



2016

## When You Need More Than Just an Apple a Day: A review of the empirical evidence relating to disparities in access to health care and a preliminary perspective on the effects of the Patient Protection and Affordable Care Act

Alexis Coulis  
Butler University, [acoulis@butler.edu](mailto:acoulis@butler.edu)

Follow this and additional works at: <https://digitalcommons.butler.edu/ugtheses>



Part of the [Economic Policy Commons](#), [Economics Commons](#), and the [Health Policy Commons](#)

---

### Recommended Citation

Coulis, Alexis, "When You Need More Than Just an Apple a Day: A review of the empirical evidence relating to disparities in access to health care and a preliminary perspective on the effects of the Patient Protection and Affordable Care Act" (2016). *Undergraduate Honors Thesis Collection*. 319.  
<https://digitalcommons.butler.edu/ugtheses/319>

This Thesis is brought to you for free and open access by the Undergraduate Scholarship at Digital Commons @ Butler University. It has been accepted for inclusion in Undergraduate Honors Thesis Collection by an authorized administrator of Digital Commons @ Butler University. For more information, please contact [digitalscholarship@butler.edu](mailto:digitalscholarship@butler.edu).

# BUTLER UNIVERSITY HONORS PROGRAM

## Honors Thesis Certification

Please type all information in this section:

Applicant Alexis Ann Coulis  
(Name as it is to appear on diploma)

Thesis title When You Need More Than Just an Apple a Day: A review of the empirical evidence relating to disparities in access to health care and a preliminary perspective on the effects of the Patient Protection and Affordable Care Act

Intended date of commencement May 7, 2016

Read, approved, and signed by

Thesis adviser(s) Thomas Lethbrun 4/19/16  
Date

Reader(s) Jennifer L. Rice 04/20/16  
Date

Certified by Rusty Jones 4/21/16  
Director, Honors Program Date

## **When You Need More Than Just an Apple a Day**

A review of the empirical evidence relating to disparities in access to health care and a preliminary perspective on the effects of the Patient Protection and Affordable Care Act

A Thesis

Presented to

The Honors Program

of

Butler University

In Partial Fulfillment

of the Requirements for Graduation Honors

Alexis Coulis

April 20, 2016

## ABSTRACT

The concept of medical care is twofold, made up of both prevention and treatment. Prevention itself consists of three distinct levels: primary, secondary, and tertiary. Primary prevention includes actions protecting healthy people from developing a disease in the first place. Secondary goes on to refer to management of a diagnosed condition that works to keep symptoms at a minimum. Finally, tertiary prevention encompasses measures taken in an attempt to control an existing disease. Three individual case studies – the influenza vaccine, asthma management, and control of congestive heart failure – exemplify these primary, secondary, and tertiary preventive measures. Together, they provide a cohesive and representative depiction of medical prevention in the United States health care system. Utilizing records and statistics from well-known databanks, professional journals, and professional associations, it is possible to define trends in the insured versus uninsured populations. Establishing this baseline, it is then possible to observe any recent changes that have occurred after the implementation of the Affordable Care Act in 2014. Analyzing this data allows for conclusions to be drawn about the ACA's ability to increase American's access to health care. After synthesizing the empirical evidence presented in these case studies, it is apparent that differences in insurance status directly results in health care disparities, making some populations sicker than others. Conclusions drawn from these case studies can be generalized to medical care as a whole and further used to offer a preliminary prediction on the improvements and shortcomings in access to care brought about by the ACA.

## INTRODUCTION

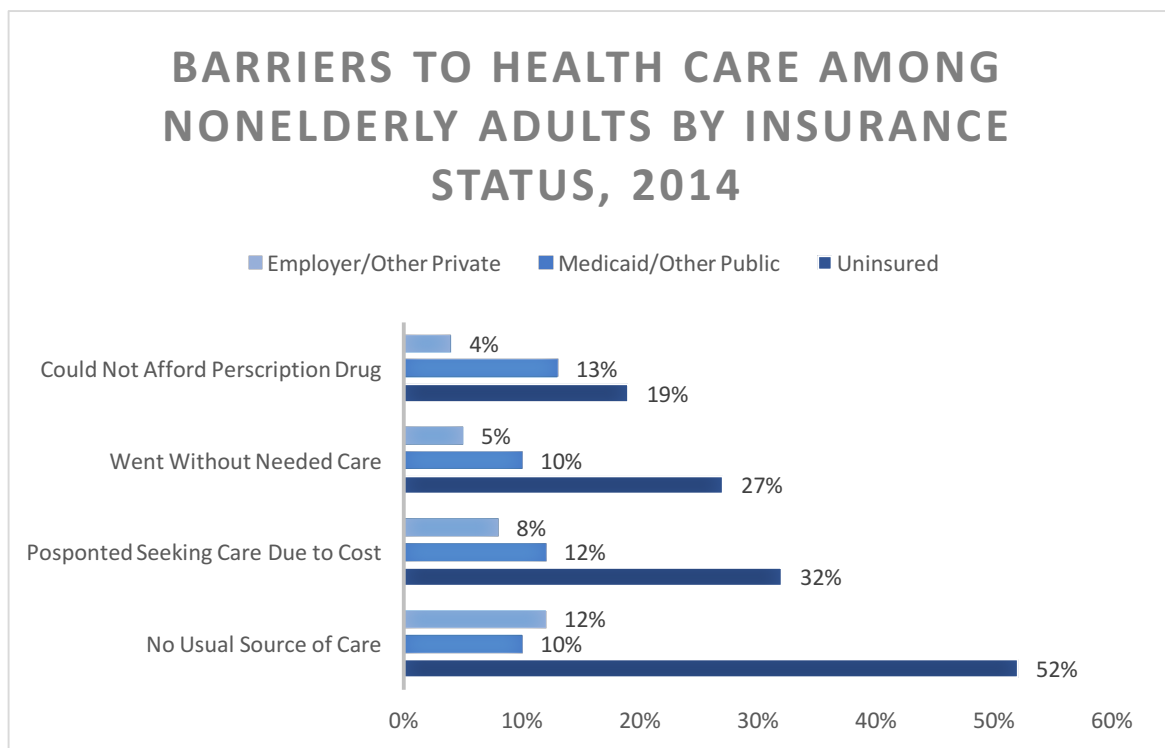
Last fall, I noticed that I could get five points of extra credit for one of my classes if I got a flu shot. Looking up when they would be administered on campus, I found that there were several dates scheduled during the upcoming fall semester when students and faculty could get the vaccine free of charge. Bringing that small proof of vaccination card to my professor was the easiest five points I have ever earned.

To be honest, I probably did not even need to get a flu shot that year. I would have had a greater chance of getting sick, but it would not have been the end of the world. As I was 20 years old and had a healthy immune system, getting the flu would just mean a couple days spent in bed feeling under the weather. I might have had to stay home from class but my professors would have understood. Assignments could have been made up and I could have gotten any missed notes from a friend. If anything, getting sick would have given me an excuse to binge watch Grey's Anatomy all day on Netflix.

Yet, for so many people, this is not the case. A flu shot is not something you typically get on a whim in order to receive a few points of extra credit, and the flu is not an excuse to lie around and watch TV. For those who cannot afford to get sick, the flu shot becomes a necessity. For many, however, getting vaccinated means arranging for the kids to stay a little later at childcare and getting your boss to agree to let you off of work a little early. It means checking to see if there is a clinic or pharmacy somewhere in the vicinity, or maybe even making sure that there is one within walking distance. Above all, it definitely isn't free. Typically costing anywhere between \$6 and \$25, you have to pay even extra if you want the nasal spray instead of the shot. I, however, was able to leisurely walk in and get a free vaccination right on campus. Noticing the vast differences in Americans' access to healthcare, it is important to look at what factors are essential for individuals to receive the vaccinations, medications, and treatment that they need. Demographics such as income, race, age, sex, and insurance status all come together to play into an individual's overall access to medical

services. Although each play a role in the American healthcare system, health insurance coverage is especially crucial.

Insulating Americans from the true costs of goods and services, insurance allows people to get the medical care they would otherwise be unable to afford. Those living without health insurance are less likely to go to a doctor, fill a prescription, or schedule a preventive screening test. Compared to those with either private or public health insurance coverage, the uninsured population is most likely to have no usual source of care, postpone seeking care, go without care, or be unable to afford a prescription drug (Kaiser Family Foundation, 2015). Looking at Figure 1, uninsured individuals are often forced to ignore any preventive or minor health treatment options until their condition has become debilitating or unavoidable.



**Figure 1. Barriers to Health Care Among Nonelderly Adults by Insurance Status, 2014.** Includes barriers experienced in past 12 months. Respondents who said usual source of care was the emergency room were included among those not having a usual source of care. All differences between uninsured and insurance groups are statistically significant ( $p < 0.05$ ).

Source: KCMU analysis of 2015 National Health Interview Survey.

Because of this, those without insurance have more preventable hospitalizations and missed diagnoses of serious health conditions. It is not surprising, therefore, that the uninsured population displays a mortality rate that is 1.8 times as much as than those who have insurance (Wilper, et al., 2009, p. 2292). It is clear that health insurance coverage drastically improves American's access to health care.

The concept of health insurance was first introduced in the 1940's. Following World War II, President Truman enacted a wage freeze on American businesses, prohibiting employers from increasing earnings in order to attract workers. To compensate, employers began offering health insurance as way to incentivize potential job candidates. Since employed Americans could receive health insurance through work, the federal government established programs in 1965 to cover those who were unemployed. The Medicare system covered retired individuals (those 65 and older) and people with disabilities, while those living below the federal poverty line received Medicaid coverage. The belief was that this way most, if not all Americans would have health insurance, thus having access to health care. Having health insurance was not a requirement, however, and many Americans went without.

Since then, medical care has become increasing complex and costly. Breakthroughs in treatment, cutting-edge technology, and increased life expectancy have all worked together to significantly increase the amount of money Americans spend on health care. As a result, many employers began to cut or eliminate their employees' health insurance coverage, increasing the number of uninsured Americans. Among the 18-64 year old population alone, the percentage of uninsured adults rose from 14.8% to 18.5% during the Great Recession of 2007 to 2010 (Holahan & Chen, 2011), leaving a significant percentage of the population without health insurance coverage and unable to pay their medical bills.

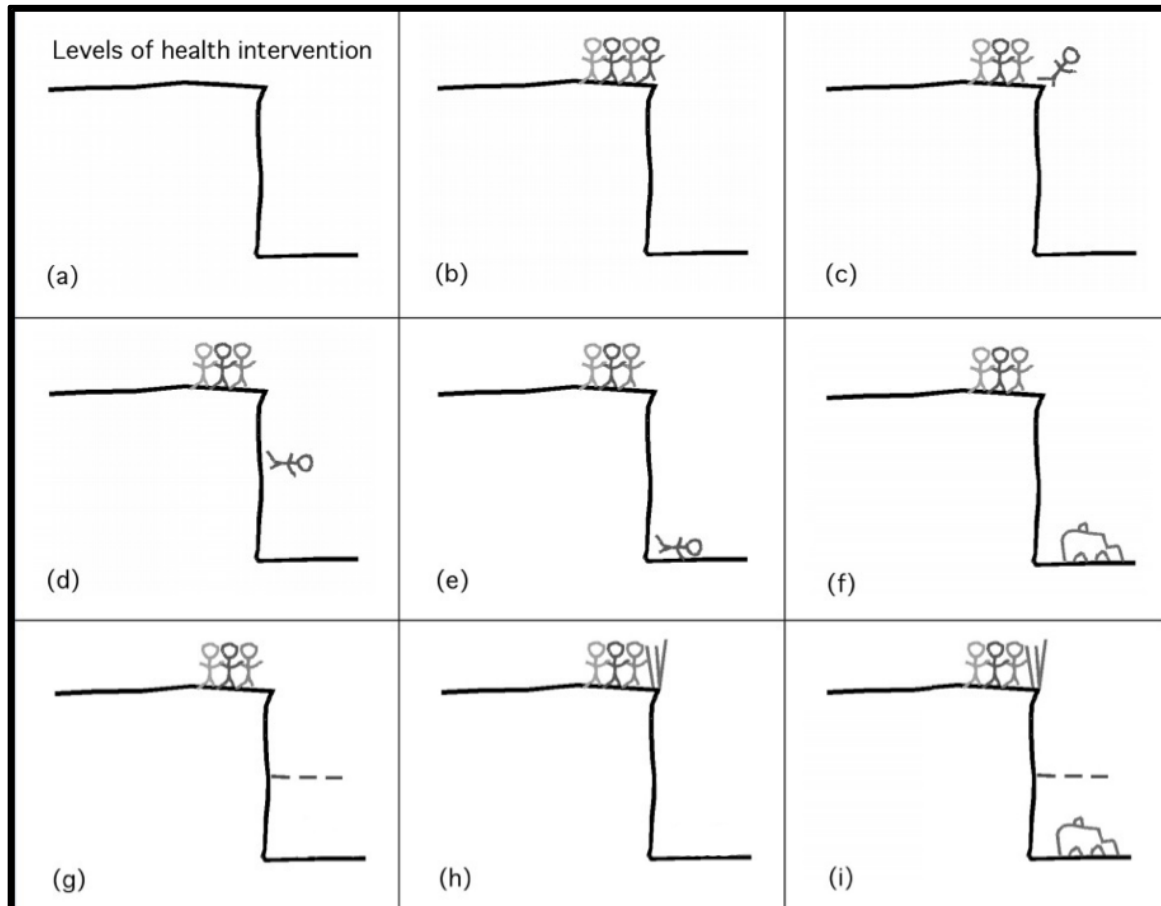
In an effort to address the significant number of uninsured Americans, the Patient Protection and Affordable Care Act (ACA) was enacted in 2010. Although it works to reform many aspects of the American health care system, its most notable feature is the mandate for every American to have

health insurance. Additionally, requiring businesses with fifty or more full-time employees to provide coverage for their workers, the ACA attempts to reverse the trend in the early 2000's when the percentage of Americans with employer-sponsored health insurance dropped from 69.3% to 58.8% (Holahan & Chen, 2011). Additionally, the ACA allows children to remain on their parent's insurance plans up until the age of 26. This provided coverage to a group of people who generally did not buy insurance on their own. The ACA also eliminated insurance companies' ability to deny coverage based on a pre-existing health conditions. Adding many healthy individuals to the insurance pool (such as the majority of the 18-26 year-old population), allowed for these "good risks" to balance out those who already had a pre-existing condition. By mandating that every American have health insurance, policy makers attempted to ensure that greater access to medical care was being given to the individuals who really needed it. Additionally, in order to increase coverage for the low-income population, Medicaid was modified to cover those earning up to 138% of the Federal Poverty Level in states that accepted the expansion.

Although the push for universal insurance coverage will significantly help reduce many American's barriers to medical care, the ACA also emphasizes the importance of preventive care. In general, preventive care includes medications, screenings, and tests that are used to detect or prevent a medical condition before it occurs. It includes things such as blood-pressure tests, cancer screenings, and vaccinations. In terms of health care dollars spent, it is much cheaper to invest in preventive care than it is to treat a condition or illness after it has developed. Therefore, benefits resulting from an emphasis on preventive medicine are twofold. Apart from reducing the amount of people getting sick, it also decreases the overall cost of health care.

Preventive care can be categorized into three types: primary, secondary, and tertiary preventive medicine. Explaining this, it may be helpful to envision an image of a person standing at the top of a cliff. Suppose a person were to fall off the edge of the cliff. Tumbling to the ground, they are bound to have sustained some injuries and would be in need of immediate medical attention.





**Figure 2. Levels of health intervention.** Three levels of health intervention are illustrated, including acute care and tertiary prevention (the ambulance at the bottom of the cliff), secondary prevention (the safety net half-way down the cliff face), and primary prevention (the fence at the top edge of the cliff).

If an ambulance were to be stationed at the bottom of the cliff as in Figure 2f, the person would be able to be taken to the hospital immediately. This would be an example of tertiary preventive care. As tertiary preventive care attempts to lessen the impact of a disease or injury (in this case falling off a cliff), having an ambulance ready would ensure that the victim received medical attention as soon as possible. However, instead imagine that a net was placed halfway down the cliff as it is in Figure 2g. Now, even if the person fell off the cliff, he or she could be caught by the safety net before they crashed to the bottom. In this case, the net represents secondary preventive care. Some minor injuries may have been sustained (such as rope burn or some bruising), but the net drastically reduces the person's injuries. Finally, what if something could keep the person from falling off of the edge of the cliff in the first place? An example would be if a fence were built around the edge (Figure 2h). This

fencing exemplifies primary preventive care. It mitigates any possible injury by not allowing the person to fall in the first place (Jones, Jones, Perry, Barclay, & Jones, 2009).

Understanding the concept of preventive health care, the fundamental question remains: has the Affordable Care Act improved American's ability to utilize preventive health services? Utilizing well-known statistical reports and national databases to examine current healthcare trends, it is possible to get a sense of American's ability to access the health care system. Upon evaluating this empirical evidence, it becomes apparent that varying insurance status due to income inequalities directly results in health care disparities, manifesting themselves through differences in populations' utilizations of medical preventions and treatment. Establishing this baseline, it is possible to offer a preliminary perspective of the Affordable Care Act, predicting that it will significantly reduce the cost barrier to preventive medical care and work towards achieving equality in access among populations who were previously uninsured.

## METHODS

This thesis utilized three individual case studies – the influenza vaccine, asthma management, and control of congestive heart failure – to exemplify primary, secondary, and tertiary preventive healthcare measures. Although there are obviously other examples that could have been studied, each of these three cases is a well-known topic corresponding to one of the three levels of prevention. They have been extensively studied, and provide ample data for analysis. Together, they exemplify a cohesive and representative depiction of American's access to different levels of medical prevention.

Found in each of the three cases is a comprehensive review of the literature, which summarizes the results already published by national data sources. Utilizing records and statistics from databanks including, but not limited to: the RAND Corporation, the Medical Expenditure Panel Survey, the Centers for Disease Control and Prevention, the National Center for Health Statistics, the Centers for Medicare and Medicaid Services, and professional journals such as Health Affairs and the Journal of Health Economics, as well as research conducted by professional associations, it was

possible to examine Americans' access to health care. These findings were then used in each case to compare the trends between the insured versus uninsured populations, and reveal the impact of an individual's insurance status, thus indicating if an insurance disparity exists. Having establishing this baseline, it was possible to observe recent changes that occurred due to the Affordable Care Act's implementation. Identifying specific components of the Act that were designed to foster change, this thesis focuses on the populations within each of these three cases that were most affected. Analysis of the relevant studies and reports revealed needed health policy revisions and allowed for conclusions to be drawn about the ACA's ability to rectify these issues. In this way, existing empirical evidence came together to synthesize an assessment of Americans' access to health care.

### Influenza Vaccine

A case study on the influenza vaccination evaluated Americans' access to immunizations and overall primary preventive services. Comparing the most recent data concerning vaccination rates between the insured and uninsured populations revealed that a large disparity existed – individuals with health insurance were much more likely to receive a flu shot than those without. Examining the general vaccination utilization percentages and determining these populations' responses to the increasing vaccination recommendations made by the Advisory Committee on Immunization Practices (ACIP), indicated these populations' access to preventive services. The impact of the ACA, therefore, was demonstrated by these populations' responses to the elimination of cost sharing for recommended preventions such as the influenza vaccine. It was then possible to observe if the ACA had narrowed the gap between the insured and uninsured, thus reducing the disparity. Reviewing additional empirical research studies on Americans' general knowledge pertaining to the flu shot indicated any need for increased education on the topic. In this way, a case study on the influenza vaccination allowed for an evaluation of populations' access to primary preventions and highlighted whether or not the ACA was able to make any improvements.

### Asthma Management

A case study on the trends in asthma management provided an insight into the diagnosis and control aspects of the health care system. As asthma disproportionately affects the lower-income population – with children in low-income families being twice as likely to ever have been diagnosed (Children's Defense Fund, 2010) – it was important to examine the recent trends amongst Medicaid recipients. Utilizing the statistics provided by the Centers for Medicare and Medicaid Services, it was possible to examine how Medicaid coverage influenced patients' drug adherence. Pointing to the effectiveness of the ACA's push for Medicaid expansion, the data illustrated if it truly increased access to preventive health care, especially for the lower-income population. Put together, the components of asthma management are closely tied to the basic subsets of medical care, namely timely diagnosis and disease control. The effects that income and insurance status have on asthma management was a powerful indicator of populations' access to health care, making it a strong case study to examine the effects of insurance coverage on secondary preventive measures.

### Control of Congestive Heart Failure

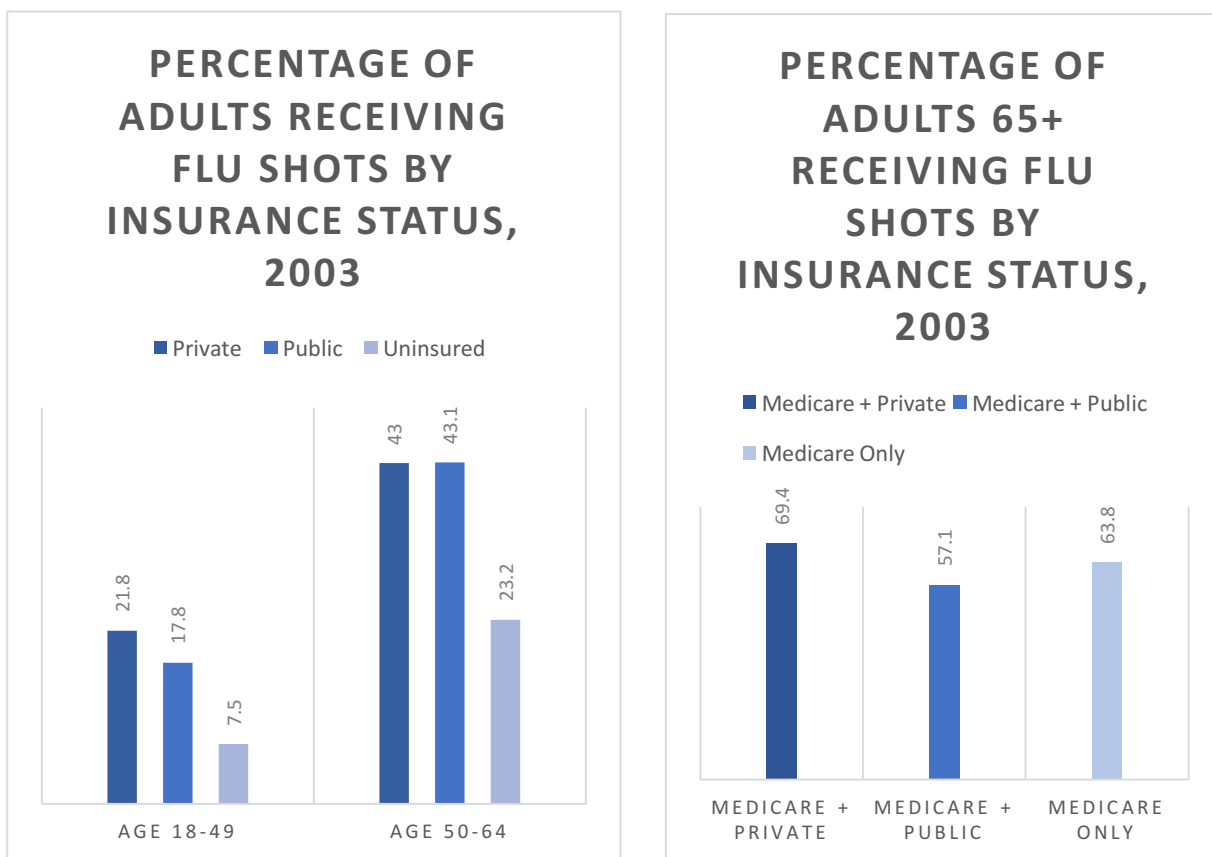
Trends in Congestive Heart Failure (CHF) hospitalization rates offered a perspective into tertiary preventive care. As CHF is the leading cause of hospitalizations for adults 65 and older, this case study was especially concerned with the quality of care provided in hospitals. Linking low quality of care to the high rates of readmission seen in CHF patients, the ACA enacted the Hospital Readmission Reduction Program (HRRP) to institute some negative reinforcement for hospitals with above average rates of readmission. Evaluating the recent data concerning the trends in hospital readmission rates, it was possible to determine if the HRRP was effective. Once again, looking at the differences in treatment for the insured and uninsured populations revealed if a disparity exists and to what extent varying insurance coverage was a factor. Overall, by exploring the trends in CHF hospitalizations and focusing on readmission rates, CHF offered an additional insight into Americans' access to health care, and illustrated the ACA's effect on tertiary preventive care.

## RESULTS

### Influenza Vaccine

As defined by the Institute for Work and Health, primary preventive care “aims to prevent disease or injury before it even occurs” (Institute for Work & Health, 2015). With this definition, possibly the best example would be a vaccination. Although some vaccinations such as the Measles, Mumps, Rubella (MMR) vaccine or the polio vaccine are required by state law, others are merely suggested. In 2003, the Advisory Committee on Immunization Practices (ACIP) recommended that certain populations of Americans receive an annual influenza vaccine. Citing the vaccination as “the primary method for preventing influenza and its severe complications” (Bridges, et al., 2003), the ACIP stated the vaccination be given to high-risk populations. Under these 2003 guidelines, it was recommended that individuals over the age of 50, babies between the age of 6-23 months, and people who are likely to have frequent contact with persons at risk get vaccinated.

As a part of their Medical Expenditure Panel Survey (MEPS) the Agency for Healthcare Research and Quality (AHRQ) published statistics quantifying the percentage of Americans eighteen or older who had received the flu shot in 2003. Their results showed that the 65 and older population was significantly more likely to get vaccinated than persons between the ages of 18 to 49. Concluding that 18.8% of 18-49 year olds, 40.7% of 50-64 year olds, and 66.4% of people over 65 were vaccinated (Soni, 2006), it was clear that the rate of flu vaccinations was positively correlated with age, mirroring the ACIP guidelines of that time. Further analyzing these three age groups by insurance status (private, public, or uninsured), it was also apparent that insurance status also influenced a person’s likeness to get vaccinated.

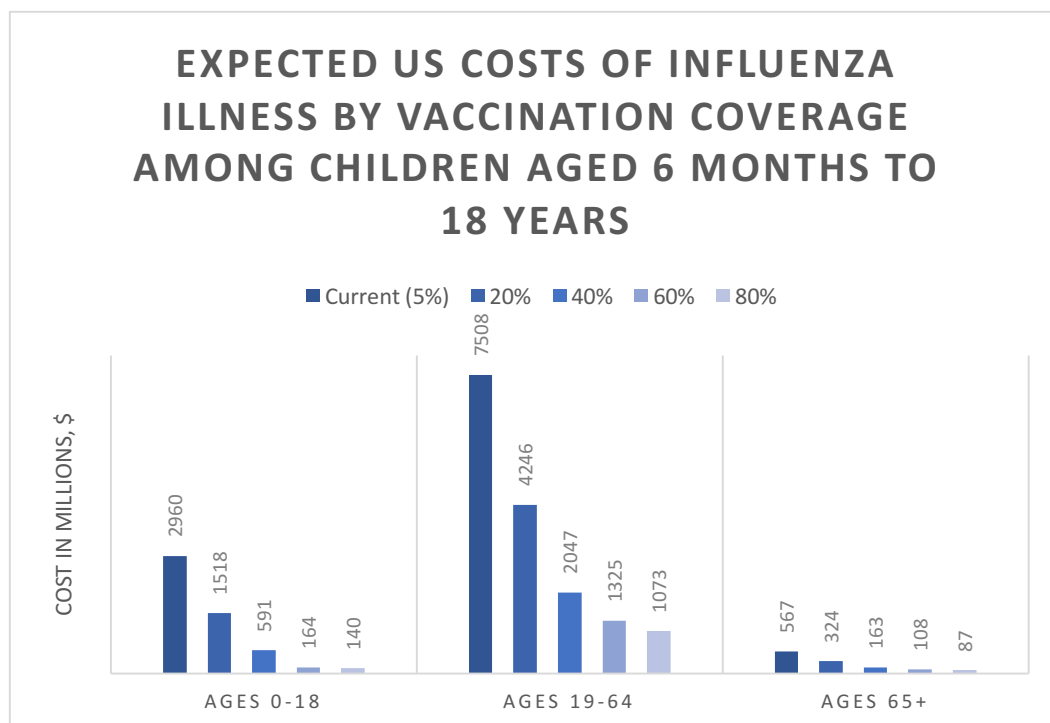


**Figure 3. Percentages of Adults Receiving Flu Shots by Insurance Status, 2003.**

Source: Center for Financing, Access, and Cost Trends, AHRQ, Household Component of the Medical Expenditure Panel Survey 2003.

Examining these results (shown in Figure 3), the under 65 population exhibited a stark difference in vaccination rates between the uninsured and insured populations. Continuing this trend in the 18-49 group, uninsured individuals were only a third as likely to get vaccinated (7.5%) as those of the same age with private insurance (21.8%). Not insured and not specifically recommended for the vaccination under the ACIP's 2003 guidelines, this statistic is not surprising. However, as it was recommended that individuals over 50 get the shot, one would expect the numbers to converge in the 50-64 population. However, the data shows that only 23.2% of uninsured individuals got vaccinated, which was only half as many as those with either private or public insurance (both around 43%). Only in the 65 and older population – where everyone had Medicare coverage – did the three groups report similar percentages. Overall, only 31.7% of all adults reported getting the flu shot in 2003.

Although influenza, or the flu, is typically not a life-threatening illness and thought to be relatively benign, it has a substantial impact every year. Analyzing the annual economic impact of influenza, a study published in 2005 calculated an average of 31.3 million reported cases in a typical influenza season (Weycker, et al., 2005, p. 1288). They concluded that these cases resulted in 11.3 million outpatient visits, 120,200 hospitalizations, and 38,300 deaths each year. In terms of both direct costs (cost of medical care) and indirect costs (influenza-related work loss), the United States spends around \$2.2 billion in direct costs and \$8.8 billion in indirect costs per year on influenza. Citing children as the main pathway through which influenza is spread, the study looked at the benefits of vaccinating the  $\leq 18$  year old population. Determining that the actual childhood vaccination rate is roughly 5%, the researchers calculated the possible benefits of increasing this percentage to 20%, and on up to 80%. Their results, shown below in Figure 4, demonstrate that routinely vaccinating children for influenza would have substantial benefits for persons of all ages.



**Figure 4. Expected US annual direct and indirect costs of influenza illness, by vaccination coverage among children aged 6 months to 18 years.** Figures in US\$ 2000; all scenarios assume vaccination coverage among persons aged 19 years and older at current US rates.

Figure 4 indicates, it is clear that vaccinating just 20% of  $\leq 18$  year olds significantly reduced the economic burden of influenza amongst all age groups. Drastically decreasing the total number of cases, and thus cutting back on expenses such as outpatient medical visits and over the counter medications, each vaccination (costing just \$6-\$24) was an economic savings. Overall, this study indicated that even low rates of influenza vaccination could go on to yield important economic and public health benefits.

Recognizing these benefits, the ACIP began to expand their recommendations. Starting in 2008 by suggesting that children between 5-18 years old be vaccinated, the guidelines were further expanded in 2010 to include all persons older than 6 months. As the 2010-2011 flu season was the first to fall under the newest ACIP guidelines, one would expect to see an increase in vaccinations. While the overall rate of vaccination increased slightly, only 42.3% of adults were vaccinated by March 2011, showing a similar vaccination percentage (41.2%) as the previous 2009-2010 season when the old guidelines were still in effect (Centers for Disease Control and Prevention, 2015). Looking specifically at the 18-49 year-old population (the newest group recommended for vaccination), only 36.9% of individuals were vaccinated in the 2010-2011 season.

Further recognizing the importance of this preventive medical care, the Affordable Care Act worked toward making “prevention affordable and accessible for all Americans by requiring health plans to cover preventive services” ((ASPA), 2012). To achieve this, the ACA eliminated cost sharing for the influenza vaccination (as well as for other recommended preventive services). In other words, beginning in 2010, insurance was expected to cover the entire cost of the flu shot. As out-of-pocket costs could be a barrier to people’s use of such preventive services, the elimination of this payment was expected to spark an increase in influenza vaccination utilization.

Specifically investigating the effects of the elimination of cost-sharing on people’s utilization of the flu shot, a 2015 study looked at data from 2009 and from 2011/2012 (the years surrounding the implementation of the ACA). The percentage of recipients receiving a flu vaccination increased



between these years in both privately insured and Medicare populations, while remaining the same in the uninsured population.

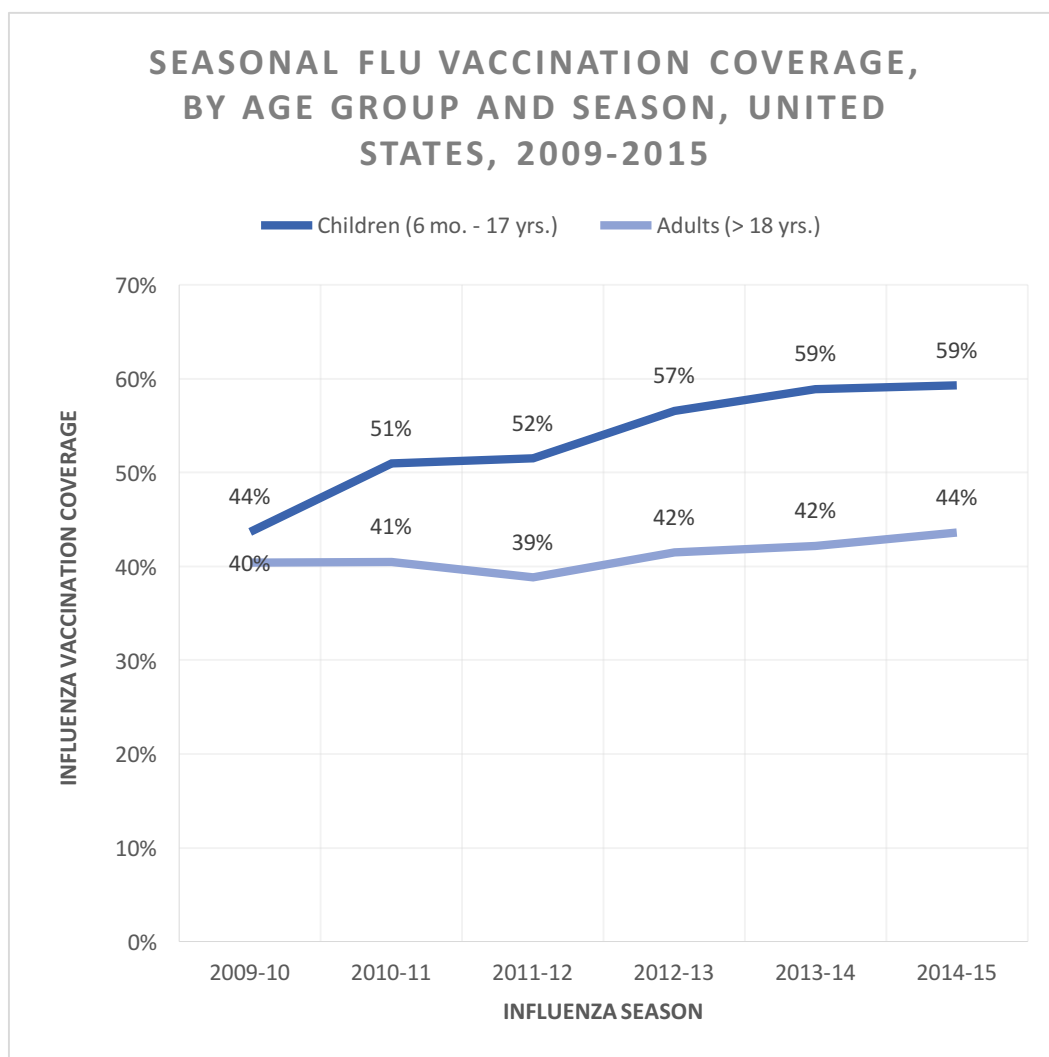
<b>ASSOCIATION BETWEEN SURVEY YEAR AND RECEIPT OF PREVENTIVE CARE, MEDICAL EXPENDITURE PANEL SURVEY 2009, 2011, AND 2012</b>			
<b>Flu shot within the past year</b>	<b>Adjusted Prevalence</b>		<b>Prevalence Ratio</b>
	<b>2009</b>	<b>2011/2012</b>	
<b>Any private insurance, aged 18-64 years</b>	0.38 (0.36-0.39)	0.39 (0.38-0.41)	1.04 (1.00-1.08)
<b>Any Medicare, aged 65+ years</b>	0.69 (0.67-0.71)	0.71 (0.69-0.73)	1.02 (0.99-1.06)
<b>No insurance, aged 18-64 years</b>	0.16 (0.14-0.17)	0.16 (0.14-0.17)	1.01 (.90-1.14)

**Table 1. Association between survey year and receipt of preventive care, Medical Expenditure Panel Survey, 2009, 2011, and 2012.** For each service, only populations with age range consistent with USPSTF recommended age range were included. Models were adjusted for age, sex, race/ethnicity, education marriage status, region, residence, and number of chronic diseases.

Source: Medical Expenditure Panel Survey

The researchers reported, “The increase in these services was confined to insured people, suggesting a positive effect of the ACA provision. Lack of change in preventive services use in the uninsured population would be expected because of the changes in cost-sharing would not remove any financial barriers to care” (Han, Yabroff, Guy, Zheng, & Jemal, 2015, pp. 87-88). Although the change is just a couple of percentage points, it is the increase itself that is significant. Seeing that more insured individuals were getting vaccinated and not seeing this trend in the uninsured population points to the influence of the ACA. As the ACA targeted the insured population by mandating that insurance companies cover the full cost of the flu shot, this early data shows promising results.

Examining the more recent trends in influenza vaccination utilization, there has been more than a 35% increase in adult influenza vaccination from the 2009-2010 season to the 2014-2015 season (Centers for Disease Control and Prevention, 2015).



**Figure 5. Seasonal Flu Vaccination Coverage, by Age Group and Season, United States, 2009-2015.**

Error bars represent 95% confidence intervals around the estimates.

The 2009-10 estimates do not include the influenza A (H1N1) pdm09 monovalent vaccine.

Starting with the 2011-12 season, adult estimates reflect changes in BRFSS survey methods: the addition of cellular telephone samples, and a new weighting method.

Source: National Immunization Survey-Flu (NIS-Flu) and Behavioral Risk Factor Surveillance System (BRFSS)

Looking at the difference between the 2009-2010 season and the 2010-2011 season alone, the data revealed a 16.7% increase in vaccinations. As the ACIP recommendations have held constant during this time and as the major increase occurred the same year that the cost-sharing elimination went into effect, it is likely that the ACA was a significant factor in this increase.

Also in 2010, the Department of Health and Human Services (DHHS) launched the Healthy People 2020 goals, outlining their public health focus for the next decade. Under an overarching goal of attaining “high-quality, longer lives free of preventable disease, disability, injury, and premature death” (US Department of Health & Human Services, 2014), Healthy People 2020 aims for 80%-90% overall influenza vaccination coverage in the United States. While recent data shows an increase in flu shot vaccination rates, the numbers show that there is still room for improvement and a long way from the Healthy People 2020 goal. With the combined impacts of the ACIP expanded recommendations and ACA elimination of cost-sharing, the data does not exhibit quite as dramatic of an increase in vaccination percentage for the 2010-2011 influenza season as one might expect. Looking at the adult population, the CDC has estimated that less than half (43.6%), of individuals received a vaccination in the past 2014-2015 flu season (Centers for Disease Control and Prevention, 2015). Furthermore, after initial spikes following the 2009-2010 and 2011-2012 seasons, the vaccination rates have seemed to plateau.

A possible explanation for low vaccination rates is examined in a study of Americans’ awareness of being recommended for the influenza vaccination. Surveying adults immediately following the 2010-2011 flu season, it was found that only 46.2% correctly reported that they were supposed to be vaccinated that season (Maurer, Harris, & Parker, 2012). Less than half of Americans knew they should be getting a flu shot. The study explained that their findings revealed, “limited awareness of last year’s changes in ACIP’s influenza vaccination recommendations and highlight the need for additional communication efforts highlighting the universal nature of the new vaccination recommendations for influenza” (Maurer, Harris, & Parker, 2012). Regardless of the ACIP recommendations and the cost coverage provided by the ACA, it seems that the majority of the American population does not even realize that they should be getting an annual influenza vaccination.

After examining the influenza vaccination rates reported by national data sources, it is clear there has been an increase in vaccination utilization following the expanded ACIP guidelines and the

ACA's elimination of cost-sharing, both of which came into effect in 2010. As research has shown that this increase is primarily seen in insured individuals, it is safe to assume that the ACA has played a significant role in increasing American's utilization of this primary preventive service. Further research is needed to examine the most recent influenza vaccination trends and determine if Americans are sufficiently aware of the vaccinations that are available to them.

### Asthma Management

Secondary preventive care refers to treatments that "aim to reduce the impact of a disease or injury that has already occurred" (Institute for Work & Health, 2015). Measures taken to control chronic asthma fit under this definition. The leading cause of emergency room visits and hospitalizations for children, asthma affects over 20 million individuals throughout the United States (Blais, et al., 2009, p. 303). Additionally, it is estimated that asthma costs the United States over \$50 billion each year in direct healthcare costs including preventable hospitalizations and emergency department visits (Lara, 2013). Although asthma is often a chronic disease, it can be controlled. The ultimate goal is that patients will utilize the appropriate controller medicines, avoid asthma triggers, and be educated in self-management techniques so that they will be symptom free (National Asthma Education and Prevention Program, 2007). With proper control, individuals with asthma can stay out of the emergency room. Therefore, studying the trends of asthma management provides an insight into the diagnosis and control aspects of the healthcare system.

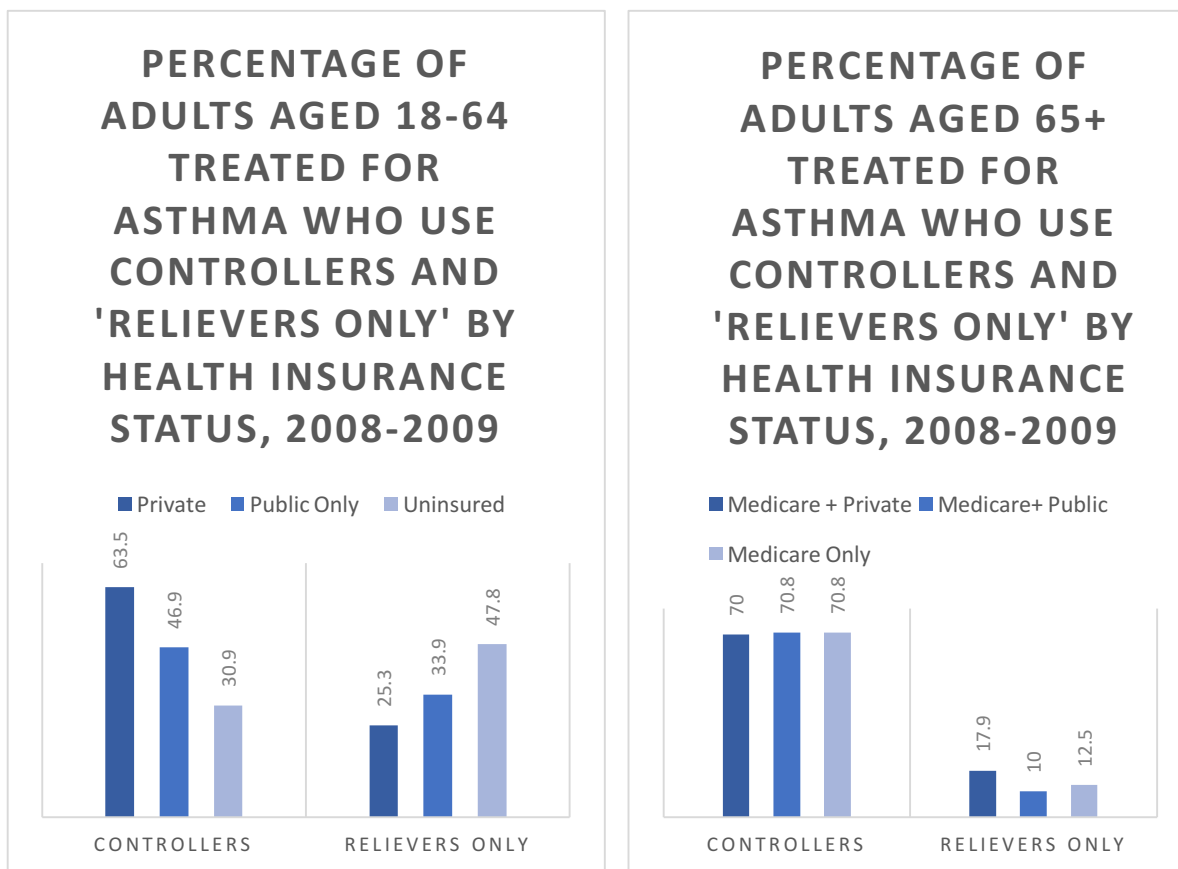
Releasing guidelines for asthma management, the National Asthma Education and Prevention Program (NAEPP) states that their ultimate treatment goals are to "prevent chronic symptoms, require infrequent use of short-acting-beta<sub>2</sub>-agonist (SABA), [and] maintain (near) normal lung function and normal activity levels," as well as minimizing the "need for emergency care or hospitalization" (National Asthma Education and Prevention Program, 2007). In other words, controlled asthma means affected individuals are rarely using their inhalers (the short-acting-beta<sub>2</sub>-agonist), have almost normal lung function, and are not experiencing frequent asthma attacks or other wheezing sessions.

To achieve this standard, physicians often employ both controlling and relieving medications that work in conjunction with one another to keep airways open and breathing under control. Relieving medications, or inhalers, are used when symptoms flare up during an asthma attack. They are quick acting medications that expand the passageways into the lungs in order to improve breathing. Long-term control medicines, on the other hand, reduce airway inflammation to improve everyday asthma control. These controlling medications are taken regularly to prevent symptoms and attacks.

Besides being the most common chronic childhood disease (Kenney, Luque, & Coyer, 2011), asthma disproportionately affects low-income, urban populations. There are many factors that contribute to this significant disparity. Whether it be car exhaust from busy streets, mold in a building's walls, or a number of other pollutants; there are several reasons why an urban environment could be irritating to a person's airways. In addition, proper asthma treatment is expensive and there is a significant financial barrier that can limit individuals' access to care. Oftentimes requiring multiple prescription refills and semiannual doctor's visits, the medical bills add up quickly. For many, it is simply easier to leave their asthma unchecked and uncontrolled. Already at a disadvantage because of their environment, many people in this demographic do not utilize preventive care to control their asthma.

This financial burden is only compounded for individuals without insurance. As insurance companies often considered chronic asthma as a pre-existing condition and thus a reason to refuse coverage, many asthma sufferers experienced difficulty getting health insurance prior to the ACA. If they did manage to get coverage, it was often very expensive. Left to pay for medications and office visits out of pocket, many chose to forgo preventive treatment and simply rely on the emergency room when their symptoms flared up. The impact of this cost differential can be seen in differences between the insured and uninsured populations' preferences for controlling versus relieving medications. Illustrated in a MEPS survey published in 2012, this disparity is evident when the privately insured population showed a clear preference (63.5%) for controlling medications while

almost half of the uninsured population (47.8%) reported relying solely on their relieving medications (Chevarley, 2012).



**Figure 6. Percentage of Adults Treated for Asthma who use Controllers and 'Relievers Only' by Health Insurance Status, 2008-2009.**

Source: Center for Financing, Access, and Cost Trends, AHRQ, Household Component of the Medical Expenditure Panel Survey, 1998-1999 and 2008-2009

Interestingly, this same study went on to report that adults over the age of 65 displayed about a 70% preference for controlling medications regardless of insurance type – a similar percentage to the privately insured group. Taking this data at face value, it is worth noting that the over 65 population, who are covered under Medicare, uniformly preferred controlling medications; a distinct difference from what is seen in the younger uninsured group.

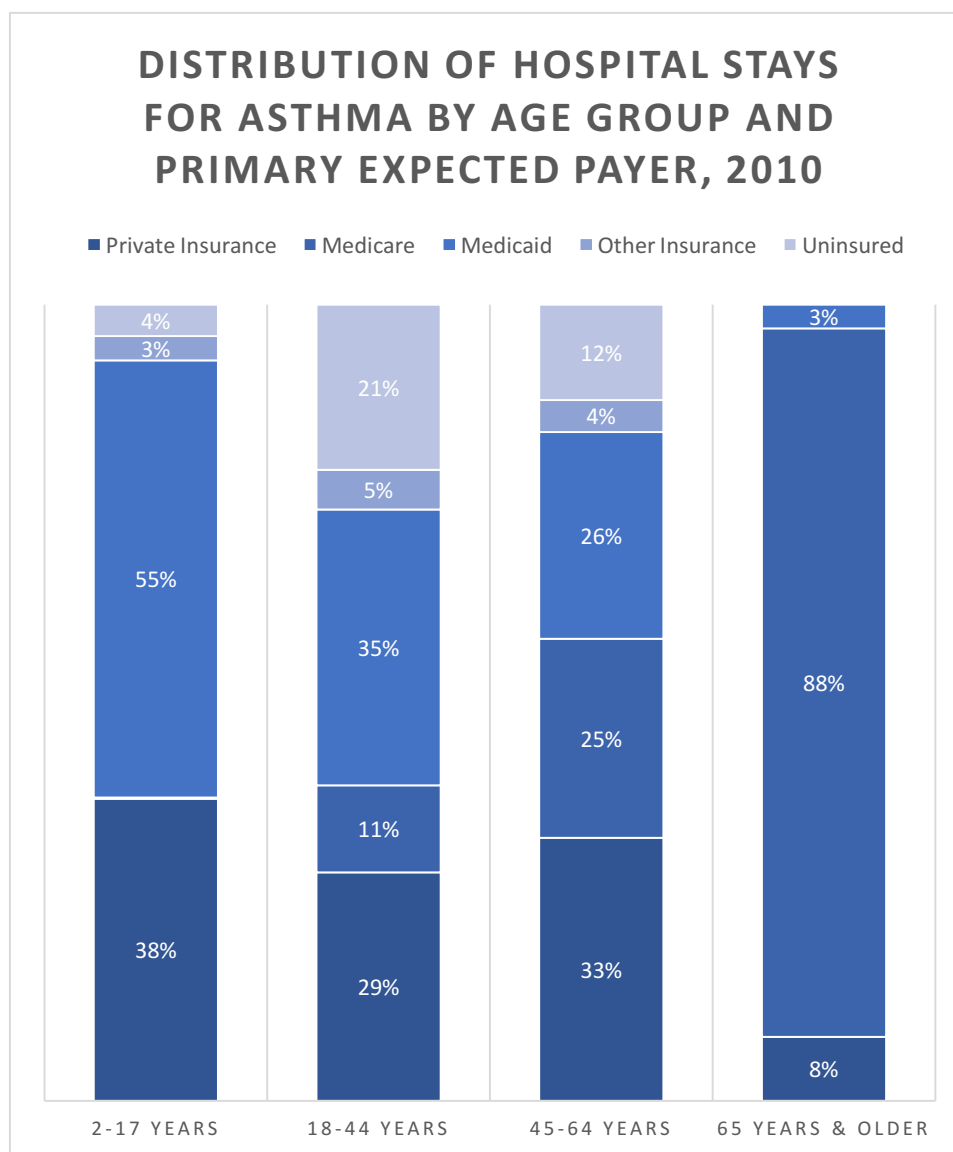
Recognizing these differences, the ACA works to provide health insurance for a greater number of individuals with asthma. Eliminating pre-existing conditions under the ACA, insurance

companies are no longer allowed to refuse coverage to persons with chronic conditions such as asthma. Additionally, the ACA encouraged states to adopt the federally funded Medicaid Expansion program. Offering Medicaid coverage to individuals who originally earned up to 138% of the federal poverty line, this expanded insurance coverage was implemented to help individuals who earn too much to be eligible for Medicaid, but still could not afford their medications and doctor's visits.

As asthma has been shown to disproportionately affect low-income individuals, the ACA's emphasis on Medicaid coverage was designed to make significant strides in allowing access to asthma treatment for a population that needed it. Offering government funded health insurance, Medicaid is designed to make necessary health treatments affordable. For this reason, one would expect to see that individuals covered by Medicaid would be better off than those who are uninsured. With health insurance to help to cover the costs of controlling medications and regular doctor's visits, Medicaid coverage would be expected to result in decreased numbers of hospitalizations and emergency room visits for asthma-related complications.

However, early studies show that this is not the case. Rates of treatment adherence were shockingly low for individuals insured by Medicaid. Data from 2014 shows that a majority of children covered under Medicaid discontinued their long-term asthma medication. Specifically, 55% discontinued treatment after 60 days, and 63% never got a refill on their 90 day prescription (effectively ending their treatment regimen) (Capo-Ramos, Duran, Simon, Akinbami, & Schoendorf, 2014). Just two months after their asthma diagnosis, over half had abandoned their preventive treatment.

Looking at trends from before the ACA's implementation, it is clear that when it comes to asthma management, the lower-income population exhibited a higher number of asthma-related hospitalizations and emergency room visits, regardless of insurance status. Reporting on the trends of hospital stays for asthma between the years of 2000 and 2010 (Figure 7), a study sponsored by the Agency for Healthcare Research and Quality showed that the Medicaid population exhibited the largest percentage of asthma-related hospital stays (Barrett, Wier, & Washington, 2014).



**Figure 7. Distribution of hospital stays for asthma by age group and primary expected payer, 2010.** Percentages less than 2 percent are not labeled. The Medicare percentage for children aged 2 – 17 years is not visible because it is only 0.2 percent.

Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample (NIS), 2010, and AHRQ Prevention Quality Indicators (PQIs)

While one may expect their uninsured status to be detrimental, these numbers show that the lower incomes of the Medicaid population plays a bigger impact. Echoing these results, another study conducted on trends in asthma-related outcomes in the early 2000's shows that the publicly insured



population almost always exhibited a higher prevalence of asthma attacks and emergency room visits due to an asthma attack (Kenney, Luque, & Coyer, 2011).

CHANGES IN ASTHMA-RELATED OUTCOMES AMONG ASTHMATIC CHILDREN (AGE 0 TO 17), BY YEAR AND HEALTH INSURANCE STATUS				
	Asthma Attack			
	Overall	Public Insurance	Private Insurance	Uninsured
2001-04	45.6%	48.5%	44.8%	43.2%
2005-08	40.8%	41.6%	40.1%	41.0%
Difference	-4.8***	-6.9***	-4.7**	-0.022
	ED Visit due to Asthma Attack			
	Overall	Public Insurance	Private Insurance	Uninsured
2001-04	33.6%	45.3%	26.0%	38.3%
2005-08	33.4%	42.5%	23.0%	48.0%
Difference	-0.2	-2.8	-3	9.7*

**Table 2. Changes in Asthma-Related Outcomes among Asthmatic Children (Age 0 to 17), by Year and Health Insurance Status.** Public coverage includes Medicaid/CHIP, state-sponsored health plans, and other government programs. Private coverage includes employer sponsored insurance (ESI) and non-group private coverage. Children who report both public and private health insurance coverage are assigned to public coverage.

\*(\*\*)(\*\*\*) Significant at the 10% (5%) (1%) level.

Source: Urban Institute tabulations of the 2001 to 2008 NHIS

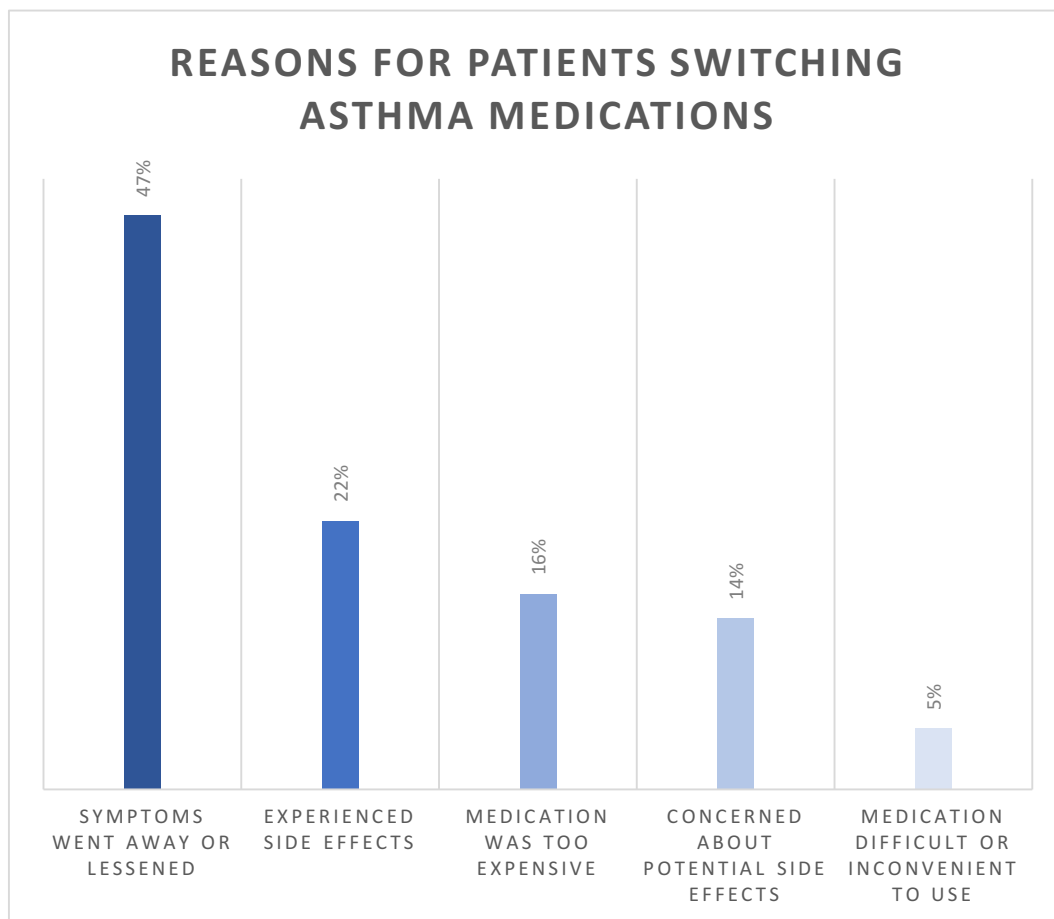
Although the uninsured population seems to overtake those who are publicly insured as the years go on, there is still not a drastic difference between the two. Even though the Medicaid population has health insurance, their statistics do not show improvement.

However, studies investigating asthma diagnosis and treatment after the implementation of the ACA have revealed that insurance coverage was shown to increase the percentage of people getting diagnosed with asthma. Asthma can be classified as persistent or intermittent depending upon how often an individual experiences symptoms. Concerning intermittent asthma, it was shown that children “who had health insurance were more likely than those who lacked health insurance to have been diagnosed with asthma” (Freeman, Schneider, & McGarvey, 2003). As the number of children covered by insurance increased, so did the number of children who were diagnosed with asthma and subsequently placed on an asthma treatment regimen. This same association, however, is not seen in

persons with persistent asthma. It seems that those with persistent symptoms are getting diagnosed, regardless of their insurance status. A likely explanation is that children with persistent symptoms were more likely to require acute-care, leading to a diagnosis at an emergency department or urgent care center. Meanwhile, children experiencing intermittent asthma were more likely to ignore their symptoms. These findings suggest that “there may be a significant ‘reservoir’ of undiagnosed children, especially among those who lack health insurance” (Coker, Kaplan, & Chung, 2012, p. 431).

Unfortunately, these same studies conclude that even though insurance coverage increases a child’s likelihood of diagnosing asthma, it does not necessarily result in higher rates of treatment. It was reported that, “Even if insurance status does increase the chance of an asthma diagnosis, whether that diagnosis leads to reduced asthma-related acute care utilization (i.e., acute care for exacerbation of asthma symptoms) is unclear” (Coker, Kaplan, & Chung, 2012, p. 432). In other words, an increase in a population’s percentage of insured individuals does not result in a decrease in the number of individuals needing treatment for an asthma-related complication. This indicates that even though they are insured, individuals are not utilizing the proper preventive options to keep their asthma under control. Echoing these findings, a second study concluded that “asthma management with medications was reported for only approximately one third of the children with asthma and tended to include critical-care medications such as albuterol” (Freeman, Schneider, & McGarvey, 2003). Important for relieving an asthma attack, these critical-care medications are typically used as a last resort and indicate that asthma was not under control. Furthermore, of the one third of children managing their asthma with medications, these medications tended to be the critical-care or last-resort medications, not a preventive medicine taken daily to manage chronic asthma.

While there is not a definite answer, a study from 2009, may shed some light on the topic. Distributing a survey asking asthma patients why they had switched or discontinued their medication, almost half stated that it was because their symptoms had gone away or lessened. Only 22% cited the cost of the medication as being an issue (Blais, et al., 2009, p. 307).



**Figure 8. Reasons for patients switching asthma medications.** Question: since being diagnosed with asthma, have you ever switched from one asthma medication to another or discontinued an asthma medication because ...?

Source: Global Asthma Physician and Patient Survey

Asking specifically about the cause for noncompliance, the most frequent answer was that they didn't need to take their medications if symptoms go away (out of the nine answer response options, lack of insurance coverage/too expensive was second to last). Also asking patients about the consequences that could result from not taking their medication, only 69% correctly reported that their symptoms would increase and only 35% knew that they could experience more frequent asthma attacks or exacerbations (Blais, et al., 2009, p. 311). Seeing these responses in the tables below, it is clear that a lack of understanding and education impacts patient's adherence to asthma treatment.

REASONS PATIENTS FAIL TO COMPLY WITH ASTHMA MEDICATION TREATMENT REGIMEN		
	Patients (%)	Physicians (%)
Don't need to take if symptoms go away	5.4	7.9
Don't need to take it so often	5.2	7.5
Forget	0.2	7.3
Fear of steroids	4.1	5.6
Concerns about side effects	3.9	5.5
Concerns about becoming dependent	3.7	5.1
Inconvenience	3.7	6.6
Lack of insurance coverage or too expensive	3.6	7.2
Difficulty understanding the instructions	2.4	5.6

**Table 3a. Reasons Patients Fail to Comply with Asthma Medication Treatment Regimen.** Patient question: On a scale of 1-10 where “1” means “not at all important” and “10” means extremely important,” how important are the following reasons you don’t or didn’t always take your asthma medication as instructed? Physician question: On a scale of 1-10 where “1” means “not at all important” and “10” means “extremely important,” how important are the following reasons your patients don’t take their asthma medication as instructed?

PATIENT AND PHYSICIAN REPORTED CONSEQUENCE OF PATIENTS NOT TAKING MEDICATION		
	Patients (%)	Physicians (%)
Increase symptoms	69	100
Limited physical activity	58	91
Increased use of bronchodilator	46	99
Nighttime awakenings	39	3
More frequent asthma attacks or asthma exacerbations	35	100
More severe asthma attacks	27	94
More physician visits	25	99
More hospitalizations or ER visits	13	90
Absence from work	10	87
Life-threatening asthma attacks	10	65
Less interaction with friends and family	9	55

**Table 3b. Patient and Physician Reported Consequence of Patients Not Taking Medication.** Patient question: Have you ever experienced the following if you don’t or didn’t take your asthma medication as instructed? Physician question: Among your asthma patients, does non-compliance in their use of asthma medication cause ...?

Source: Global Asthma Physician and Patient Survey

Showing just how effective proper asthma education can be, multiple studies show how time spent ensuring patients fully understand their asthma and their treatment results in significant benefits such as better treatment adherence and decreased emergency room visits. Reporting on the effects of asthma management education being offered in primary care settings, a 2015 study showed “a progressive increase in asthma knowledge and an improvement in medication adherence” (Boulet, et al., 2015, p. 991). Working with a sample size of 124, after three educational sessions held 4-6 weeks, 4-6 months, and one year after diagnosis, the researchers found that the number of unscheduled visits for respiratory problems decreased from 137 to 33. Similarly promising results were seen in treatment adherence as “there was a significant increase in adherence to treatment from [the] baseline to all other time points” (Boulet, et al., 2015, p. 997). Confirming the importance of education, a study

published in 2013 also displayed how parents who had been given a brief educational overview on their child's asthma condition, were more likely to follow-up with the necessary outpatient visit. Specifically, "asthma follow-up rates at one week improved from 20.8% to 50% after intervention" (Williams, Word, Streck, & Titus, 2013, p. 1). Together, these studies show how simple educational interventions lead to significant changes in asthma treatment adherence.

Recognizing the important impact a patient's knowledge and understanding plays on their adherence to asthma treatment, some states have begun to implement initiatives that would offer Medicaid reimbursement for educational interventions. Several states such as Massachusetts, Minnesota, and New York, allow "Medicaid reimbursement for specialists to visit the homes of low-income patients with severe asthma to identify asthma triggers in those homes. Medicaid would also provide reimbursement for face-to-face sessions to educate asthmatics in the disease and ways to manage it" (Ollove, 2014). These programs target "super-utilizers" who are described by the CMS as asthma patients who are frequent users of the emergency room, regularly hospitalized, or often prescribed oral steroids for asthmatic emergencies. According to the CMS, these super-utilizers are just 1% of the US population, but account for 22% of the United State's total healthcare expenditures (Ollove, 2014). As asthma education has shown promising results, offering federal and state funding to help educate these patients is predicted to drastically reduce the number of hospitalizations and emergency room visits. Seeing the potential, additional states such as Missouri and Vermont are looking at adopting similar programs.

As chronic asthma disproportionately affects the low-income, urban population, the ACA's expansion of Medicaid was meant to provide insurance coverage to a population who would likely benefit from preventive asthma treatment, but could not afford it on their own. While this increased insurance coverage did result in more asthma diagnoses, it did not correlate into increased utilization of asthma management methods. While it seems that "prescribed" educational asthma programming could help significantly, further research is needed to investigate the impact of these initiatives to

evaluate if they are effective in teaching patients the importance of utilizing secondary preventive measures such as daily asthma management.

### Control of Congestive Heart Failure

Tertiary preventive care “aims to soften the impact of an ongoing illness or injury that has a lasting effect” (Institute for Work & Health, 2015). Although many chronic diseases could be used to explore this level of prevention, Congestive Heart Failure (CHF) is a well-known condition and has received extensive focus, making it an ideal candidate for investigation. CHF is a medical condition in which the heart cannot pump enough blood around the body. This chronic disease is often the result of an overall weakening of the heart muscle, leading to its inability to pump blood. This weakening can be caused by a variety of conditions such as atherosclerosis (plaque buildup in the arteries), hypertension (high blood pressure), diabetes, or coronary artery disease. Overall, it is estimated that almost 6 million Americans currently suffer from CHF, and that an additional 555,000 are diagnosed each year. It is the leading cause of hospitalizations for adults 65 and older (Joynt & Jha, 2010, p. 53). Of all the CHF patients hospitalized, 75% were over the age of 65, and 50% were over the age of 75 (Sanghavi, et al., 2014, p. 5). Most importantly, however, it is estimated that 24% of CHF patients are readmitted to a hospital within 30 days of their original discharge (Sanghavi, et al., 2014, p. 3).

CHF is categorized as an Ambulatory Care Sensitive Condition, meaning that in general, hospitalizations can be avoided if patients receive timely and appropriate primary care interventions. In other words, CHF patients often end up in the emergency room suffering from avoidable complications. Although many programs improving access and quality of care have been implemented in recent years, there has not been a decrease in preventable or avoidable CHF hospitalizations. In fact, hospitalization rates have not changed significantly from 2000 to 2010, remaining at approximately 1 million hospitalizations per year (Hall, Levant, & DeFrances, 2012).

Recognizing the high rate of hospital readmissions as a problem, the Affordable Care Act implemented the Hospital Readmission Reduction Program (HRRP). Taking effect in 2013, the HRRP penalizes hospitals that report a higher than average rate of Medicare readmissions by cutting up to 3% of their reimbursement. Dealing with a population that already has universal health insurance coverage, the HRRP is meant to spark a renewed focus on quality care, resulting in fewer readmissions.

Although recent findings reveal that a majority of hospitals were not significantly penalized, there is some concern that low-income and teaching hospitals suffer disproportionately. Focusing particularly on low-income hospitals, an article published in *Circulation* raises the concern that “because some of the financially and clinically resource-poor hospitals in the country are among the worst performers for heart failure readmissions, quality improvement efforts that rely on penalties and rewards may further widen the gap” (Joynt & Jha, 2010, p. 54). Working with a riskier population, these hospitals are more likely to have higher rates of readmission. Already at a disadvantage, a penalty in such cases may do more harm than good. Supporting the article’s prediction, a recent study on the impact of the HRRP on hospital readmission rates revealed that hospitals containing the highest proportion of low-income Medicare patients displayed the highest percentage of hospitals receiving a penalty.

<b>VARIATION IN PENALTIES BY HOSPITAL TYPE GENERALLY PERSIST ACROSS FIRST THREE YEARS OF HRRP</b>								
	% of hospitals in group	% of hospitals in group	% of hospitals with any penalty			% of hospitals at year's max penalty		
			2013	2014	2015	2013 (-1%)	2014 (-2%)	2015 (-3%)
<b>Quartile 1 (Lowest)</b>	25%	19%	0.18%	0.15%	0.43%	4.30%	0.40%	1.70%
<b>Quartile 2</b>	25%	27%	0.24%	0.22%	0.46%	5.40%	0.00%	0.20%
<b>Quartile 3</b>	25%	29%	0.31%	0.28%	0.53%	8.00%	0.40%	1.00%
<b>Quartile 4 (Highest)</b>	25%	25%	0.37%	0.36%	0.54%	14.70%	1.30%	1.80%

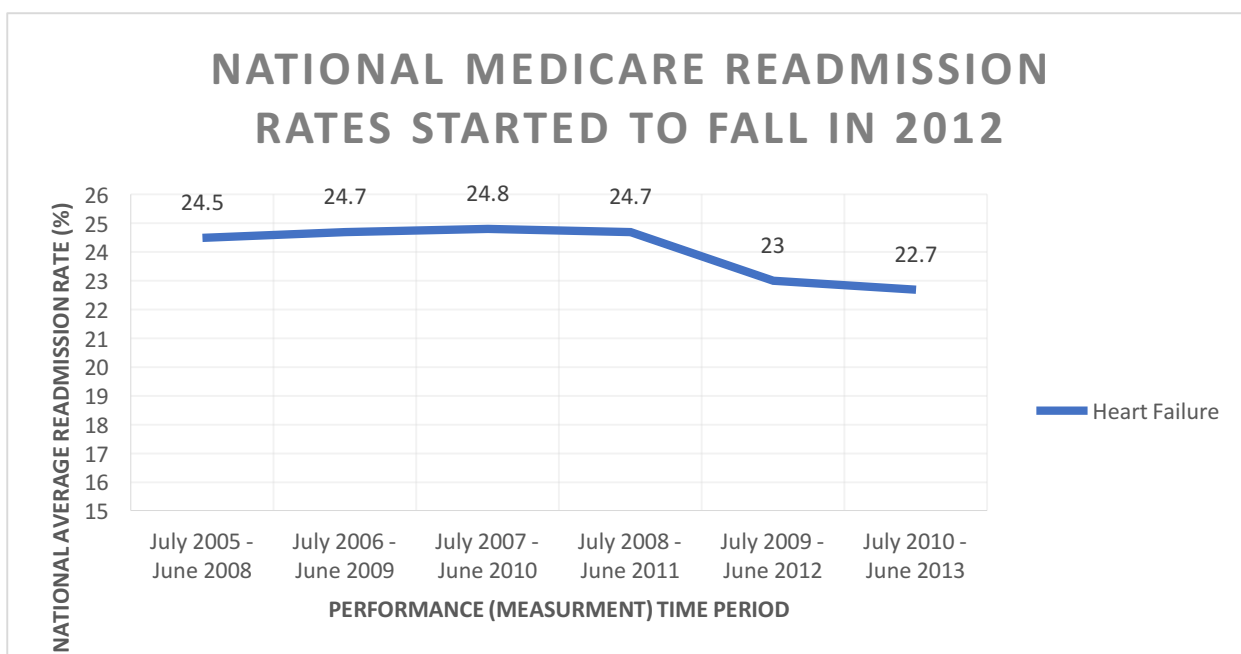
**Table 4. Variation in penalties by hospital type generally persist across first three years of HRRP.** The low-income Medicare patient proportion is derived from hospital ratios of the Supplemental Security Income (SSI) patient days, with the 4<sup>th</sup> quartile having the highest ratio of low-income patient days. The percent of hospitals in each group is for FY2015. The percent of Medicare fee-for-service patient admissions is from FY2013, the most recent year for which admission distribution is available. Analysis excludes hospitals not subject to HRRP because they are not paid under the Medicare Hospital Inpatient Prospective Payment System (IPPS) (e.g. Maryland hospitals, psychiatric hospitals).

Source: Kaiser Family Foundation analysis of CMS Final Rules and Impact Files for the Hospital IPPS; CMS’s SSI calculations from 2013 run out.

Table 4 shows that hospitals in the 4th Quartile (highest proportion of low income Medicare patients), were penalized more often than hospitals in the 1st Quartile (lowest proportion of low-income Medicare patients).

Further confirming these results, research done by the Medicare Payment Advisory Commission showed that “hospitals readmission penalties are positively correlated with their share of low-income Medicare patients, suggesting that factors other than hospital quality may play a role in readmission rates” (Boccuti & Casillas, 2015, p. 6). Recognizing this, it may be beneficial for the HRRP to take additional measures into account – particularly those pertaining to socioeconomic status. In this way, it can better account for hospitals that are prone to higher rates of readmission due to their patient demographics.

Despite the fact that some hospitals were more likely to be penalized than others, less than 0.5% of all Medicare admissions occurred in hospitals that received the maximum penalty of 3%. As a majority of hospitals have managed to incur only a small penalty (<1%) or avoid a penalty all together, analysis of the recent trends in heart failure readmission rates begin to shows a measureable decrease in 2012.



**Figure 9. National Medicare Readmission Rates Started to Fall in 2012.** National readmission rates include Medicare fee-for-service unplanned hospitalizations for any cause within 30 days of discharge from an initial hospitalization from either heart failure, heart attack, or pneumonia. Rates are risk-adjusted for certain patient characteristics, such as age and other medical conditions.

Source: Kaiser Family Foundation analysis of CMS Hospital Compare data files.



The previously flat readmission rates that were consistently around 24%, dropped to 23% in 2012 and continued to decrease the following year. As the penalties took effect in 2013, researchers hypothesized that “hospitals may have started to implement strategies to lower their readmissions in response to the enactment of the HRRP, with the understanding that the financial penalties (starting in 2013) would be based on performance in prior years” (Boccuti & Casillas, 2015, p. 7). In other words, hospitals recognized the possibility of a penalty and took action to decrease their readmission rates. Successfully implementing initiatives to improve quality of care, readmission rates dropped and a majority of hospitals avoided a major penalty.

In addition to the ACA’s implementation of the HRRP and its efforts to reduce CHF hospitalizations by increasing quality of care, Medicaid expansion was also thought to improve individuals’ access to care, allowing them to get the preventive care needed to stay out of the hospital. As was briefly touched upon above, CHF hospitalizations exhibit a higher mortality rate among patients with a lower socioeconomic status (Kapoor, et al., 2011, p. 1466). Because lack of health insurance is associated with lower rates of preventive care and increased adverse health outcomes, Medicaid expansion should improve health outcomes.

A precursor to CHF, controlled hypertension subsequently results in controlled CHF. Studies investigating the relationship between Medicaid coverage and clinical outcomes of hypertension show that individuals with Medicaid insurance were 1.83 times as likely of being aware of their hypertension than uninsured individuals, as well as being 1.69 times as likely to having their hypertension controlled. The study reports that “Medicaid recipients visited health care providers much more frequently than comparable uninsured individuals, and were more likely to be aware of their hypertension” (Christopher, et al., 2016, p. 67). Demonstrating that Medicaid coverage is associated with an increased awareness and treatment of hypertension, this data holds promising results showing how Medicaid expansion can help control chronic conditions such as CHF.

Recognizing high rates of readmission for CHF as a problem, the ACA instituted the HRRP to penalize hospitals with above average rates of readmission and to encourage high quality tertiary

preventive care. While recent data reveals promising results showing that readmission rates have decreased since the HRRP's implementation, additional research is needed to continue investigating trends in CHF-related hospital readmission. Specifically, there need to be investigations into the influence of patients' socioeconomic status on HRRP penalties.

## DISCUSSION/CONCLUSION

Having examined the recent trends, there is a visible increase in influenza vaccinations starting in 2010. Reviewing the primary literature and research studies surrounding the topic, it is clear that insured individuals were, and are, more likely to receive preventive vaccinations such as the flu shot than their uninsured contemporaries. Seeing how increased insurance coverage is positively correlated with vaccination utilization, it is therefore safe to assume that the spike in vaccination percentage can be greatly attributed to the Affordable Care Act's elimination of out-of-pocket costs for recommended preventions. Removing the financial barrier to primary preventive care for insured individuals, the American people were given the ability to comply with the expanded ACIP recommendations. However, there is still room for improvement. The low percentage of Americans who correctly reported being recommended for the flu shot reveal that people need to be made more aware of vaccination guidelines and benefits. If there is any hope of reaching Healthy People 2020's goal of an 80%-90% vaccination percentage, there needs to be an increased awareness and general education surrounding immunizations like the flu shot. Nevertheless, after seeing an increase in influenza vaccinations beginning in 2010, it is clear that under the ACA insured individuals are more likely to engage in primary preventive behaviors such as the influenza vaccination.

Investigating the effects of insurance status on asthma management has shown that the ACA has made a significant impact on the number of asthma diagnoses. As increased coverage has allowed many individuals the opportunity to visit a primary care physician, the expansion of Medicaid has especially lead to an increased number of diagnoses in recent years. Insuring a population of people who were largely uninsured before the ACA has allowed these individuals the opportunity to see their

primary care physician and pay for much needed medications. Seeing an increase in asthma particularly in persons with intermittent symptoms, it seems there was a large reservoir of previously uninsured individuals who were ignoring their symptoms. Although one would assume that the increase in diagnoses would lead to better disease management, thus reducing the number of asthma-related hospitalizations, the recent research has shown that this is not the case. Even with expanded Medicaid coverage, a majority of low-income individuals discontinue their treatment regimen, leading to a high percentage of asthmatic Medicaid recipients who experience an asthma-related hospital stay. Overall, this data has indicated that the income-disparity associated with individuals receiving the proper course of asthma treatment outweighs the positive effects of having insurance coverage. A fundamental factor behind this observation may be the general lack of education surrounding the topic. As with the case study on the flu shot, the ACA has expanded Americans' access to care; but additional educational programming needs to be put in place to ensure people are taking advantage of these secondary preventive care measures.

Ending with Congestive Heart Failure, it is clear that tertiary preventive care measures such as the quality of care provided during CHF related hospitalizations has also been affected by patients' insurance status and the ACA. As almost 1 in every 4 individuals that were hospitalized for a CHF related condition were readmitted less than 30 days later, the numbers exhibit a shortcoming in the current hospital system. Acknowledging that quality of care is a problem, the ACA responded by implementing the Hospital Readmission Reduction Program (HRRP). Cutting reimbursement for hospitals whose readmission rates are too high, the HRRP was meant to incentivize hospitals to improve their care of CHF patients and keep them from needing to come back. Examining the trends in CHF reimbursement and seeing the drastic drop in 2012 (the year before the penalties took effect), it is clear that this initiative has been effective. Although hospitals serving a high percentage of low-income Medicare patients were disproportionately penalized (showing that patient demographics needs to be factored in), less than one percent of hospitals across the United States received the highest penalty. As almost 90% of hospitals were either minimally penalized or not penalized at all, it

seems the HRRP has encouraged hospitals to limit their readmission rates, and subsequently improve the quality of their tertiary preventive care.

After investigating the examples of the influenza vaccination, asthma management, and control of congestive heart failure it is clear that a person's insurance status influences their access to care. This goes on to influence their willingness and/or ability to participate in primary, secondary, and tertiary preventive measures. Through the expansion of Medicaid and the mandate that every American have health insurance, the ACA has tried to increase Americans' access to health care services. Additional programs outlined in the ACA such as the cost-sharing elimination for recommended preventive measures, Medicaid covered asthma educational programs, and the HRRP also work toward encouraging preventive measures, making them a cornerstone of the United States healthcare system.

The case studies above, however, are just examples. They describe some of the strengths and weaknesses of the ACA. Illustrating how the ACA expands American's access to care by eliminating financial barriers; they also reveal how progress can be limited without the proper educational programs. Having evaluated the empirical evidence, it is apparent that varying insurance status directly results in health care disparities – which are manifested through differences in populations' utilization of medical preventions and treatment. Although more research is needed into its long-term effects and other factors that influence access to care, preliminary data indicates that the Affordable Care Act significantly reduces the cost barrier for preventive medical care, and works toward achieving equality among populations who were previously uninsured. Overall, it has shown great promise in providing Americans the opportunity to participate in a wide range of preventive services.

## Works Cited

- (ASPA), A. S. (2012). *The Affordable Care Act and Immunization*. (U. D. Services, Producer) Retrieved from hhs.gov: <http://www.hhs.gov/healthcare/facts-and-features/fact-sheets/aca-and-immunization/index.html>
- Antonova, E., Ambrose, C., Kern, D., Block, S. L., Caspard, H., & Tunceli, O. (2014). Seasonal influenza vaccination trends from 2007-2011 in privately insured children and adults in the United States. *Vaccine*, 6563-6568.
- Barrett, M. L., Wier, L. M., & Washington, R. (2014). *Trends in Pediatric and Adult Hospital Stays for Asthma, 2000-2010*. Agency for Healthcare Research and Quality, US Department of Health & Human Services.
- Blaiss, M. S., Kaliner, M. A., Baena-Cagnani, C. E., Dahl, R., Valovirta, E. J., & Canonica, G. W. (2009). Barriers to Asthma Treatment in the United States: Results from the Global Asthma Physician and Patient Survey. *World Allergy Organization Journal*, 303-313.
- Boccuti, C., & Casillas, G. (2015). *Aiming for Fewer Hospital U-turns: The Medicare Hospital Readmission Reduction Program*. The Henry J. Kaiser Family Foundation.
- Boulet, L.-P., Boulay, M.-E., Gauthier, G., Battisti, L., Chabot, V., Beauchesne, M.-F., . . . Cote, P. (2015). Benefits of an asthma education program provided at primary care sites on asthma outcomes. *Respiratory Medicine*, 991-1000.
- Bridges, C. B., Harper, S. A., Fukuda, K., Uyeki, T. M., Cox, N. J., & Singleton, J. A. (2003). *Prevention and Control of Influenza*. Centers for Disease Control and Prevention, Recommendations and Reports. Morbidity and Mortality Weekly Report.
- Capo-Ramos, D. E., Duran, C., Simon, A. E., Akinbami, L. J., & Schoendorf, K. C. (2014). Preventive asthma medication discontinuation among children enrolled in fee-for-service Medicaid. *Journal of Asthma*, 618-626.
- Centers for Disease Control and Prevention. (2015). *Flu Vaccination Coverage*.
- Chevarley, F. M. (2012). *Asthma Medication Use among Adults with Reported Treatment for Asthma, United States, 1998-1999, and 2008-2009*. Medical Expenditure Panel Survey, US Department of Health & Human Services. Agency for Healthcare Research and Quality.
- Children's Defense Fund. (2010). *Asthma Health Fact Sheet*.
- Christopher, A. S., McCormick, D., Woolhandler, S., Himmelstein, D. U., Bor, D. H., & Wilper, A. P. (2016). Access to Care and Chronic Disease Outcomes Among Medicaid-Insured Persons Versus the Uninsured. *American Journal of Public Health*, 63-69.

- Coker, T. R., Kaplan, R. M., & Chung, P. J. (2012). The Association of Health Insurance and Disease Impairment with Reported Asthma Prevalence in US Children. *Health Services Research Journal*, 431-445.
- Freeman, N. C., Schneider, D., & McGarvey, P. (2003). The Relationship of Health Insurance to the Diagnosis and Management of Asthma and Respiratory Problems in Children in a Predominantly Hispanic Urban Community. *American Journal of Public Health*, 1316-1320.
- Hall, M. J., Levant, S., & DeFrances, C. J. (2012). *Hospitalization for Congestive Heart Failure: United States, 200-2010*. Centers for Disease Control and Prevention, US Department of Health & Human Services. National Center for Health Statistics.
- Han, X., Yabroff, K. R., Guy, G. P., Zheng, Z., & Jemal, A. (2015). Has recommended preventive service use increased after elimination of cost-sharing as part of the Affordable Care Act in the United States? *Preventive Medicine*, 85-91.
- Holahan, J., & Chen, V. (2011). *Changes in Health Insurance Coverage in the Great Recession, 2007-2010*. The Henry J Kaiser Family Foundation.
- Institute for Work & Health. (2015, Spring). What researchers mean by... primary, secondary, and tertiary prevention. *at work*. Retrieved from <https://www.iwh.on.ca/wrmb/primary-secondary-and-tertiary-prevention>
- Jones, C. P., Jones, C. Y., Perry, G. S., Barclay, G., & Jones, C. A. (2009). Addressing the Social Determinants of Children's Health: A Cliff Analogy. *Journal of Health Care for the Poor and Underserved*, 1-20.
- Joynt, K. E., & Jha, A. K. (2010). Who Has Higher Readmission Rates for Heart Failure, and Why? *Circulation*, 53-59.
- JSI Research & Training Institute, Inc. (2015). *Expanding Medicaid Reimbursement to Support Guidelines-Based Asthma Care*. Retrieved from Vermont Asthma Program: <http://www.jsi.com/JSIInternet/Resources/publication/display.cfm?txtGeoArea=US&id=15817&thisSection=Resources>
- Kaiser Family Foundation. (2015). *Key Facts about the Uninsured Population*. The Henry J. Kaiser Family Foundation, The Kaiser Commission on Medicaid and the Uninsured.
- Kapoor, J. R., Kapoor, R., Helkamp, A. S., Hernandez, A. F., Heidenreich, P. A., & Fonarow, G. C. (2011). Payment Source, Quality of Care, and Outcomes in Patients Hospitalized with Heart Failure. *Journal of the American College of Cardiology*, 1465-1471.
- Kenney, G. M., Luque, A., & Coyer, C. (2011). *Recent Trends in Childhood Asthma-Related Outcomes and Parental Asthma Management Training*. Urban Institute.

- Lara, M. (2013). *Can the Affordable Care Act Help Asthma Sufferers Breathe Easier?* Retrieved from Commentary (The RAND Blog): <http://www.rand.org/blog/2013/11/can-the-affordable-care-act-help-asthma-sufferers-breathe-easier.html>
- Maurer, J., Harris, K. M., & Parker, A. M. (2012). Who knew? Awareness of being recommended for influenza vaccination among US adults. *Influenza and Other Respiratory Viruses*, 284-290.
- National Asthma Education and Prevention Program. (2007). *Guidelines for the Diagnosis and Management of Asthma*. National Heart, Lung, and Blood Institute, US Department of Health & Human Services.
- Ollove, M. (2014, April 16). *States Battle Asthma as Numbers Grow*. Retrieved from Kaiser Health News: <http://khn.org/news/stateline-states-asthma/>
- Sanghavi, D., George, M., Bencic, S., Bleiberg, S., Alawa, N., Shaljian, M., & McClellan, M. B. (2014). *Treating Congestive Heart Failure and the Role of Payment Reform*. Brookings Institution.
- Soni, A. (2006). *Annual Flu Shot Rates Among Persons 18 and Older in the US Civilian Noninstitutionalized Population, 2003*. Medical Expenditure Panel Survey, US Department of Health & Human Services. Agency for Healthcare Research and Quality.
- US Department of Health & Human Services. (2014). *About Healthy People*. (Healthy People 2020) Retrieved from HealthyPeople.gov: <https://www.healthypeople.gov/2020/About-Healthy-People>
- Weycker, D., Halloran, M. E., Longini, I. M., Nizam, A., Ciuyrla, V., & Oster, G. (2005). Population-wide benefits of routine vaccination of children against influenza. *Vaccine*, 1284-1293.
- Williams, K. W., Word, C., Streck, M. R., & Titus, M. O. (2013). Parental Education on Asthma Severity in the Emergency Department and Primary Care Follow-up Rates. *Clinical Pediatrics*, 1-8.
- Wilper, A. P., Woolhandler, S., Lasser, K. E., McCormick, D., Bor, D. H., & Himmelstein, D. U. (2009). Health Insurance and Mortality in US Adults. *American Journal of Public Health*, 2289-2295.