;

b. Serious consequences could arise from unauthorized disclosure, such as threats to health and safety, or legal sanctions.

6. Constraints on Use of Data

6.1. The Data being shared/accessed is owned and belongs to HCA.

6.2. This Agreement does not constitute a release of the Data for the Receiving Party's discretionary use. Receiving Party must use the Data received or accessed under this DSA only to carry out the purposes described herein. Any ad hoc analyses or other use or reporting of the Data is not permitted without HCA's prior written consent.

6.3. Any disclosure of Data contrary to this Agreement is unauthorized and is subject to penalties identified in law.

7. Data Disposition

Upon request by HCA, at the end of the DSA term, or when no longer needed, the Data shared under this DSA must be disposed of as set out in Exhibit A, Data Disposition, except as required to be maintained for compliance or accounting purposes.

8. Public Disclosure

Receiving Party acknowledges that HCA is subject to the Public Records Act (Chapter 42.56 RCW). This Agreement will be a "public record" as defined in Chapter 42.56 RCW. Any documents submitted to HCA by Receiving Party may also be construed as "public records" and therefore subject to public disclosure.

9. Data Shared with Subcontractors

The Receiving Party will not enter into any subcontract without the express, written permission of HCA, which will approve or deny the proposed contract in its sole discretion. If Data access is to be provided to a Subcontractor under this DSA, the Receiving Party must include all of the Data security terms, conditions and requirements set forth in this Agreement in any such Subcontract. In no event will the existence of the Subcontract operate to release or reduce the liability of the Receiving Party to HCA for any breach in the performance of the Receiving Party's responsibilities.

10. Data Breach Notification and Obligations

The Breach of Data shared under this Agreement must be reported to the HCA Privacy Officer at PrivacyOfficer@hca.wa.gov within five (5) business days of discovery. The Receiving Party must also take all reasonable actions to mitigate the risk of loss and comply with any notification or other requirements imposed by applicable law or reasonably requested by HCA in order to meet its regulatory obligations.

11. Amendments and Alterations

This Agreement, or any term or condition, may be modified only by a written amendment signed by all parties. Only personnel authorized to bind each of the parties will sign an amendment.

12. Assignment

The Receiving Party may not assign rights or obligations derived from this Agreement to a third party without the prior, written consent of HCA and the written assumption of the Receiving Party's obligations by the third party.

13. Dispute Resolution

13.1. The parties will use their best, good faith efforts to cooperatively resolve disputes and problems that arise in connection with this Agreement. Both parties will continue without delay to carry out their respective responsibilities under this Agreement while attempting to resolve any dispute. When a genuine dispute arises between HCA and the Receiving Party regarding the terms of this Agreement or the responsibilities imposed herein and it cannot be resolved between the parties' Contract Managers, either party may initiate the following dispute resolution process.

13.2. The initiating party will reduce its description of the dispute to writing and deliver it to the responding party (email acceptable). The responding party will respond in writing within five (5) Business Days (email acceptable). If after five (5) additional Business Days the parties have not resolved the Dispute, it will be submitted to the HCA Director, who may employ whatever dispute resolution methods the Director deems appropriate to resolve the dispute.

13.3. A party's request for a dispute resolution must:

a. Be in writing;

b. Include a written description of the dispute;

c. State the relative positions of the parties and the remedy sought;

d. State the Contract Number and the names and contact information for the parties;

13.4. This dispute resolution process constitutes the sole administrative remedy available under this Agreement. There is no right under this Agreement to an adjudicative proceeding under the Administrative Procedure Act.

14. Entire Agreement

This Agreement, including all documents attached to or incorporated by reference, contains all the terms and conditions agreed upon by the parties. No other understandings or representations, oral or otherwise, regarding the subject matter of this Agreement, will be deemed to exist or bind the parties.

15. Governing Law and Venue

This Agreement is governed by, and will be construed and enforced in accordance with, the laws of the State of Washington. In the event of a lawsuit involving this Agreement, jurisdiction is proper only in the Superior Court of Washington, and venue is proper only in Thurston County, Washington.

16. Incorporated Documents and Order of Precedence

16.1. Each of the documents listed below is, by this reference, incorporated into this Agreement as though fully set forth herein.

a. Schedule 1 – Description of Shared Data

b. Exhibit A – Data Security Requirements – Data Disposition

c. Section 4 of OCIO 141.10, *Securing Information Technology Assets Standards*: Data Security (https://ocio.wa.gov/policies/141-securing-information-technology-assets/14110-securing-information-technology-assets.)

16.2. In the event of any inconsistency in this Agreement, the inconsistency will be resolved in the following order of precedence:

a. Applicable federal and state statutes, laws, and regulations;

b. Sections of this Data Share Agreement;

c. Attachments, Exhibits and Schedules to this Data Share Agreement.

17. Inspection

No more than once per quarter during the term of this Agreement and for six (6) years following termination or expiration of this Agreement, HCA will have the right at reasonable times and upon no less than five (5) business days prior written notice to access the Receiving Party's records and place of business for the purpose of auditing, and evaluating the Receiving Party's compliance with this Agreement and applicable laws and regulations.

18. Legal Notices

18.1. Any other notice or demand or other communication required or permitted to be given under this DSA or applicable law will be effective only if it is in writing and signed by the applicable party, properly addressed, and either delivered in person, or by a recognized courier service, or deposited with the United States Postal Service as first-class mail, postage prepaid certified mail, return receipt requested, to the parties at the addresses provided in this section.

a. To Receiving Party at:

Preston Simmons

12322 217th Street SE

Snohomish, WA 98296

b. To HCA at:

Contract Administrator

Division of Legal Services

Health Care Authority

P. O. Box 42702

Olympia, Washington 98504-2702

Notices will be effective upon receipt or four (4) Business Days after mailing, whichever is earlier. The notice address and information provided above may be changed by written notice given as provided above.

19. Maintenance of Records

The Receiving Party must maintain records related to compliance with this Agreement for six (6) years after expiration or termination of this Agreement. HCA or its designee will have the right to access those records during that six-year period for purposes of auditing.

20. Responsibility

HCA and the Receiving Party will each be responsible for their own acts and omissions and for the acts and omissions of their agents and employees. Each party to this Agreement must defend, protect, and hold harmless the other party, or any of the other party's agents, from and against any loss and all claims, settlements, judgments, costs, penalties, and expenses, including reasonable attorney fees, arising from any willful misconduct or dishonest, fraudulent, reckless, unlawful, or negligent act or omission of the first party, or agents of the first party, while performing under the terms of this Agreement, except to the extent that such losses result from the willful misconduct, or dishonest, fraudulent, reckless, unlawful, or negligent act or omission on the part of the second party. Each party agrees to promptly notify the other party in writing of any claim and provide the other party the opportunity to defend and settle the claim.

21. Severablility

The provisions of this Agreement are severable. If any provision of this Agreement is held invalid by a court of competent jurisdiction, that invalidity will not affect the other provisions of this Agreement and the invalid provision will be considered modified to conform to the existing law.

22. Survival Clauses

The terms and conditions contained in this Agreement that by their sense and context are intended to survive the expiration or other termination of this Agreement will survive. Surviving terms include, but are not limited to: *Constraints on Use of Data, Security of Data, Data Confidentiality and Non-Disclosure of Data, Non PHI Data Breach Notification, Dispute Resolution, Inspection, Maintenance of Records, and Responsibility*.

23. Term and Termination

23.1. Term. This Agreement will begin on date of execution and continue through June 30, 2018, unless terminated sooner as provided in this Section.

23.2. Termination for Convenience. Either HCA or the Receiving Party may terminate this Agreement for convenience with thirty (30) calendar days' written notice to the other. However, once Data is accessed by the Receiving Party, this Agreement is binding as to the confidentiality, use and disposition of all Data received as a result of access, unless otherwise agreed in writing.

23.3. Termination for Cause. HCA may terminate this Agreement for default, in whole or in part, by written notice to the Receiving Pary, if HCA has a reasonable basis to believe that the Receiving Party has: (1) failed to perform under any provision of this Agreement; (2) violated any law, regulation, rule, or ordinance applicable to this Agreement; and/or (3) otherwise breached any provision or condition of this Agreement.

Before HCA terminates this Agreement for default, HCA will provide the Receiving Party with written notice of its noncompliance with the Agreement and provide the Receiving Party a reasonable opportunity to correct its noncompliance. If the Receiving Party does not correct the noncompliance within the period of time specified in the written notice of noncompliance, HCA may then terminate the Agreement. The determination of whether or not the Receiving Party corrected the noncompliance will be made by HCA, in its sole discretion.

24. Waiver

Waiver of any breach or default on any occasion will not be deemed to be a waiver of any subsequent breach or default. Any waiver will not be construed to be a modification of the terms and conditions of this Agreement.

25. Signatures and Counterparts

The signatures on the cover page indicate agreement between the parties. The parties may execute this Agreement in multiple counterparts, each of which is deemed an original and all of which constitute only one agreement.

Schedule 1: Description of Shared Data

Research Project Summary: The study will look at the dependent variables of emergency department visits/1000 population, admissions/1000 population, and ambulatory visits/1000 population with the main focus being on Emergency Department (ED) utilization. It is assumed for this study that the underlying demographic characteristics of the population are staying consistent over the time period studied. The study will include all Medicaid patients and those enrolling in the exchange during the open enrollment period for 2014, 2015, and 2016 within Washington State along with data on Medicaid Patients for the 2 years preceding the exchange, years 2012 and 2013. Each enrollment year will be categorized as a Group: A, B, C, D, and E, representing years 2012 through 2016 respectively. For those enrollees entering in 2014 (Group C), their new enrollee ED Utilization Rates and ambulatory rates will be compared to the existing enrollee cohorts (Group A and Group B). For new enrollees entering in 2015 (Group D), they will be compared to the baseline cohort in Group A in years 2012, 2013, 2014, and 2015, and Group B in 2013, 2014, and 2015, and Group C in 2014, and 2015, and so forth.

Client Data will be provided in five separate data files:

- CY 2012: 1/2012 – 12/2012
- CY 2013: 1/2013 – 12/2013
- CY 2014: 1/2014 – 12/2014
- CY 2015: 1/2015 – 12/2015
- CY 2016: 1/2016 – 6/2016

Claim Data will be provided in five separate data files, separated by CY as above, and based on Client Data files.

Required Data Elements:

Data requested elements:	
Client file:	
Data Element	Description
MBR_H_SID	The unique system identifier of a Member.
CLNDR_YEAR	The year of calendar year.
MBR_AGE	Age of Member in years
GENDER_LKPCD	The code that identifies the gender of a Member (F, M)
RACE_CODE	The code that identifies the race/ethnicity of a member.
RACE_NAME	The name that identifies the Race/Ethnicity of a Member.
RSDNTL_POSTAL_CODE	The standard zip or postal code.
MARITAL_STATUS_NAME	The name that identifies a Members marital status, i.e. divorced, married, separated, etc.
HOH_MBR_H_SID	The unique system identifier of a Head Of Household Member in a case.
MBR_H_SID	The unique system identifier of a family Member in a case.
HOH_RLTNSHP_NAME	The relationship of a Member to head of household. (Ex: Spouse, Self or Natural/Adopted Child)

RPRTBL_RAC_CODE	The code identifying the RAC (Recipient Aid Category) that a member is associated with.
RPRTBL_RAC_NAME	The name identifying the RAC (Recipient Aid Category) that a member is associated with.
RPRTBL_BSP_GROUP_NAME	The name that identifies a Benefit Service Package group that member is associated with.
Claim file - will separate for each year	
Claim file:	
Data Element	Description
MBR_H_SID	The unique system identifier of a Member.
TCN_SID	The Transaction Control Number of the claim.
FCLTY_TYPE_CODE	The code that identifies a facility type or a place of service.
FCLTY_TYPE_NAME	The Facility Name that identifies a facility type or a place of service.
FROM_SRVC_DATE (year only)	The first service date (service from) of the claim. Year only.
TO_SRVC_DATE (year only)	The last service date (service to) of the claim. Year only.
CLM_TYPE_CID	The unique system identifier of a claim type
CLM_TYPE_NAME	The type of the claim. (Professional, Ambulance, Vision, Dental, Inpatient, Outpatient)
PRCDR_CODE	The identifier as received on the claim line that represents a procedure or a service which was provided to the patient.
PRIMARY_DIAGNOSIS_CODE	The unique code assigned for a specific diagnosis; universally accepted.
DIAGNOSIS_CODE_2	The unique code assigned for a specific diagnosis; universally accepted.
DIAGNOSIS_CODE_3	The unique code assigned for a specific diagnosis; universally accepted.
DIAGNOSIS_CODE_4	The unique code assigned for a specific diagnosis; universally accepted.
DIAGNOSIS_CODE_5	The unique code assigned for a specific diagnosis; universally accepted.
ADMTNG_DIAGNOSIS_IID	The admitting diagnosis identifier generated based on algorithm to convert an alphanumeric code to numeric.
ADMTNG_DIAGNOSIS_CODE	The unique code assigned for a diagnosis. This is applicable for Institutional claims and is required in inpatient admission and encounters.

Assumptions:

Receiving Party will not have access to the key to SID or CID codes.

Data provided will be both paid and denied claims.

Data provided will be Fee-for-Service and Encounter claims.

Data provided will be ambulatory, ED, office visit, and inpatient.

Data will only contain Year for any dates.

For Zip Codes, Data provided the first 3 digits if more than 20,000 enrollees and "000" if less than 20,000 enrollees in zip code.

For Ages over 89, Data will report as a single data category of "90 or over."

Exhibit A – Data Disposition

When the Data is no longer needed, it must be returned to HCA or destroyed. Media on which Data may be stored and associated acceptable methods of destruction are as follows:

Data stored on:	Will be destroyed by:
Server or workstation hard disks, or Removable media (e.g. floppies, USB flash drives, portable hard disks, Zip or similar disks)	Using a "wipe" utility which will overwrite the Data at least three (3) times using either random or single character Data, or Degaussing sufficiently to ensure that the Data cannot be reconstructed, or Physically destroying the disk
Optical discs (e.g. CDs or DVDs)	Incineration, shredding, or cutting/breaking into small pieces.
Magnetic tape	Degaussing, incinerating or crosscut shredding