ARE YOU COVERED? EXAMINING HOW KNOWLEDGE OF THE PATIENT PROTECTION AND AFFORDABLE CARE ACT INFLUENCES USE OF PREVENTIVE REPRODUCTIVE HEALTH SERVICES

Ashlee Sawyer
Virginia Commonwealth University

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ARE YOU COVERED? EXAMINING HOW KNOWLEDGE OF THE PATIENT PROTECTION AND AFFORDABLE CARE ACT INFLUENCES USE OF PREVENTIVE REPRODUCTIVE HEALTH SERVICES

A thesis submitted in partial fulfillment of the requirement of the degree of Master of Science at Virginia Commonwealth University

by:
Ashlee Nicole Sawyer
B.S., Old Dominion University, Norfolk, VA, 2014

Director: Eric G. Benotsch, Ph.D
Associate Professor of Psychology
Department of Psychology

Virginia Commonwealth University
Richmond, Virginia
May, 2016
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Abstract

ARE YOU COVERED? EXAMINING HOW KNOWLEDGE OF THE PATIENT PROTECTION AND AFFORDABLE CARE ACT INFLUENCES USE OF PREVENTIVE REPRODUCTIVE HEALTH SERVICES

By: Ashlee Nicole Sawyer, B.S.

A thesis submitted in partial fulfillment of the requirement of the degree of Master of Science at Virginia Commonwealth University.

Major Director: Eric G. Benotsch, Ph.D
Associate Professor of Psychology
Department of Psychology

Virginia Commonwealth University
Richmond, Virginia
May, 2016

The Patient Protection and Affordable Care Act (PPACA) expanded access to insurance coverage and health care services for many citizens, and has increased access for women in particular by including preventive reproductive health services as essential health benefits. The current national rates of sexually transmitted infections (STIs), reproductive cancer diagnoses, and unintended pregnancy serve as major areas of concern for women’s health and public health. The present study examined how knowledge of the PPACA influences receipt of preventive reproductive health services among women. Results indicate that higher levels of knowledge of the PPACA are associated with a greater likelihood of receiving cancer and STI screenings, as well as contraceptive counseling, and that increasing contraceptive knowledge, rates of contraceptive counseling, and pap screenings are related to greater use of highly effective contraception. The present study offers support for increased outreach and education efforts, along with additional policy and provider involvement.
Are you covered? Examining how knowledge of the Patient Protection and Affordable Care Act influences use of preventive reproductive health services

**Introduction and Background**

Sexually transmitted infections (STIs), reproductive cancers, and unintended pregnancies are negative sexual health outcomes that result in significant personal and public health concerns. Previous research has illustrated that many different components of health care should be considered when attempting to evaluate and decrease the prevalence of these problems. A few of these components are access to health insurance (Garfield, Licata, & Young, 2014), knowledge of insurance options and how to utilize coverage and benefits (Hall, Fendrick, Zochowski, & Dalton, 2014), frequency of healthcare visits (Pourat, Tao, & Walsh, 2008), knowledge of sexual health resources and services (Dodson, Gray, & Burke, 2012; Frost, Lindberg, & Finer, 2012; Kaestle & Waller, 2011), and education about reproductive health (McMorrow, Kenney, & Goin, 2014).

Existing research has found that insurance coverage is associated with positive health outcomes (Baicker, Taubman, & Allen, 2013; Geisler, Chyu, Kusunoki, Upchurch, & Hook, 2006; Sommers, Long, & Baicker, 2014). The Patient Protection and Affordable Care Act (PPACA), also referred to as “Obamacare,” was enacted with the primary intention of increasing insurance coverage for citizens through Medicaid expansion, federal subsidies, and the creation of lower-cost private policies. Another major goal of this legislation was to ensure that individuals had access to a higher minimum standard of care by requiring that insurance policies cover certain essential health benefits – many of which focus on the promotion of access to preventive health services. Although the PPACA was designed to benefit all American citizens, the legislation houses many provisions that are aimed at increasing access to health care for
women, such as the inclusion of pap smears, breast exams, and maternity care as essential health benefits to be covered by all insurance plans. However, while the policy has the potential to greatly improve access to services among the general population, and consequently improve the country’s overall health, it is just the starting point for achieving a healthier nation.

Research has shown that even when individuals have health insurance, they may still be seeking services for basic care outside of primary care settings (Stephens, Cohen, Philip, & Bernstein, 2014), or not receive all of the services that they need (Chabot et al., 2011; Kalmuss & Tatum, 2007; Porter & Ku, 200). One significant barrier to healthcare utilization is the lack of awareness among the general public of the PPACA’s policies and what changes have been made to the insurance system (Gross et al., 2012). It is possible that individual understanding of health insurance coverage, as well as knowledge of sexual and reproductive health and services, influences the rate at which services aimed at improving reproductive health are utilized.

**Sexual and Reproductive Health**

Sexual and reproductive health is defined as ‘a state of physical, emotional, mental, and social well-being relating to sexuality and the reproductive system, its functions, and processes.’ Each year, 20 million new cases of STIs are estimated to occur in the United States, with younger individuals (15-24 years old) comprising half of those infections (Centers for Disease Control [CDC], 2013). Perhaps more alarming is the fact that many individuals are unaware that they are carrying an infection, making the spread of such STIs much more likely (CDC, 2013). Certain infections, such as HIV (Human Immunodeficiency Virus) are known to be detrimental to health; however, even infections that are considered to be less serious have the ability to cause problems such as ectopic pregnancy and infertility in women (CDC, 2013; Ochsendorf, 2008). Furthermore, contraction of any STI has been associated with an increase in the likelihood of
contracting HIV (Ochsendorf, 2008). In addition to the personal and public health impact, STIs in the country are estimated to cost 16 billion in direct medical costs alone each year (CDC, 2013).

Of the 20 million new infections that occur each year, HPV (Human Papillomavirus) is estimated to account for 14.1 million (CDC, 2013). While the majority of HPV infections have fewer long-term adverse health effects and are likely to clear up on their own over time, about 10 percent of infections have the potential to lead to serious health issues such as cervical cancer (CDC, 2013), as well as vulvar, vaginal, anal, and oropharyngeal cancers (National Cancer Institute, 2012). While cervical cancer diagnoses have decreased considerably since the implementation of routine pap smears for women (National Institute of Health, 1996), more than 12,000 women in the U.S. were diagnosed with cervical cancer in 2012 (US Cancer Statistics Working Group, 2015).

Reproductive cancers can also be screened for using preventive health services. Uterine cancer, which is currently the fourth most common cancer among women in the United States, was diagnosed more than 47,000 times in U.S. women in 2011 (CDC, 2014). Breast cancer currently carries a 1 in 8 lifetime risk ratio for women, and it is estimated that 292,130 new cases of breast cancer will be diagnosed among women in the United States in 2015 (American Cancer Society, 2015).

Unintended pregnancy is another negative health outcome—one that occurs at a significantly higher rate in the U.S. than in many other developed countries (Mosher & Jones, 2010; Peipert, Madden, Allsworth, & Secura, 2012). Fifty-one percent of pregnancies each year in the U.S. are unintended (Jones & Drewke, 2011). Unintended pregnancy is associated with a range of negative health outcomes for pregnant women, including increased rates of physical and
sexual abuse, mental health issues (i.e., depression, anxiety) (East, Chien, & Barber, 2012; Miller, Sable, & Beckmeyer, 2009; Sayil, Güre, & Uçanok, 2007), self-induced abortion, and maternal mortality (Fawcus, 2007; Sensoy, Dogan, Sen, Aslan, & Baser, 2015). Furthermore, unintended pregnancy is related to many negative consequences for the child, such as delayed prenatal care, premature birth, low birth weight, and poor mental and physical outcomes (Crissey, 2005; Jones, Mosher, & Daniels, 2012; The Alan Guttmacher Institute, 2000; Trussel, 2011).

Unintended pregnancy disproportionately affects those of lower-income, lower education levels, and minority status, as well as those who are unmarried and of younger age (18-24) (Finer & Zolna, 2016; Jones & Dreweke, 2011; Jones, Mosher, & Daniels, 2012). Of the roughly 4 million births that occur annually (Martin et al., 2013; Monte & Ellis, 2014; US Census Bureau, 2012), Medicaid is estimated to pay for 44 to 48 percent each year (Kaiser Family Foundation, 2010; Markus et al., 2013; Sonfield, Kost, Benson Gold, & Finer, 2011; Stranges, Wier, & Elixhauser, 2012), as well as a significant amount of Neonatal Intensive Care Unit (NICU) costs (Institute of Medicine, 2007). Similarly, when considering all expenses associated with the one million unintended pregnancies that result in births each year, approximately $11 billion dollars are provided annually by American taxpayers (Gold & Sonfield, 2011).

Abortion is an outcome that is inherently associated with unintended pregnancy. While the abortion rate for the country has been consistently decreasing for over a decade, three out of every ten women will have experienced an abortion by the time they reach 45 years of age (The Alan Guttmacher Institute, 2012). An estimated 40% of unintended pregnancies result in abortion each year (Jones & Jerman, 2011). The most recent numbers report that there were 1.1 million abortions in 2011, equating to a rate of 16.9 abortions per 1,000 women annually (Jones
Resembling the demographic distribution of unintended pregnancy, abortion is more common among those with lower education levels and those of minority status (The Alan Guttmacher Institute, 2012). Of women who have abortions, 69% are of lower socioeconomic status, 61% have at least one child, 58% are in their twenties, and 56% are single (Jones & Kavanaugh, 2011).

**Barriers to Health Care**

Understanding of, access to, and utilization of health care services plays a major role in the prevention of negative sexual and reproductive health outcomes. Much research has shown that the general population lacks an informed understanding of sexual and reproductive health in terms of how STIs are transferred and affect personal health (Baer, Allen, & Braun, 2000; Kaestle & Waller, 2011; Yacobi, Tenant, Ferrante, Pal, & Roetzheim, 1999), how contraceptives work (Eisenberg, Secura, Madden, Allsworth, Zhao, & Peipert, 2012; Frost et al., 2012; Sokkary et al., 2013), and what services are available to meet sexual and reproductive health needs (Hall et al., 2014). Multiple studies have found that a lack of knowledge about HPV and its role in the development of genital warts and cervical cancer is a significant barrier to vaccination (Brewer & Fasekas, 2007; Giambi et al., 2011; Rosenthal et al., 2011). Cohen (2013) found that receiving STI information from the participants’ university significantly increased the likelihood that individuals would obtain the HPV vaccine. Studies have also found that low levels of awareness and understanding of long-acting reversible contraceptive (LARC) methods of birth control serve as a barrier to greater utilization (Dodson, et al., 2012; Teal & Romer, 2013).

It is also widely understood that individuals tend to underestimate their actual risk levels for health problems. A study completed by Burak et al. (1997) found that 80 percent of women incorrectly considered themselves to be at no risk for contraction of sexually transmitted
infections. A similar study found that many women did not believe themselves to be at risk for contracting HPV when they were, in fact, at risk (Ratanasiripong, 2012). Yet another study completed by Kaestle and Waller (2011) found that 70 percent of sexual minorities with a bacterial STI rated their STI contraction risk as being very low.

There are many mechanisms that influence access to care, and affordability serves as one of the most significant barriers. It has been shown that women of lower socioeconomic status are significantly more likely to experience an unintended pregnancy and abortion than their wealthier counterparts (Guttmacher Institute, 2014). Moreover, research has shown that many women list cost as a significant barrier to contraceptive use (Kavanaugh, Frohwirth, Jerman, Popkin, & Ethier, 2013; Peipert et al., 2012; Rose, Cooper, Baker, & Lawton, 2011), and that poorer women are less likely to be able to afford contraceptives – especially those that are longer-acting and more reliable (Gostin, 2014; Guttmacher Institute, 2014; Peipert et al., 2012; Ricketts, Klingler, & Schwalberg, 2014). The birth control pill, patch, and ring each carry a typical use failure rate of 9 out of every 100 women becoming pregnant in the first year of use, compared to 18 out of every 100 for male condom use, 6 out of 100 for injectables (e.g., Depo Provera), and .05-.08 out of 100 for arm implants and intrauterine devices (IUDs) (World Health Organization, 2011). Despite the failure rates associated with typical use of the pill being much higher than other hormonal methods of birth control, it still remains the most frequently used birth control method in the United States (Mosher & Jones, 2010).

Research on the contraceptive CHOICE project in St. Louis found that when cost was not a consideration, 70 – 75 percent of women chose to use LARC methods (i.e., implants and IUDs) (Mestad, Secura, Allsworth, Madden, Zhao, & Peipert, 2011; Peipert et al., 2012). A similar study evaluated the Colorado Family Planning Initiative, which was designed to reduce
unintended pregnancy and abortion rates among teenagers by providing free LARC methods (Ricketts et al., 2014). The authors found that by the end of the program, 19 percent of women in the 14-20 age group chose to use a LARC method. When compared to 5 percent LARC use at the start of the study, this growth translates to a four-fold increase in utilization (Ricketts et al., 2014). The same study also found that the significant increase in LARC method use was almost equally matched by a 13 percent decrease in contraceptive pill use among their sample (Ricketts et al., 2014).

Affordability has also been listed as a barrier to obtaining vaccinations and preventive cancer screenings. In multiple studies evaluating HPV vaccination rates, participants frequently cite high cost as a deterrent for receiving the vaccine (Burke, Vail-Smith, White, Baker, & Mitchelle, 2010; Bynum, Wright, Brandt, Burgis, & Bacon, 2009; Conroy, Rosenthal, Zimet, Jin, Bernstein, Glynn, & Kahn, 2009). Similarly, an evaluation of the effects of the Balanced Budget Act of 1997 (which eliminated costs associated with Part B deductibles for mammograms received through Medicare), showed that mammogram screening among Medicare patients increased 20% in the two years following the waiver, and 25% by year four (Goodwin & Anderson, 2012).

**Lack of insurance coverage as a barrier.** Another substantial barrier to obtaining health care services is access to health insurance. People are more likely to forego health care services—including preventive services—if they lack coverage, thus leading to poorer health outcomes (Kaiser Commission on Medicaid and the Uninsured, 2006). One study showed that 52% of women who reported postponing preventive services in 2013 due to cost were uninsured, compared to 42% of men (Kaiser Family Foundation, 2015). Another study using a nationally representative sample showed that only 33% of individuals who were uninsured reported
receiving preventive screenings, compared to 67% of individuals who had Medicaid coverage, and 74% of those with private insurance (Garfield et al., 2014).

Similarly, women are more likely to experience gaps in their insurance coverage, due to factors such as job patterns, relationship status, and being covered as a dependent (Fitzgerald, Cohen, Hyams, Sullivan, & Johnson, 2014; Patchias & Waxman, 2007). Women are more likely than men to be employed part-time, which results in ineligibility for employer-based insurance coverage (Fitzgerald et al., 2014). Women are also more likely to be insured through a partner’s plan, granting them dependent coverage and leaving them at risk of experiencing gaps in coverage during situations of partner job loss and divorce (Patchias & Waxman, 2007).

The implications of this information are problematic when taking into consideration STI screening and diagnosis. One study found that young adult men with any health insurance coverage throughout the year or continuous coverage had a significantly lower risk for chlamydial infection, while for women, risk was only reduced for those with continuous 12-month coverage (Geisler, 2006). In relation to HPV, possession of insurance coverage is linked to increased rates of cervical cancer screening (Kessels et al., 2012; Rodriguez et al., 2005). Receipt of the HPV vaccination is also associated with having insurance coverage, with the likelihood of receiving the vaccine increasing almost two fold among young women who are covered by their parents’ insurance (Cohen, 2013). Other studies have noted a lack of insurance coverage as one of the more common reasons cited for not having obtained the vaccine (Conroy et al., 2009; Holguin, 2010; Rosenthal et al., 2011; Zimet et al., 2010).

Another study by Culwell & Feinglass (2007) found that among women aged 18-44 years old who were at risk for unintended pregnancy, those without insurance were 20-40% less likely to utilize prescription contraception. This finding held steady across all racial, financial, and
marital status groups. Of those using prescription methods, the most common was oral contraception (43%), followed by over-the-counter methods, such as condoms (21%), long-term prescription methods (10%), and “other” methods, such as withdrawal (10%) (Culwell & Feinglass, 2007). A rather substantial number of sexually active participants (17%) reported using no method of birth control at all (Culwell & Feinglass, 2007).

The Patient Protection and Affordable Care Act

In 2010, the year that the PPACA was signed into law, 16% of Americans were uninsured, 22.3% of 18-24 year olds were without insurance, and 7.8% of those under 18 years old were uninsured (Ward, Clarke, Freeman, & Schiller, 2015). At that time, research illustrated that preventive services were utilized at a rate that was well below the recommended rates (Lurie, Manning, Peterson, Goldberg, Phelps, & Lillard, 1987; Maciosek, Coffield, Edwards, Flottemesch, Goodman, & Solberg, 2006; Nelson, Bland, Powell-Griner, 2002; Smith, Cokkinides, Eyre, 2005). In addition to the rate of uninsured citizens and lack of preventive care utilization in the country, the costs of health care in the United States were (and still are) problematic. The United States spends more money on health care than any other country in the world while citizens experience subpar health care. Americans’ life expectancy is currently below that of leading countries who pay nearly half as much in per capita health care costs (Organisation for Economic Co-operation and Development, 2014). Medical costs for American citizens are also substantial, and contribute to approximately 60% of bankruptcies in the U.S. (Brill, 2013).

Working to correct these issues served as a partial motivator for the development of the PPACA. Massachusetts’ 2006 Health Care Reform served as the basis for the development of the national health care legislation, with key elements such as the individual mandate, financial
subsidies, and minimum standards of care incorporated into the PPACA (The Henry J. Kaiser Family Foundation, 2012). While the health reform in Massachusetts has not yet been able to address all of the issues mentioned, significant increases in insurance coverage were attained and Massachusetts currently has a 96% insured rate, which is higher than that of any other state (Smith & Medalia, 2014). Racial minorities and those who were below 300% of the federal poverty level experienced higher gains in coverage than other groups, thus addressing a portion of the disproportionate gaps in coverage that previously existed (Van Der Wees, Zaslavsky, & Ayanian, 2013). The state also experienced a significant growth in preventive care use among adults, with service utilization increasing from just under 70% in 2006 to almost 76% in 2010 (The Henry J. Kaiser Family Foundation, 2012). Higher rates of cervical cancer screening were reported in Massachusetts than in other New England states (Van Der Wees et al., 2013). Another study found increases in the receipt of breast and cervical cancer screening at 3 years after implementation of the reform, with the most significant growth in utilization occurring among low-income women (Sabik & Bradley, 2016).

Expansion of Coverage and Benefits through the PPACA

The passage of the PPACA (Patient Protection and Affordable Care Act) has expanded health insurance coverage to millions of previously uninsured Americans through a few significant changes. One of these changes was the requirement that insurance companies allow their policyholders to maintain coverage for their children up to the age of 26. This adjustment has the potential to greatly benefit women, as 25% of women aged 19-25 were uninsured in 2011 (Kaiser Family Foundation, 2013). Because young adults have served as one of the largest uninsured groups, and make up a significant number of STI diagnoses and unintended
pregnancies, this expanded coverage also has the potential to be beneficial in the aim to reduce negative sexual health outcomes.

Medicaid was also expanded (in states that opted to participate) to cover individuals up to 138% of the poverty level, as well as able-bodied, single adults. Currently, 31 states have expanded Medicaid for their citizens (Including Washington, D.C.), 19 states have refused expansion, and Utah is considering expansion (Kaiser Family Foundation, 2015). Similarly, the PPACA has allowed for individuals between 138 and 400% of the poverty level to apply for federal subsidies, wherein the government pays a portion of an individual’s premiums in order to help them gain and maintain insurance coverage long-term. Previous studies have indicated that those below 400% of the federal poverty level will gain insurance at a higher rate than those above this bracket through the PPACA, as they possess a stronger need for federal aid in order to obtain insurance (Buettgens, Garrett, & Holahan, 2010; McMorrow, Kenney, & Goin, 2014). This is encouraging when considering that 53% of women who were uninsured in 2013 were below 138% of the federal poverty level, and 37% were between 139 and 399% of the federal poverty level (Kaiser Family Foundation, 2013). The PPACA has the potential to increase access to insurance coverage for many women who qualify for government assistance in the form of Medicaid or subsidies.

Thus far, both of these policy changes have resulted in a significant number of women gaining insurance coverage. Medicaid has experienced a 19.3% increase in enrollment from 57.8 million individuals enrolled in September 2013 to 70.0 million enrolled at the start of 2015, with states that have undergone Medicaid expansion experiencing higher rates of enrollment than states who have yet to expand (26% vs 8%, respectively) (Office of the Assistant Secretary for Planning and Evaluation [ASPE], 2015). Additionally, 11.7 million people have enrolled in
coverage through the marketplace, and it is estimated that 57% of individuals who gained this coverage during the first period of open enrollment had previously been uninsured (ASPE, 2015; Hamel, Norton, Levitt, Claxton, Cox, Pollitz, et al., 2014)

The expansion of coverage for sexual and reproductive health services was yet another significant change. The PPACA requires that the majority of insurance policies now provide coverage for preventive tests and screenings (e.g., pap smears, breast exams, STI testing), as well as hormonal contraception without requiring that the individual pay copay, deductible, or coinsurance charges. This expansion of preventive services removes cost barriers for many women, and has the potential to increase rates of STI testing, cancer screenings, and birth control use. It is estimated that over 137 million men, women, and children now have this preventive service coverage with no cost sharing requirements, with 55.6 million women gaining this access (ASPE, 2015). This aspect of the PPACA is particularly beneficial to women, because it removes the requirement of a referral from a primary care physician to see a OB/GYN, thus including women’s gynecological visits under the umbrella of basic health care (Kaiser Family Foundation, 2013). Considering that for many women, gynecologists serve as a primary care doctor, the inclusion of this care as a covered preventive health service has the potential to greatly increase access to care for women.

Additionally, the inclusion of maternal and neonatal care under covered essential health benefits in all insurance plans has the ability to substantially improve maternal and fetal health, as well. Prior to the passage of the PPACA, only 13 percent of health plans in the individual market covered these services (National Women’s Law Center, 2009), while all insurance plans in Oregon, Massachusetts, and New Jersey provided maternity coverage, 22 states did not offer a single plan with these benefits (Collins, Rustgi, & Doty, 2010). While the option to add on
maternal care coverage was available for some plans, women were required to purchase a separate rider that was often very costly and carried a waiting period (Kaiser Family Foundation, 2013). Moreover, the PPACA removes the classification of pregnancy as a pre-existing condition, thus enabling pregnant women to gain coverage without rejection from insurance carriers (Kaiser Family Foundation, 2015). As pregnancy-related issues and childbirth are listed as the leading source of hospitalization in the country, the addition of this care as an essential health benefit has the potential to address some of the negative health outcomes associated with unintended pregnancy and receipt of care (Kaiser Family Foundation, 2015).

**Beyond the Legislation**

Although a recent report from the U.S. Census Bureau (2015) indicates that a large majority of individuals (approximately 284.3 million) now have health insurance, while a much smaller minority (approximately 33 million) are uninsured, access to insurance coverage and health care providers does not serve as a guarantee that individuals will utilize preventive health care services. One study found that although one-third of patients at an STI clinic reported having insurance at the time of their care, they still chose to forego use of their health insurance and seek care at the clinic rather than with a primary care doctor (Stephens et al., 2014). Nevertheless, research has shown that higher rates of health care visit are related to positive health outcomes (Baicker, Taubman, & Allen, 2013; Sommers, Long, & Baicker, 2014). Pourat and colleagues (2008) found that young women who had participated in five or more doctor visits in the previous year (compared to those who did not participate in any visits) were more likely to be screened for Chlamydia. Furthermore, receiving a pap smear or clinical breast exam was associated with a greater likelihood that women would be screened for Chlamydia as well (Pourat et al., 2008).
Knowledge as a Barrier

Following the passage of the PPACA, many individuals are still largely unaware of how to sign up for plans or how to dissect the language of insurance (Sobel, Salganicoff, & Kurani, 2015). Many individuals are signing up for low-premium, high-deductible plans that could potentially lead them into bankruptcy should a major health issue arise. A study by Sonier, Boudreaux, and Blewett (2013) showed that stronger state outreach efforts equate to higher rates of individuals acquiring health insurance. Presumably, stronger outreach efforts would also lead to individuals being more knowledgeable about their coverage, how to use it, and what restrictions they may have.

Similarly, many citizens are still unaware of the PPACA’s policies and how it affects their coverage and access to services. One study assessing knowledge about the PPACA found that understanding of the elements of the legislation was limited when participant certainty about their responses were factored into scoring (Gross et al., 2012). In this study, 84.2 percent of individuals got 9 or more items (out of 18) correct with varying levels of certainty recorded compared to only 18.9 percent of individuals getting 9 or more items correct with high levels of certainty (Gross et al., 2012). Furthermore, this study found that understanding of the legislation had not notably changed between the year that the law was passed and 2012, with 14.9 percent of individuals scoring correctly on 9 items with high certainty in 2010 compared to 18.9 percent in 2012 (Gross et al., 2012). Another study of women showed that while 80 percent of women surveyed had heard of the PPACA, only 24 percent of women expected their insurance coverage to change as a result of its policies (Hall et al., 2014). The same study showed that those who were less-educated, poorer, and uninsured were less likely to understand the changes that the PPACA meant for their coverage (Hall et al., 2014). With the PPACA improving access to
various preventive health services for women across the country, a lack of knowledge about the policy has the potential to result in less positive change than is possible under the new legislation. If women are unaware of the new services and options that are available to them at no or reduced cost through their insurance coverage, then it is less likely that they will utilize the preventive services that the PPACA provides access to.

**Theoretical Framework: The Health Belief Model (HBM)**

The health belief model was used as the theoretical framework for this study because of the substantial support it has received in the literature as a strong framework for understanding how individuals make decisions about their health (Janz & Becker, 1984). The health belief model was one of the first theories developed to explain health behaviors (National Cancer Institute [NCI], 2005). This model was developed by social psychologists working for the U.S. Public Health Service, with the aim of explaining why people were utilizing disease prevention and detection programs at much lower rates than expected (Hochbaum, 1958; Rosenstock, 1960, 1966, 1974). There are 6 constructs that comprise the Health Belief Model, which are outlined below and in figure 1 (Champion & Skinner, 2016; NCI, 2005):

1. Susceptibility refers to perceptions of risk related to contracting a certain condition,
2. Severity refers to beliefs about how serious an issue or condition is, or how strongly it may affect one’s health or wellness,
3. Benefits refer to beliefs about how positive engaging in a certain health action may be, or how effective the health action may be in reducing susceptibility or severity of a condition,
4. Barriers refer to beliefs about the negative aspects or outcomes, or costs (e.g., physical, psychological, etc.) of engaging in the health action,
5. Cues to action refer to any factor that may trigger engagement in a health action or a desire to engage in the health action, and

6. Self-efficacy refers to beliefs about the individual’s capabilities to engage in the health activity.

**INDIVIDUAL PERCEPTIONS**

- Perceptions of Susceptibility & Severity

**MODIFYING FACTORS**

- Age, Sex, Ethnicity
- Personality
- Socioeconomic Status
- Knowledge

**LIKELIHOOD OF ACTION**

- Perceived Threat of Condition or Issue
- Perceived Benefits vs. Perceived Barriers
- Likelihood of Engaging in Behavioral Change

Cues to Action:
- Education
- Symptoms
- Media Information

**Figure 1.** The Health Belief Model (modified slightly from Glanz et al., 2002, p.52).

**The Health Belief Model and Preventive Reproductive Health Service Use**

This model has been applied to various populations and a plethora of health behaviors, and has been used to address public health concerns (Conner & Norman, 1996; Champton & Skinner, 2016). This includes preventive health behaviors, such as cancer screening, vaccination uptake, and birth control use behaviors, as well as clinical use behaviors, such as physician visits (University of Twente, 2016; Yarbrough & Braden, 2001). The dimensions of the health belief model are substantially supported by empirical evidence as significant predictors of individuals’ engagement in various health behaviors (Janz & Becker, 1984).

However, in practice, the Health Belief Model is often broken down and used to assess one or more of the above components on their own (Crepaz & Marks, 2002; Yarbrough &
Braden, 2001). Reviews of the existing literature show that the tools and approaches used to assess the dimensions of this model are amenable while maintaining significant explanatory and predictive ability (Janz & Becker, 1984). Thus, the broad definitions for each dimension and the ability of the model to withstand adaptations allows for the investigation of factors that were not intended for use with this psychosocial model, but fit conceptually. The present study focuses on the modifying factors of group differences (i.e., age, race/ethnicity, socioeconomic status, and education) and cues to action (i.e., the passage of the PPACA and promotion of preventive reproductive health services as essential health benefits to be covered without cost-sharing) outlined above in relation to perceived benefits and barriers in determining the likelihood of female use of preventive reproductive health services.

**Present Research**

The purpose of the present research was to examine the relationships among knowledge of coverage, consistency of coverage, and receipt of reproductive health services. Although previous research has examined relationships between insurance coverage and the receipt of health care, the changes resulting from the recent passage of the PPACA, as well as patient understanding of insurance requirements and benefits have not been adequately evaluated.

**Hypothesis 1a-1b:** In line with preceding research (Kessels et al., 2012; Rodriguez et al., 2005), it was hypothesized that consistency of insurance coverage would be related to an increased frequency of preventive health care visits, such as STI testing, reproductive cancer screenings, and birth control visits and services. As an extension of previous findings (Ricketts et al. 2014) it was hypothesized that those with consistent insurance coverage would have obtained long-acting reversible contraceptives (LARC) at a higher rate than those with inconsistent or no insurance coverage.
**Hypothesis 2:** Consistent with past research (Hall et al., 2014) it was hypothesized that those with less education and lower socioeconomic status will have less knowledge of the PPACA and insurance benefits, and will utilize fewer preventive reproductive health services. Furthermore, it was hypothesized that those with consistent health insurance coverage (Geisler et al., 2006), as well as those with more knowledge of the PPACA and its provisions would be more likely to utilize preventive reproductive health services.

**Hypothesis 3:** In line with the findings of Gostin (2014) and Finer and colleagues (2012), it was hypothesized that women who are of younger age and possess less education would be less likely to adopt LARC methods of contraception. Moreover, it was hypothesized that those possessing consistent health insurance coverage would be more likely to adopt LARC methods (Culwell & Feinglass, 2007; Mestad et al., 2011; Ricketts et al., 2014). Finally, it was hypothesized that individuals who have more knowledge about the policies of the PPACA would have an increased likelihood of using LARC methods.

**Method**

**Sample & Procedure**

Post hoc power analyses were run separately for the outcomes of preventive service use and LARC use using G*Power software (Faul, Erdfelder, Buchner, & Land, 2009). When conducting the analysis for the outcome of preventive service use with the participants in the sample who identified as female (n=693), it was determined that this sample size was sufficient to detect a moderate effect at .90 (90%). When conducting the analysis for the outcome of LARC use with those not at risk for pregnancy removed from the sample (n=488), it was determined that this sample size was sufficient to detect a moderate effect at .90 (.90%).
A survey was administered to women across the United States who were between the ages of 18 and 44 using Amazon Mechanical Turk (MTurk). MTurk is a crowdsourcing website where individuals who are referred to as “workers” complete web-based tasks (usually, but not always) in exchange for monetary compensation. In MTurk, workers complete “Human Intelligence Tasks” (HITs) set up by “requesters” (who are the employers) that can range from providing feedback on media advertisements to passage translation to handwriting transcription to product rating, and more (Azzam & Jacobson, 2013; Berinsky, Huber, & Lenz, 2012). More recently, MTurk has also gained the interest of researchers as a platform for conducting research with human subjects.

Multiple studies evaluating MTurk have found that the research participants (“workers”) are generally representative of the general United States population (Berinsky, Huber, & Lenz, 2012; Crump, McDonnell, & Gureckis, 2013; Shapiro, Chandler, & Mueller, 2013). MTurk samples have been shown to align closely with the regional distribution of the country (Simons & Chabris, 2012), as well as racial and gender distributions (Azzam & Jacobson, 2013; Berinsky et al, 2012). In these ways, MTurk has been shown to be more diverse than other internet samples or college student samples (Berinsky et al., 2012; Buhrmester, Kwang, & Gosling, 2011, Ross, Ivani, Silberman, Zaldivar, & Tomlinson, 2010). However, some demographic differences have been found among the MTurk sample. MTurk workers have been found to possess higher income levels than phone survey samples (Simons & Chabris, 2012), but lower income levels than those comprising face-to-face interview samples (Berinsky et al., 2012), as well as higher levels of education than the general population (Ross et al., 2010). Researchers agree that despite the differences that MTurk may display from other survey methods, the crowdsourcing site is a
valid resource for recruitment and data collection, and that MTurk workers are largely representative of the United States population.

MTurk requires that individuals be at least 18 years of age in order to register a worker account. Those above the age of 44 were excluded, as reduced reproductive health risk levels and less need for certain services among this age group leads to reduced rates of utilization of many of the reproductive health care services that were evaluated (Frost, 2013). The current study aimed to survey a varying age range of adult women who were likely to be affected by the PPACA and utilize preventive reproductive health services. Furthermore, a filter was applied within Mturk that restricted eligibility to people living in the U.S. only, and residency was verified through participant’s responses to the survey item asking them to report which state they lived in. Individuals residing outside of the U.S. are not subject to the PPACA legislation, and thus were not a focus of interest for this study.

Data were collected from February until April 2016. A total of 708 participants completed the survey. The description of the study indicated that the survey items pertained to preventive health care services and health care policy. When participants opened the HIT in MTurk, they were provided with a link that took them to the Survey Monkey website to complete the survey. Once participants were in this webpage, they reviewed an electronic notification statement, which indicated that participation in the study was voluntary (See Appendix A). Participants were required to indicate that they were at least 18 years of age and wanted to participate in the study before they were able to access the survey. Participants were informed via the consent document that certain demographic characteristics were required to participate in the study, and were required to respond to a brief set of demographic questions before proceeding. Participants were not informed of the desired demographic characteristics
(i.e., age range and sex) before completion of the demographic questions, and were either taken to a page that informed them that they did not qualify for the study or were allowed to continue through the rest of the questionnaire.

Participants were also informed via the consent document that in order to receive compensation for their participation, they must correctly respond to two out of three quality assurance questions, and would be paid $0.45 upon successful completion of the study. Participants were also required to enter a six-digit code in both Survey Monkey and MTurk in order to receive compensation. Once the codes were matched across online platforms, compensation was authorized. IP addresses were collected initially as a quality control measure to ensure that participants had not submitted duplicate entries, but were removed from the saved dataset once data quality had been evaluated. The present study was approved by the Institution Review Board (IRB at Virginia Commonwealth University (VCU).

Materials

Demographics. Participants provided information about their age, gender, race/ethnicity, sexual orientation, relationship status, educational attainment, income level, household size, and state of residence (See Appendix B for full questionnaire). Gender was asked to ensure that participants who identified as male were excluded from this study, and age was asked primarily to ensure that participants were between the ages of 18 and 44. Income level, household size, and state of residence were asked in order to determine each participant’s financial standing as a percentage of the federal poverty level. Percentage of the federal poverty level was calculated using the 2015 poverty guidelines provided by the US Department of Health and Human Services, where household size for each participant was multiplied by the poverty
guideline for their state of residence. If participants did not provide their state of residence, the poverty guidelines for the 48 contiguous states and the District of Columbia were used.

**Health Insurance Information.** In order to gain an understanding of participants’ insurance status, questions were posed about the consistency of their health insurance coverage during the previous year, the type of insurance plan that they have, and whether their health insurance plan is considered to be a grandfathered plan. The item assessing consistency of health insurance coverage during the previous year was a modified version of the item used by Geisler and colleagues (2006), and includes the following response options: (1) “I was not insured at all in the past year,” (2) “I was insured for 1-6 months out of the last year, (3) “I was insured for 7-11 months out of the last year,” and (4) “I was insured for all 12 months of the last year.”

Health insurance plan type was assessed at a broad level of public versus private insurance, consistent with other studies (Culwell & Feinglass, 2007; Smith & Medalia, 2014), but was also broken down further into plan types, with the goal of gaining a more accurate and detailed view of health insurance coverage types. Private insurance plan types were as follows: (a) a plan through an employer, (b) federal government insurance (for federal employees), (c) a plan through the government exchange/ Marketplace, (d) coverage through a parent’s plan, or (e) coverage through a university plan. Public insurance plan types were: (a) military insurance (Tricare), (b) Medicaid/ state program insurance, (c) Medicare, (d) veteran benefits.

**Preventive Reproductive Health Service Utilization.** Participants were asked to provide information about their preventive reproductive health care-seeking behavior during the previous year. Participants provided information about which types of health care facilities they used in the previous year (i.e., doctor’s offices, free clinics, emergency rooms). Participants were also asked to indicate what, if any, preventive reproductive health services they utilized over the
previous year (e.g., reproductive cancer screenings, STI testing, and birth control counseling and visits). Because of the medical guidelines surrounding pap smears, receipt of this service was evaluated through the question “when was the last time that you received a pap smear” so that responses could be applied to the suggested three-year time-frame.

Participants were also asked to report what, if any, birth control methods they had used during the previous year. Birth control use was classified based on efficacy of the method using the following five categories: (1) None/ no birth control, (2) Non-hormonal, (3) Hormonal, (4) LARC, and (5) Sterilization. For individuals who reported using more than one birth control method during this time, and used methods that fell into separate categories, categorization was based on the most efficacious form of birth control reported (e.g., those who used a non-hormonal method and a hormonal method of birth control were categorized as having used a hormonal method during the previous year). Additionally, participants were asked to report whether they received pregnancy, miscarriage, or abortion care during the previous year, as well as whether they were attempting to become pregnant during this span of time.

**Sexual Behavior.** Participants reported their total number of male and female sexual partners over the past three months, as well as their total number of unprotected vaginal or anal sex acts and any STI diagnoses they received during this time frame. Participants also reported their total number of male and female sexual partners, and indicated whether they had ever been diagnosed with an STI.

**Knowledge of the PPACA.** In order to gauge participant knowledge of the PPACA, a modified version of the knowledge quiz created by Gross and colleagues (2012) was administered. This quiz contained 31 knowledge questions inquiring as to whether certain provisions are part of the health care law or not, with response options of “True” and “False.”
For each knowledge item, participants were asked to indicate their level of certainty that their response was correct on a 1 (not sure at all) to 5 (extremely sure). The 31 items are divided into three categories: (1) plan requirements and provisions, (2) benefits and services, and (3) government and taxing. Participant responses were scored on a scale of 0-31, indicating the number of correct responses provided. This method yielded a very low reliability for this sample ($\alpha = .574$).

The items were then scored with the number of items that participants got correct and indicated that they were either “very sure” or “extremely sure” about categorized as being correct, while incorrect responses and correct responses that were followed with “moderately sure,” “slightly sure” or “not sure at all” were considered incorrect. This method yielded a much higher level of reliability for this sample ($\alpha = .893$). This second method of scoring was used in analyses to account for the effects of random guessing because previous research reported a large difference between those who answered items correctly and those who answered items correctly with a high level of certainty (Gross et al., 2012).

When items were scored with the number of items that participants got correct and indicated that they were “moderately sure,” “very sure,” or “extremely sure” about categorized as being correct, and incorrect responses and correct responses followed with “slightly sure” or “not sure at all” considered incorrect, results were consistent with the scoring method used for analyses in the present study.

**Birth Control Knowledge.** A shortened version of a contraception knowledge survey was used to evaluate participants’ understanding of the various available birth control methods (Kaye, Suellentrop, & Sloup, 2009). This knowledge inventory had 14 items, and the response options were “True” and “False.” For this sample, the reliability of the measure was $\alpha = .781$. 
Quality Assurance. In order to reduce random response rates and promote greater data quality, three questions were placed in the survey as quality assurance items. Two of these items were true/ false items (items 122 and 219), and the third is a short answer item (item 264). Participants were notified in the informed consent document that if they failed to correctly answer two out of three of these items, then they would not receive compensation. Additionally, participant data was removed for those individuals who failed two out of three of the quality assurance items.

Results

Demographic Information

Sample demographic information is shown in Table 1. The average age of participants was 31 years. The sample was also majority white, and largely consisted of those who had received their Bachelor’s degree, and were married. When compared to the 2015 state population estimates published by the U.S. Census Bureau, the current sample was geographically representative at $r = .942$, $p<.001$.

Table 1. Sample demographic characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Means (SD)/ Percentages (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td>Mean= 30.94 (SD=6.69)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>97.9% (693)</td>
</tr>
<tr>
<td>Transgender Male</td>
<td>1.1% (8)</td>
</tr>
<tr>
<td>Transgender Female</td>
<td>0.4% (3)</td>
</tr>
<tr>
<td>Gender Non-Conforming</td>
<td>0.4% (3)</td>
</tr>
<tr>
<td>Race/ Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>76.7% (543)</td>
</tr>
<tr>
<td>African American</td>
<td>8.8% (62)</td>
</tr>
<tr>
<td>Hispanic/ Latino</td>
<td>5.4% (38)</td>
</tr>
<tr>
<td>Asian</td>
<td>5.1% (36)</td>
</tr>
<tr>
<td>Multiracial</td>
<td>1.3% (9)</td>
</tr>
<tr>
<td>American Indian/ Alaskan Native</td>
<td>0.8% (6)</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>0.4% (3)</td>
</tr>
<tr>
<td>“Other”</td>
<td>1.6% (11)</td>
</tr>
</tbody>
</table>
Education
- Middle school: 0.3% (2)
- GED: 2.4% (17)
- High School: 19.2% (136)
- Vocational School: 6.4% (45)
- Associates Degree: 15.5% (110)
- Bachelor’s Degree: 42.9% (304)
- Graduate Degree (Master’s, Doctorate): 13.1% (93)

Relationship Status
- Not currently dating or in a relationship: 18.6% (132)
- In a newer relationship with 1 person (less than 12 months): 10.9% (77)
- In a long-term relationship with 1 person (12 months or longer): 27.1% (192)
- Married: 40.4% (286)
- Dating/ in a relationship with more than 1 person: 2.1% (15)

Geographical Region
- Northeast: 18.6% (132)
- Midwest: 23.3% (165)
- South: 35.0% (248)
- West: 22.2% (157)

N = 708
SD = Standard deviation

Preventive Reproductive Health Service Use and Demographic variables

A substantial majority of participants reported using a preventive reproductive health service during the previous year. Following the most recent medical guidelines, pap screenings were evaluated based on the last three years (71.6%, n=507) (Table 2). The majority of participants had received a pap smear within the previous three years. Additionally, many participants reported receiving a well woman’s exam or physical, a pelvic exam, and/ or a breast exam during the previous year. Fewer participants had received birth control counseling or STI testing during the previous year. A small number of participants reported using LARC methods during the previous year.
Table 2.
Rates of preventive reproductive health service utilization

<table>
<thead>
<tr>
<th>Service</th>
<th>Did not receive service % (n)</th>
<th>Did receive service % (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pap smear, last 3 years</td>
<td>27.4 (190)</td>
<td>72.6 (503)</td>
</tr>
<tr>
<td>Well woman’s exam/ physical, last year</td>
<td>35.8 (248)</td>
<td>64.2 (445)</td>
</tr>
<tr>
<td>Pelvic exam, last year</td>
<td>45.6 (316)</td>
<td>54.4 (377)</td>
</tr>
<tr>
<td>Breast exam, last year</td>
<td>53.1 (368)</td>
<td>46.9 (325)</td>
</tr>
<tr>
<td>Birth control counseling, last year</td>
<td>69.1 (479)</td>
<td>30.9 (214)</td>
</tr>
<tr>
<td>STI testing, last year</td>
<td>74.6 (517)</td>
<td>25.4 (176)</td>
</tr>
<tr>
<td>LARC methods of birth control, last year</td>
<td>86.1 (597)</td>
<td>13.9 (96)</td>
</tr>
</tbody>
</table>

N = 693

There was no significant difference in preventive reproductive health service utilization between White and non-White participants, \( x^2 (1, n = 693) = 2.019, p = .155 \). There were also no significant differences in service use based on sexual orientation, \( x^2 (6, n = 693) = 10.346, p = .111 \). However, there were significant differences in service utilization based on highest achieved education and relationship status (Table 3).

Table 3.
Differences in service use based on education and relationship status

<table>
<thead>
<tr>
<th>Education</th>
<th>Did not use preventive services, last year (n = 193)</th>
<th>Used preventive services, last year (n = 494)</th>
<th>( X^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle School</td>
<td>0(^a)</td>
<td>0.40(^a)</td>
<td></td>
</tr>
<tr>
<td>GED</td>
<td>1(^a)</td>
<td>3.0(^a)</td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>28.2(^a)</td>
<td>15.1(^b)</td>
<td></td>
</tr>
<tr>
<td>Vocational School</td>
<td>7.5(^a)</td>
<td>6.0(^a)</td>
<td>21.943**</td>
</tr>
<tr>
<td>Associates Degree</td>
<td>16.4(^a)</td>
<td>15.3(^a)</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>37.4(^a)</td>
<td>45.3(^a)</td>
<td></td>
</tr>
<tr>
<td>Graduate Degree (Master’s, Doctorate)</td>
<td>9.2(^a)</td>
<td>14.9(^b)</td>
<td></td>
</tr>
<tr>
<td>Relationship Status</td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Not dating or in a relationship</td>
<td>24.9(^a)</td>
<td>15.6(^b)</td>
<td></td>
</tr>
<tr>
<td>Newer relationship (&lt;12 months) with 1 person</td>
<td>9.8(^a)</td>
<td>11.3(^a)</td>
<td></td>
</tr>
<tr>
<td>Long-Term relationship (&gt;12 months) with 1 person</td>
<td>28.0(^a)</td>
<td>27.1(^a)</td>
<td>12.300*</td>
</tr>
<tr>
<td>Married</td>
<td>36.3(^a)</td>
<td>43.3(^a)</td>
<td></td>
</tr>
<tr>
<td>In a relationship with &gt; 1 person</td>
<td>0.5(^a)</td>
<td>2.6(^a)</td>
<td></td>
</tr>
</tbody>
</table>

N = 693

\(^a\) p < .05, \(^*\) p < .01, \(^**\) p < .001

Columns with different superscripts differ significantly (Bonferroni corrected)
Preventive Reproductive Health Service Use and Duration of Insurance Coverage

The majority of participants reported having insurance coverage for all 12 months of the previous year (78.2%, n = 541), while 7.9% (n = 55) reported having insurance for 7-11 months out of the year, 5.2% (n = 36) reported having insurance for 1-6 months out of the year, and 8.7% (n = 60) reported not being insured at all during the previous year. Additionally, 74.5% (n = 527) of those who had insurance reported having a private insurance plan, and 23.3% (n = 165) reported having a public insurance plan (See Table 4). Additionally, 60.0% (n = 425) of participants indicated that they were the policy holder, while 36.4% (n = 258) indicated that they were a dependent on the plan.

Table 4.
Insurance information

<table>
<thead>
<tr>
<th>Insurance plan type</th>
<th>Percentage (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>7.1% (49)</td>
</tr>
<tr>
<td>Private</td>
<td>70.3% (487)</td>
</tr>
<tr>
<td>Through an employer</td>
<td>49.5% (343)</td>
</tr>
<tr>
<td>Through the exchange/marketplace</td>
<td>11.4% (79)</td>
</tr>
<tr>
<td>Through a parent’s plan</td>
<td>10.0% (69)</td>
</tr>
<tr>
<td>Through a university</td>
<td>2.3% (16)</td>
</tr>
<tr>
<td>Not sure</td>
<td>2.6% (18)</td>
</tr>
<tr>
<td>Public</td>
<td>22.7% (157)</td>
</tr>
<tr>
<td>Military insurance</td>
<td>3.9% (27)</td>
</tr>
<tr>
<td>Medicaid/care (state program)</td>
<td>22.4% (155)</td>
</tr>
<tr>
<td>Not sure</td>
<td>1.9% (13)</td>
</tr>
<tr>
<td>Both public and private insurance coverage</td>
<td>5.5% (38)</td>
</tr>
</tbody>
</table>

N = 693
Percentages are computed out of the entire sample

Knowledge of the PPACA

Participant responses were first scored on a scale of 0-31, indicating the number of correct responses provided. Using this scoring method, the average score was 19.7 (SD = 3.88) and scores ranged from 7 – 29. As previously stated, this method yielded a very low reliability and was not used in hypothesis testing. Information for the three subscales is presented in table 5.
The PPACA knowledge measure used was scored by summing the number of items that participants got correct and indicated that they were either “very sure” or “extremely sure” about categorized as being correct. Incorrect responses and correct responses that were followed with “moderately sure,” “slightly sure” or “not sure at all” were considered incorrect. This scoring method resulted in an average score of 5.97 (SD = 5.70), and a range of 0 – 29. This method yielded a much higher level of reliability for this sample (α = .893), and was used in analyses to account for the effects of random guessing (Gross et al., 2012). Information for the three subscales is presented in table 5.

Table 5. 
*Performance and scoring information for PPACA knowledge scale and subscales*

<table>
<thead>
<tr>
<th>Number of correct responses provided</th>
<th>Number of items in scale</th>
<th>Mean (SD)</th>
<th>Cronbach’s alpha (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Scale</td>
<td>31</td>
<td>19.72 (3.88)</td>
<td>.574</td>
</tr>
<tr>
<td>Requirements and provisions subscale</td>
<td>10</td>
<td>7.29 (1.73)</td>
<td>.462</td>
</tr>
<tr>
<td>Benefits and services subscale</td>
<td>13</td>
<td>8.32 (2.12)</td>
<td>.325</td>
</tr>
<tr>
<td>Government and taxing subscale</td>
<td>8</td>
<td>4.89 (1.38)</td>
<td>.122</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of correct responses provided, with high certainty</th>
<th>Number of items in scale</th>
<th>Mean (SD)</th>
<th>Cronbach’s alpha (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Scale</td>
<td>31</td>
<td>5.97 (5.70)</td>
<td>.893</td>
</tr>
<tr>
<td>Requirements and provisions subscale</td>
<td>10</td>
<td>2.45 (2.38)</td>
<td>.781</td>
</tr>
<tr>
<td>Benefits and services subscale</td>
<td>13</td>
<td>2.45 (2.38)</td>
<td>.808</td>
</tr>
<tr>
<td>Government and taxing subscale</td>
<td>8</td>
<td>1.70 (1.68)</td>
<td>.663</td>
</tr>
</tbody>
</table>

N = 693

**Hypothesis 1a**

A Chi square analysis was conducted to determine whether the amount of time during the past year that an individual possessed health insurance coverage was related to differences in the receipt of STI testing, reproductive cancer screenings, and birth control visits and services. For this analysis, the amount of time that an individuals had health insurance coverage was based on four possible responses: (1) “I was not insured at all in the past year,” (2) “I was insured for 1-6 months out of the last year,” (3) “I was insured for 7-11 months out of the last year,” and (4) “I
was insured for all 12 months out of the last year.” Preventive health service use was transformed into binary categories (where necessary) for each category of services.

There were significant differences in the receipt of various types of reproductive cancer screening based on duration of health insurance coverage over the previous year (Table 6). Receipt of a pap smear within the last 3 years, a pelvic exam in the last year, a breast exam in the last year, and a physical or well woman’s exam in the last year, all showed a similar pattern of difference in service use across insurance coverage duration. Those who did not possess insurance coverage at all during the previous year had significantly lower rates of utilization for each type of reproductive cancer screening. There were also significant differences in the receipt of STI testing and birth control counseling based on duration of health insurance coverage over the previous year. Again, those who had no insurance coverage during the previous year had significantly lower rates of service receipt for both STI screening and birth control counseling.

**Table 6.**

*Differences in service use based on duration of insurance coverage during the previous year*

<table>
<thead>
<tr>
<th>Service</th>
<th>Not insured at all in last year (n = 60)</th>
<th>Insured for 1-6 months of last year (n = 36)</th>
<th>Insured for 7-11 months of last year (n = 55)</th>
<th>Insured for all 12 months of last year (n = 541)</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cancer Screenings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pap smear, last 3 years</td>
<td>33.3ᵃ</td>
<td>66.7ᵇ</td>
<td>72.7ᵇ</td>
<td>77.3ᵇ</td>
<td>52.991***</td>
</tr>
<tr>
<td>Pelvic exam, last year</td>
<td>16.7ᵃ</td>
<td>45.4ᵇ</td>
<td>44.1ᵇ</td>
<td>60.3ᵇ</td>
<td>46.040***</td>
</tr>
<tr>
<td>Breast exam, last year</td>
<td>11.7ᵃ</td>
<td>33.3ᵃᵇ</td>
<td>40.0ᵇ</td>
<td>52.3ᵇ</td>
<td>39.986***</td>
</tr>
<tr>
<td>Physical/ well woman’s exam, last year</td>
<td>21.7ᵃ</td>
<td>58.3ᵇ</td>
<td>67.3ᵇ</td>
<td>68.9ᵇ</td>
<td>53.270***</td>
</tr>
<tr>
<td><strong>Other Prev. Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STI testing, last year</td>
<td>11.6ᵃ</td>
<td>33.3ᵇ</td>
<td>20.0ᵃᵇ</td>
<td>27.0ᵇ</td>
<td>8.725*</td>
</tr>
<tr>
<td>Birth control counseling, last year</td>
<td>8.3ᵃ</td>
<td>38.9ᵇ</td>
<td>29.1ᵇ</td>
<td>32.9ᵇ</td>
<td>16.517**</td>
</tr>
</tbody>
</table>

N = 693

* p < .05, ** p < .01, *** p < .001

Columns with different superscripts differ significantly (Bonferroni corrected)
**Hypothesis 1b**

Another chi square analysis was computed to determine whether consistent health insurance coverage is related to differences in the utilization of LARC methods. For this analysis, insurance coverage was based on the same four categories previously mentioned, and LARC method use was transformed into binary categories of use (0 = No, 1 = Yes). This analysis was restricted to women who are at risk for pregnancy, including those who identify as female, are sexually active and report engaging in sex with men, have not been sterilized, and those who were not attempting to become pregnant during the previous year. This excluded 228 women, and resulted in a sample size of 480 women for this analysis. There were no significant differences in LARC use based on the duration of insurance coverage, \( x^2 (3, n = 480) = 4.063, p = .255 \). A subsequent analysis comparing the use of any non-hormonal form of birth control to the use of any hormonal form of birth control (including LARC methods) also showed no significant differences across duration of insurance coverage, \( x^2 (3, n = 480) = 5.752, p = .124 \).

**Hypothesis 2**

A three stage hierarchical logistic regression was used to test the hypothesis that knowledge of the PPACA predicts utilization of preventive reproductive health services (excluding services for birth control prescriptions or devices). Use of preventive health services was entered into the model as a binary outcome based on having not received preventive health services \( (n = 195) \) or having received these services \( (n = 496) \) (Table 7). Demographic factors [i.e., age, race, education level, and income (as a percentage of the federal poverty level)] were entered in at stage one of the model, and significantly predicted preventive service use when compared to the constant-only model, \( x^2 (4, N=693) = 17.238, p < .01 \). As education level increased, the likelihood of having used preventive reproductive health services increased as
well, with those who had obtained more education being 1.099 times as likely to have received services (p<.05; b = .094; 95% CI = 1.968, 1.248).

The number of months participants indicated having health insurance coverage was entered in at stage two of the model, and significantly added to the predictive utility of the model, $x^2 (1, N=693) = 37.251$, p<.001. Those who had insurance coverage for a longer span of time during the year were 1.7 times more likely to have utilized these services (p<.001; b = .532; 95% CI = 1.428, 2.032). Knowledge of the PPACA was entered into the final stage of the model, and also added significantly to the predictive utility of the model, $x^2 (1, N=693) = 4.194$, p<.05, demonstrating that knowledge of the PPACA was associated with utilization of preventive reproductive health service utilization after controlling for demographic factors and duration of insurance coverage. For every 1-unit increase in PPACA knowledge score, there was a 3.4% greater likelihood of receiving preventive reproductive health services (p<.05; b = .034; 95% CI = 1.001, 1.069).

**Table 7.**

*Hierarchical logistic regression analysis predicting preventive reproductive health service use*

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>OR</th>
<th>CI</th>
<th>B</th>
<th>SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Age (Years)</td>
<td>.996</td>
<td>(.971, 1.023)</td>
<td>-.004</td>
<td>.013</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Race (Whites as reference group)</td>
<td>.909</td>
<td>(.606, 1.366)</td>
<td>-.095</td>
<td>.207</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Education Level</td>
<td>1.099</td>
<td>(1.019, 1.248)</td>
<td>.094</td>
<td>.065</td>
<td>&lt;.05</td>
</tr>
<tr>
<td></td>
<td>FPL Standing (Income)</td>
<td>1.000</td>
<td>(1.000, 1.001)</td>
<td>.000</td>
<td>.000</td>
<td>ns</td>
</tr>
<tr>
<td>2.</td>
<td>Insurance Duration</td>
<td>1.703</td>
<td>(1.428, 2.032)</td>
<td>.532</td>
<td>.090</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>3.</td>
<td>PPACA Knowledge</td>
<td>1.034</td>
<td>(1.001, 1.069)</td>
<td>.035</td>
<td>.017</td>
<td>&lt;.05</td>
</tr>
</tbody>
</table>

N=693  
ns = not significant

**Hypothesis 3.**

A multinomial logistic regression was used to test the hypothesis that knowledge of the PPACA predicts an increased likelihood of LARC method use above health insurance coverage and demographic factors. Birth control method was entered into the model as a nominal outcome (0 = no birth control, 1 = non-hormonal methods, 2 = hormonal methods, 3 = LARC methods).
Demographic factors [i.e., age, race, education level, and income (as a percentage of the federal poverty level)], number of months with health insurance coverage, and knowledge of the PPACA were entered into the model. As in hypothesis 2, the variables in stages one and two have established relationships to the outcome (Culwell & Feinglass, 2007; Gostin, 2014; Mestad et al., 2011; Ricketts et al., 2014) and were controlled for in the model. This analysis was also restricted to women who were at risk for pregnancy.

Age was the only significant predictor in the model, $\chi^2 (3, \text{N}=408) = 21.239, p<.001$. This predictor was only significant when comparing those who did not use birth control in the previous year to those who used a hormonal method(s) during this time. The analysis showed that as age increased, the odds of using a hormonal method of birth control decreased (Table 8). The other demographic factors of race, $\chi^2 (3, \text{N}=408) = 1.084, p=.781$, education, $\chi^2 (3, \text{N}=408) = 1.985, p=.576$, and federal poverty adjusted income, $\chi^2 (3, \text{N}=408) = 7.241, p=.065$. The duration of insurance coverage during the previous year was also not a significant predictor, $\chi^2 (3, \text{N}=408) = 3.122, p=.373$. Finally, knowledge about the PPACA was not a significant predictor, $\chi^2 (3, \text{N}=408) = 3.809, p=.283$.

**Table 8.**

Multinomial logistic regression predicting use of various birth control methods

<table>
<thead>
<tr>
<th></th>
<th>Non-hormonal method, last year (n = 235)</th>
<th>Hormonal method, last year (n = 201)</th>
<th>LARC method, last year (n = 86)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>Age</td>
<td>1.002 (.945, 1.063)</td>
<td>.926* (.871, .984)</td>
<td>.941 (.881, 1.006)</td>
</tr>
<tr>
<td>Race (White as reference group)</td>
<td>.998 (.796, 1.252)</td>
<td>1.101 (.872, 1.390)</td>
<td>1.045 (.810, 1.347)</td>
</tr>
<tr>
<td>Education</td>
<td>.883 (.577, 1.352)</td>
<td>1.089 (.693, 1.711)</td>
<td>1.116 (.673, 1.851)</td>
</tr>
<tr>
<td>Insurance duration</td>
<td>1.000 (.999, 1.001)</td>
<td>1.001 (1.000, 1.002)</td>
<td>1.001 (1.000, 1.002)</td>
</tr>
<tr>
<td>FPL standing (Income)</td>
<td>1.019 (.944, 1.100)</td>
<td>1.055 (.977, 1.139)</td>
<td>1.044 (.961, 1.134)</td>
</tr>
<tr>
<td>PPACA knowledge</td>
<td>.882 (.332, 2.339)</td>
<td>.719 (.272, 1.901)</td>
<td>.949 (.325, 2.769)</td>
</tr>
</tbody>
</table>

N = 480
None/ no birth control method used during previous year used as reference group
*p<.05
**Exploratory Analyses**

Because the results for hypothesis 3 showed that knowledge of the PPACA was not a significant predictor of contraceptive use, an exploratory analysis was conducted to evaluate other potential predictors. One of the predictors that was added into the model and evaluated was knowledge about birth control methods and use. It stands to reason that knowledge about birth control may be more influential than knowledge about the PPACA when making decisions about which method of birth control – if any – is appropriate for an individual woman. This claim is supported by previous research that has shown that low levels of awareness and understanding about LARC methods of birth control serve as a significant barrier to use (Dodson et al., 2012; Teal & Romer, 2013).

Another predictor that was evaluated was the receipt of birth control counseling. This is thought to be related to birth control knowledge, as it serves as a vehicle through which clinicians can provide accurate information about contraception. Birth control counseling services focus on the education of the patient about the options available, and aiding them in choosing the method that works well for them after factoring in their concerns. Part of this process may also aid the patient in navigating insurance coverage and benefits when cost is a concern.

A final predictor evaluated was pap smear receipt during the previous 3 years. It may be that going to the doctor to receive a pap smear creates an additional opportunity to receive contraceptive services, especially considering that a common component of doctor’s visits for pap smears is a discussion about contraceptive use and methods. Consistent with this idea, Pourat and colleagues (2008) found that receiving a pap smear increased the likelihood that women would receive Chlamydia screening and other studies have found that higher rates of doctor’s...
visits result in more positive health outcomes (Baicker, Taubman, & Allen, 2013; Sommers, Long, & Baicker, 2014). Furthermore, literature shows that many clinicians still require pelvic exams and pap smears before they will prescribe oral contraception, which further establishes the link between the two services (Henderson, Sawaya, Blum, Stratton, & Harper, 2010).

For this analysis, the outcome variable was divided into the same 4 categories: (0) None/no birth control (n = 32), (1) Non-hormonal (n = 162), (2) Hormonal (n = 166), and (3) LARC (n = 72). The overall model was significant, $\chi^2 (24, N = 480) = 159.875$, $p < .001$, and the Nagelkerke pseudo $R^2$ suggested that the predictors in the model accounted for approximately 33.8% of the total variance in method of birth control used during the previous year. Knowledge of the PPACA was removed from this model, and birth control knowledge, pap smear receipt, and birth control counseling were entered in (Table 9).

Birth control knowledge significantly added to the predictive utility of the model, $\chi^2 (3, N = 480) = 44.886$, $p < .001$, and suggested that for every 1 unit increase in birth control knowledge scores, there was a 25.2% greater likelihood of using a hormonal birth control method ($p < .01; b = .225; 95\% CI = 1.086, 1.444$), and a 57.2% greater likelihood of using a LARC method of birth control ($p < .001; b = .452; 95\% CI = 1.331, 1.856$), although it was not a significant predictor for non-hormonal birth control use.

Pap smear receipt during the previous 3 years was also a significant predictor, $\chi^2 (3, N = 480) = 13.638$, $p < .01$, and showed that those who had received a pap smear during the previous 3 years were 2.7 times more likely to use a hormonal method of birth control ($p < .05; b = 1.006; 95\% CI = 1.068, 7.000$), and 5.7 times more likely to use a LARC method of contraception ($p < .01; b = 1.745; 95\% CI = 1.723, 19.023$). Pap smear receipt was not a significant predictor of non-hormonal birth control use.
Birth control counseling during the previous year also added to the predictive utility of the model, $x^2 (3, N = 480) = 40.283$, $p<.001$, and indicated that those who had received birth control counseling during the previous year were 8.7 times more likely to have used a hormonal method of birth control ($p<.01; b = 2.163; 95\% CI = 2.416, 31.332$), and 4.1 times more likely to have used a LARC method for birth control ($p<.05; b = 1.411; 95\% CI = 1.059, 15.863$). Birth control counseling during the previous year was not, however, a significant predictor of non-hormonal contraceptive use during the last year.

**Table 9.**
Multinomial logistic regression predicting use of various birth control methods

<table>
<thead>
<tr>
<th></th>
<th>Non-hormonal method, last year (n = 235)</th>
<th>Hormonal method, last year (n = 201)</th>
<th>LARC method, last year (n = 86)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
<td>OR</td>
</tr>
<tr>
<td>Age</td>
<td>1.001</td>
<td>(.944, 1.061)</td>
<td>.942</td>
</tr>
<tr>
<td>Race (White as reference group)</td>
<td>1.381</td>
<td>(.497, 3.838)</td>
<td>2.140</td>
</tr>
<tr>
<td>Education</td>
<td>.971</td>
<td>(.769, 1.226)</td>
<td>1.029</td>
</tr>
<tr>
<td>FPL standing (Income)</td>
<td>1.000</td>
<td>(.999, 1.001)</td>
<td>1.001</td>
</tr>
<tr>
<td>Insurance Duration</td>
<td>.795</td>
<td>(.512, 1.237)</td>
<td>.846</td>
</tr>
<tr>
<td>Birth control knowledge</td>
<td>1.117</td>
<td>(.978, 1.276)</td>
<td>1.252**</td>
</tr>
<tr>
<td>Birth control counseling</td>
<td>1.369</td>
<td>(.586, 3.196)</td>
<td>2.734*</td>
</tr>
<tr>
<td>Pap test, last 3 years</td>
<td>1.780</td>
<td>(.485, 6.540)</td>
<td>8.701**</td>
</tr>
</tbody>
</table>

N = 480

None/ no birth control method used during previous year used as reference group

*p<.05; **p<.01; ***p<.001

**Discussion**

The present study was the first to evaluate the role of PPACA knowledge in preventive sexual and reproductive health service utilization among women. Results from this study further the understanding of some of the factors that contribute to female use of preventive reproductive health services, and highlight the fact that expanding access to health insurance coverage is just one component necessary to increase utilization of preventive services.
Hypothesis 1a

The PPACA set out to increase access to services among women by reducing the cost barrier for services in two ways: (1) increasing access to affordable insurance coverage, and (2) mandating that this insurance coverage consider women’s reproductive preventive care and cover it with no cost-sharing responsibilities for the woman. The first hypothesis examined variations in preventive reproductive health service use based on duration of insurance coverage. Findings show that possession of insurance for any duration of time throughout the year is associated with higher rates of participation in cancer screening services, STI testing, and birth control counseling among women. These findings provide support for existing literature that has established lack of health insurance coverage and shorter duration of coverage as barriers to service use among women (Garfield et al., 2014; Geisler, 2006; Kaiser Commission of Medicaid and the Uninsured, 2006; Rodriguez et al., 2005).

Furthermore, findings provide support for the methods utilized by the PPACA, and show that having insurance that covers preventive health services is associated with higher rates of utilization for various preventive services that are extremely important for women to receive. This finding suggests that there would likely be value in the expansion of Medicaid in states that have not already made this change, especially when considering that two-thirds of the 6.4 million adults that are uninsured due to lack of expansion are women. Access to insurance coverage under Medicaid would allow these women to access valuable preventive reproductive health services in an affordable way, thus meeting many of their health needs and improving their health outcomes. Providing such coverage and access to preventive health services may also provide a financial benefit to states by eliminating costs related to treatment of conditions, such as the $16 billion that is spent annually in the U.S. on direct medical costs related to STIs.
Hypothesis 1b

Differences in LARC method use was also evaluated in relation to duration of health insurance coverage. Findings from the current study indicated that there were not significant differences in LARC method use based on duration of coverage. A subsequent analysis also revealed that there were no significant differences in the use of any hormonal form of birth control based on duration of coverage. These findings contradict those of previous studies, which have found that those without insurance are less likely to utilize prescription contraception, and that cost is one of the most significant barriers to the adoption of LARC methods (Culwell & Feinglass, 2007; Gostin, 2014; Guttmacher Institute, 2014; Piepert et al., 2012; Ricketts et al., 2014).

These findings may indicate that possession of insurance coverage is not enough to guarantee utilization of services, and that there are other influential factors that need to be targeted if increased utilization of LARC methods is desired in the U.S. One such factor may be the type of insurance plans that women possess. Although the provision of other preventive health services is well-established and largely standardized across carriers and policies, contraception is still somewhat separated from the other services and may be covered differently depending on carrier or plan type. This may mean that not all women are actually guaranteed comprehensive access to contraception as originally intended by the PPACA.

Research by the Kaiser Family Foundation on contraceptive coverage provided by different carriers in five U.S. states found that the interpretation of the contraceptive mandate and its accompanying guidelines was not uniform across carriers. Although the CDC suggests that carriers provide coverage for the full range of FDA-approved contraceptive methods, it is not required and issuers are permitted to use reasonable medical management (RMM) to control costs (Sobel, Salganicoff, & Kurani, 2015). There are no specific guidelines for how RMM
should be implemented, though, and some carriers have used this as a loophole to avoid providing coverage for certain contraceptive methods.

In practice, these RMMs can appear in a few different forms. One type of RMM is chemical compound limitation, wherein carriers decide to provide coverage without cost-sharing for only one of the methods that are chemically equal, regardless of different delivery systems. This means that carriers can decide to cover oral contraception and refuse to cover the patch or ring (which are often more expensive), or cover IUD’s and refuse to cover implants, because they contain the same chemical compounds (Sobel et al., 2015). Another RMM is step therapy, where carriers require patients to try lower tier (usually lower-cost) methods before moving up to the next tier. This requires that patients try lower tier methods, and have a provider document that these methods were not successful and a higher tier method is medically necessary (Sobel, et al., 2015). A final method of RMM is requiring that approval be obtained from the insurance carrier beforehand, so that the service or medication prescribed by the provider will be covered later. These RMMs are not used by all carriers or present in all plans; however, they do have the ability to create inequality in contraceptive access for women who do possess these plans.

**Hypothesis 2**

The second hypothesis was to examine the influence of PPACA knowledge on preventive service utilization, after controlling for demographic factors and duration of health insurance coverage. A study conducted by Gross and colleagues (2012) found that those who knew more about the PPACA held more favorable attitudes towards the legislation, and suggested that increasing knowledge about the legislation may result in considerably higher rates of approval. Present findings suggest that increasing knowledge about the legislation would also result in higher rates of preventive reproductive health service utilization among women. Specifically, for
each 1-unit increase in knowledge about the PPACA, the likelihood of preventive service use rose 3.5%.

This finding supports the importance of the outreach efforts that were built into the healthcare legislation. However, participant PPACA knowledge scores for the current study also show that accurate knowledge of the legislation in still very low. The average number of correct responses provided was 6 out of 31 when level of certainty about the response was taken into consideration, which is perhaps more alarming when considering that, overall, the sample was highly educated. Previous work has shown that those with less education understand less about the changes implemented by the PPACA (Gross et al., 2012; Hall et al., 2014), which would suggest that knowledge would likely be even lower among the general population.

Results also showed that those with higher levels of educational attainment were more likely to engage in preventive service use. This echoes findings from previous studies that show that those who are more educated are more likely to use reproductive health services (Hall et al., 2014; Hall, Dalton, & Johnson, 2014; McMorrow et al., 2014). The association between these factors and preventive reproductive service use may offer support for intervention efforts delivered at the community level that are targeted toward those with lower educational attainment and those with less access to accurate information about the healthcare law. Since the legislation includes provisions and funding for enhancing outreach and enrollment, it would be beneficial to ensure that those efforts and funds are heavily concentrated in communities that possess lower rates of education to maximize rates of service utilization.

Additionally, duration of health insurance coverage during the previous year was a significant predictor of preventive service use, with those who had possessed insurance coverage for a longer period of time throughout the year being more likely to have utilized preventive
health services. As previously stated for hypothesis 1a, this finding supports the existing literature (Culwell & Feinglass, 2007; Gostin, 2014; Guttmacher Institute, 2014; McMorrow et al., 2014; Piepert et al., 2012; Ricketts et al., 2014), as well as the efforts of the PPACA to increase access to insurance coverage and efforts to persuade the remaining 19 U.S. states to expand Medicaid coverage.

However, it is also important to note that while insurance coverage was shown to influence service use, just over 75% of the sample had insurance coverage for all 12 months of the year, and rates of use for some services, such as breast exams (47%), birth control counseling (30%) and STI testing (25%) were still somewhat low. Rates of receipt for these services were also much lower than having had a well woman’s visit or physical (64%) during the same time period. It is also worth noting that approximately 23% of the women who were insured for all 12 months of the previous year had not obtained a pap smear within the previous 3 years. Pap smears are an important aspect of women’s health and prevention of severe negative health outcomes, making receipt of this service very important. As exploratory analyses showed, pap smear receipt may also be an important factor when considering the adoption of more effective contraceptive methods. Understanding that women who had insurance coverage during the previous year had access to this preventive service and still did not obtain it may be cause for concern, and is worth exploring in future research.

To an extent, the aforementioned rates of service use may reflect the diversity of needs among women in the sample as they age, marry, have children, etc. Still, this may also reflect sentiments expressed in previous research that visiting a provider does not guarantee that a patient will receive all of the recommended services (Howell & Kenney, 2012). While the present study did not intend to directly assess this issue, some of the items used can still offer
insight. Of the 708 participants in the current sample, 66% said that they would likely get tested for STIs if the service was offered for free by their provider, and 65% reported that a provider had never (in the participant’s lifetime) suggested that they receive STI testing. These rates may indicate a disconnect in patient/provider communication and unsuccessful attempts to offer comprehensive preventive care. These are issues that could be addressed through the expansion of initiatives such as provider training in assessment and communication, providing support and resources to providers’ offices that is designed to educate patients about health risks and available services, or encouraging pay-for-performance programs for providers.

**Hypothesis 3**

The third hypothesis evaluated the role of PPACA knowledge on the use of LARC methods, after controlling for demographic factors and duration of health insurance coverage. A recent study on LARC adoption showed that when cost was removed as a barrier, 70-75% chose to use LARC methods (Mestad et al., 2011; Peipert et al., 2012). Because the PPACA mandated the provision of contraception coverage without cost-sharing in (almost) all insurance policies, it was expected that those who had more knowledge of the healthcare legislation would adopt LARC methods at a higher rate. However, results from this sample did not support this hypothesis. Knowledge of the PPACA also did not predict higher rates of non-hormonal or hormonal birth control use.

As previously stated, this may partly be due to the differences in interpretation of the PPACA’s contraceptive coverage mandate that has resulted in a lack of standardization of contraception coverage among carriers and plans, as well as difficulties accessing and deciphering such coverage information. Because these actions have the ability to directly inhibit a woman’s ability to choose the method that is best for her, it would be advantageous to work on
progressing legislation mirroring California’s ‘Contraceptive Coverage Equity Act of 2014.’

This law mandates coverage of methods that have been FDA-approved, requires that at least one option of equivalent contraceptives be covered with no cost-sharing responsibilities for the insured, and defines equivalent contraceptives as those with the same chemical formulation and delivery system (Sobel et al., 2015).

This finding may also indicate the need to increase LARC knowledge and training among providers. Some studies have indicated that providers often fail to consider nulliparous women as appropriate candidates for IUDs, many lack training, and not all women’s health facilities offer LARC services (Kavanaugh, Carlin, & Jones, 2011; Kavanaugh, Jones, & Finer, 2010). Thus, measures may be necessary to increase provider awareness and education before issues about awareness and education of potential patients can be addressed.

**Exploratory Analyses**

An exploratory analysis was performed to evaluate factors other than knowledge of the PPACA that may predict utilization of various methods of contraception. Birth control knowledge, birth control counseling, and pap smear receipt were all significant predictors of the utilization of LARC methods, as well as hormonal birth control use. Those who had higher rates of knowledge of birth control methods and use were more likely to use a hormonal or LARC method of birth control over no method of contraception than those who had lower levels of knowledge, which supports findings from previous work (Dodson et al., 2012; Frost, Lindberg, & Finer, 2012; Teal & Romer, 2013).

This finding also lends support for continued (and perhaps expanded) funding for state and community programs aimed at increasing reproductive health knowledge. More immediately, it also suggests that support should be provided for President Obama’s suggestion
to eliminate funding for abstinence-only sexual education programs and instead allot those funds
toward evidence-based education programs instead. A necessity for the development and
maintenance of programs that reduce contraceptive costs for low-income women or women with
poor insurance coverage may be highlighted as well. It was previously assumed that such
programs would become obsolete following implementation of the PPACA; however, with
evidence present that the contraceptive mandate is not being followed as it was intended and 19
states still not yet expanding Medicaid coverage to their residents, they are likely still valuable
for many.

Moreover, those who had received birth control counseling during the previous year were
almost 3 times more likely to have used a hormonal method and almost 6 times more likely to
have used a LARC method of birth control. These findings support those of previous research,
which have shown that low levels of awareness and knowledge about LARC methods serve as a
significant barrier to adoption (Dodson et al., 2012; Teal & Romer, 2013). These findings also
offer room for optimism, since birth control counseling is considered an essential health benefit
to be covered without cost-sharing. Also, although differences exist in contraceptive coverage for
some carriers or plans, Sobel and colleagues (2015) found that coverage for contraceptive
counseling is uniformly provided. It is possible that these changes will result in a natural
progression toward the use of the more effective LARC methods of contraception among women
in the U.S. as the provision of counseling services continues to increase. This will, however,
require that providers take some initiative in advertising this service to their patients and
incorporating it into comprehensive health visits.

Additionally, those who had received a pap smear in the previous three years were over
eight times more likely to have reported using a hormonal method of birth control, and four
times more likely to have reported LARC use. This finding is consistent with those of other studies that have found that receiving a pap smear increased the likelihood of a woman receiving Chlamydia screening (Pourat et al., 2008), and that higher rates of doctor’s visits are related to better health outcomes (Baicker et al., 2013; Sommers et al., 2014). This finding may provide additional support for the need to integrate the various reproductive health services into comprehensive visits. If the specific goal is to increase the use of the most effective contraceptive methods, then it may be most beneficial for providers to provide pap screening, contraceptive counseling, and birth control prescription or medical services as a single visit.

Limitations

Despite overall support for some hypotheses, several limitations must be considered. One limitation was the use of a cross-sectional correlational design, which prevents drawing any causal inferences. This study also employed a relatively small sample size, which was reduced yet again when analyses required the exclusion of those who were not at risk for pregnancy. In particular, only a very small subset of the sample reported using LARC methods of birth control.

The sample was also majority white (76.7%), and highly educated, with more than 70% having received education beyond high school. This may reduce the ability to generalize beyond these groups. The demographic distribution is likely a byproduct of internet sampling, which tends to result in such samples. Relying on self-reports of health behaviors and service receipt, which are likely to contain some measurement error, is also a limitation of the present study. Participants may not be able to accurately recall the frequency or timing of participation in health services, or may feel pressure to report receiving recommended preventive reproductive health services (Bhandari & Wagner, 2006).
Sampling bias is also a limitation of this study. Although Amazon Mechanical Turk has the ability to recruit a nationally representative sample, individuals are still in control of which studies they self-select into. It is possible that those who decided to self-select into a study about health and the healthcare legislation differ from the general population.

This study also did not assess attitudes towards the surveyed preventive health services, perceptions of health risk, or attitudes toward medical professionals or organizations. Previous research has shown that lacking trust in medical providers or services is a barrier to utilization (Issac, Brandon, LaVeist, 2005; Thornburn & Bogart, 2005). This may be particularly true among populations that are often the “targets” of health promotion and intervention programs, such as young women, racial and sexual minorities, and those with lower incomes and education levels (Gilliam, 2015; Gold, 2014; Gomez, Fuentes, & Allina, 2014; Higgins, 2014; Johnson & Nemeth, 2014). Studies have also shown that individuals tend to feel uncomfortable or embarrassed during reproductive health care screenings or may anticipate pain, and may choose to avoid them altogether as a result (Fiddles, Scott, Fletcher, & Glasier, 2003; Kahn et al., 1999). Future studies should incorporate health risk perceptions, attitudes toward health services and providers, and provider discrimination in models of health care coverage and service receipt after the PPACA.

**General Implications**

While using self-report data is a limitation of this study, online surveying resulted in a geographically representative national sample of women and provided insight into some of the factors that predict the use of preventive reproductive services. An implication of the present study is that expanding knowledge about the PPACA may be beneficial in increasing the utilization of preventive reproductive health services among women, generally. The current
findings provide support for an increase in funds and resources to outreach and education of the
general population about the provisions and benefits of the PPACA, as well as individuals’
personal health coverage plans.

However, the present research also suggests that increasing knowledge of the healthcare
legislation may not be as influential in increasing the rates of adoption for more effective
contraceptive methods (i.e., hormonal and LARC methods in place of non-hormonal methods
and non-use of contraception). Instead, knowledge about birth control use and methods, and
receipt of contraceptive counseling and pap smears are stronger predictors of such contraceptive
use. This would suggest that increasing outreach and educational efforts focused on hormonal
birth control and LARCs as options in the general population may be more beneficial in
increasing adoption of these contraceptive methods.

Additionally, the current study provides support for the necessity of provider education
and training for LARC methods, and suggests continued focus on improving patient/provider
communication and developing truly comprehensive, patient-centered reproductive healthcare
for women. Findings may highlight a disconnect between the intentions of the PPACA’s
contraceptive mandate and the actual implementation of such benefits. Policy efforts are
encouraged to address the improper utilization of RMMs in contraceptive coverage by insurance
carriers, in addition to the lack of informational transparency of these benefits. Such efforts have
the potential to improve access to more effective contraceptive methods for women by
standardizing coverage across carriers and ensuring that women are able to use the contraceptive
method of her choice without cost barriers.
References


doi:10.1371/journal.pone.0121595


National Women’s Law Center. (2009). Still Nowhere to Turn: Insurance companies treat women like a pre-existing condition.


APPENDIX A:

RESEARCH SUBJECT INFORMATION AND CONSENT FORM

TITLE: Knowledge and Use of Health Services

VCU IRB NO.: HM20005824

PURPOSE OF THE STUDY
The purpose of this research study is to examine the relationships between individual knowledge of the PPACA, the use of preventive reproductive health services, and possession of insurance coverage.

DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT
If you decide to participate in this research study, you will be asked to consent to participate by selecting “I choose to participate in this study,” after you have had all your questions answered and understand what the study will involve.

After consenting to participate in the study, you will be directed to a brief demographic survey. The study requires the possession of certain demographic characteristics in order to participate. If you do not qualify for the study, then you will be redirected out of the survey and will not receive compensation. If you do meet the demographic qualifications, then you will be taken to the next section of the study.

Your participation will last approximately 25 minutes. Topics covered will include: demographic characteristics, insurance knowledge and use, sexual health behaviors, items pertaining to your reproductive medical history, and health service use during the previous year. All of your responses will remain confidential, so the answers that you provide will not be released to anyone.

RISKS AND DISCOMFORTS
Sometimes discussing personal health issues and behaviors cause people to become embarrassed or upset. You may stop participating in the research at any time. If you become upset, you may contact the research team using the information at the end of this form.

BENEFITS TO YOU AND OTHERS
The information we learn from people in this study may help us better understand how people understand and utilize health services in the United States.

COSTS
There are no costs for participating in this study other than the time you will spend completing the survey.
COMPENSATION
You will be compensated $0.45 for your participation in this research study. In order to receive compensation, you must correctly answer 2 out of 3 quality assurance questions that are randomly placed throughout the questionnaire.

CONFIDENTIALITY
Data are being collected only for research purposes. MTurk automatically collects participants’ IP addresses; however, we will not retain your IP address in our saved records or link your survey responses to your IP addresses in any saved databases, publications, presentations, or any other format.

Information from the study and your consent to participate may be looked at or copied for research or legal purposes by Virginia Commonwealth University. What we find from this study may be presented at conferences or published in scholarly papers. Your answers will remain confidential, as we will discard your IP addresses before data is stored and we are not collecting your name or other identifiable information.

COMPUTER USE
If possible, please take this survey on your personal computer.

VOLUNTARY PARTICIPATION AND WITHDRAWAL
You do not have to participate in this study. If you choose to participate, you may stop at any time without any penalty. You may also choose not to answer particular questions that are asked in the study.

QUESTIONS
In the future, you may have questions about your participation in this study. If you have any questions, complaints, or concerns about the research, contact:

Dr. Eric Benotsch  
808 W. Franklin St., #208  
Richmond, VA 23284  
E-mail: ebenotsch@vcu.edu  
Phone: 804-828-0133

If you have any questions about your rights as a participant in this study, you may contact:  
Office for Research  
Virginia Commonwealth University  
800 East Leigh Street, Suite 113  
P.O. Box 980568  
Richmond, VA 23298  
Telephone: 804-827-2157
You may also contact this number for general questions, concerns or complaints about the research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at http://www.research.vcu.edu/irb/volunteers.htm.

CONSENT

I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. I am stating that I am willing to participate in this study. I also verify that I am 18 years of age or older and live in the United States.

☐ I choose to participate in this study.

☐ I choose to not participate in this study.
APPENDIX B: STUDY QUESTIONNAIRE

Instructions: Please answer the following questions to the best of your ability:

1. Age: ___

2. Gender:
   - Male
   - Female
   - Transgender Male
   - Transgender Female
   - Gender Non-Conforming
   - Other ____________

3. Which race/ethnicity best describes you:
   - Caucasian
   - African American
   - Hispanic/Latino
   - Asian
   - American Indian or Alaskan Native
   - Native Hawaiian or Other Pacific Islander
   - Other ______________

4. Sexual Orientation:
   - Heterosexual/Straight
   - Homosexual/Gay
   - Bisexual
   - Other ______________

5. Relationship Status:
   - Not currently dating or in a relationship
   - In a newer relationship with 1 person (less than 12 months)
   - In a long-term relationship with 1 person (12 months or longer)
   - Married
   - Dating/ in a relationship with more than 1 person

6. Highest level of education completed:
   - Middle school
   - High school
   - GED
   - Vocational school
   - Associates Degree
   - Bachelor Degree
   - Graduate Degree (Masters, Doctorate, etc.)

7. Political Affiliation:
   - Democrat
   - Republican
   - Independent
• Libertarian
• Green
• Other ____________
• None

8. How many people live in your household? ______

9. How many of the people living in your household are dependent children

10. Please report the amount that best describes your household yearly income BEFORE taxes (Note: this amount should include all income, including veterans’ payments, child support, alimony, and assistance from outside of the household; however, it should exclude food stamps and housing subsidies):

___________

11. What state do you currently live in (Please provide the abbreviation – e.g., “CA” for California): _____

12. Of the following, please choose the option that best describes your highest level of employment (e.g., if you have both a part-time and a full-time job, choose “full time”):
   • Not employed
   • Student
   • Employed part-time
   • Employed full-time
   • Retired

13. What is your primary news source?
   • New York Times
   • CNN
   • MSNBC
   • Fox News
   • Huffington Post
   • Washington Post
   • ABC News
   • BBC News
   • USA Today
   • LA Times
   • Yahoo! News
   • NPR
   • Local Newspaper
   • Local TV News
   • National TV News
   • PBS

14. Out of the past year, which option best describes the amount of time that you had health insurance coverage?
   • I was not insured at all in the past year
   • I was insured for 1-6 months out of the last year
   • I was insured for 7-11 months out of the last year
   • I was insured for all 12 months of the last year

15. What type(s) of health insurance plan(s) have you had in the past year?
   • Private Insurance
     • A plan through an employer
     • Federal Government Insurance (for federal employees)
     • A plan through the government exchange/ Marketplace
     • Coverage through a parent’s plan
     • A university plan
     • I’m not sure
     • I did not have any insurance coverage during the last year
   • Public Insurance
     • Military Insurance (i.e., Tricare)
     • Medicaid/ State program insurance
     • Medicare
16. Have you had insurance coverage from 2 or more policies at the same time in the past year?
   Yes    No    I don’t know

17. Are you the policy holder or a dependent?
   - I’m the policy holder (the insurance is in my name)
   - I am a dependent, and the policy is through my spouse
   - I am a dependent, and the policy is through my parent(s)
   - I am a dependent, and the policy is through a different legal guardian

18. Did you have insurance before the health insurance marketplace opened under the Affordable Care Act in October 1, 2013?
   Yes    No    I don’t know

19. In the last year, did you receive a subsidy from the government to help pay for your health insurance plan?
   Yes    No    I don’t know

20. A grandfathered health insurance plan is a group health plan that was created—or an individual health insurance policy that was purchased—on or before March 23, 2010. Do you have a “Grandfathered” insurance plan?
   Yes    No    I don’t know

21. Have you had difficulty affording the monthly premiums required to pay for your insurance coverage in the past year?
   Yes    No

22. Approximately how many times have you visited a doctor’s office in the past year?
   0 times    1 time    2-5 times    6-9 times    10+ times

23. Approximately how many times have you visited a free clinic in the past year?
   0 times    1 time    2-5 times    6-9 times    10+ times

24. Approximately how many times have you visited an emergency room in the past year?
   0 times    1 time    2-5 times    6-9 times    10+ times

25. Do you have a chronic health condition?
   Yes    No

26. Do you have a reproductive health issue?
   Yes    No

Instructions: Please indicate whether you have received the following services in the past year:

27. Vaginal pelvic exam
   Yes    No

28. Breast Exam
   Yes    No
29. Well woman’s visit  
   Yes        No

   Physical     
   Yes        No

30. HPV vaccination  
   Yes        No

31. Gonorrhea/Chlamydia testing  
   Yes        No

32. HIV testing  
   Yes        No

33. Syphilis testing  
   Yes        No

34. Genital Herpes testing  
   Yes        No

35. Birth control counseling (someone discussing birth control options with you and how they work)  
   Yes        No

36. Birth control visit to receive a prescription (for pills, patches, or Nuvaring)  
   Yes        No

37. Birth control procedure [Depo injection ("the shot"), the arm implant, IUD (intrauterine device) insertion, male or female sterilization]  
   Yes        No

38. Reproductive/sexual health education through a doctor  
   Yes        No

39. Prenatal care  
   Yes        No

40. Abortion  
   Yes        No

41. Care for miscarriage management  
   Yes        No

42. Flu Shot  
   Yes        No

43. When was the last time that you received a pap smear? **Even if you are unsure of the exact date, please provide your best estimate.** ________

44. Have any of your female family members (i.e., sister, mother, aunt, grandmother) been diagnosed with a form of reproductive cancer (e.g., ovarian, cervical, breast, etc.)?  
   Yes        No
**Instructions:** Please indicate whether you have used the following birth control methods *in the past year*:

<table>
<thead>
<tr>
<th>Method</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>45. None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46. Abstinence</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>47. Male condoms</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>48. Female condoms</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>49. Fertility Awareness-Based Methods (i.e. The Temperature Method, The Cervical Mucus Method, The Calendar Method, etc.)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>50. Breast Feeding</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>51. Rhythm</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>52. Withdrawal</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>53. Diaphragm</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>54. Cervical cap</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>55. Sponge</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>56. Spermicide</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>57. Birth control pills</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>58. The morning after pill/ Plan-B</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>59. Patch</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>60. Vaginal ring</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>61. Depo Provera Injection</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
62. Arm implant (Implanon, Nexplanon)
   Yes  No
63. IUD (Skyla, Mirena, Liletta, Paragard)
   Yes  No
64. Sterilization (e.g., Tubal Ligation, Hysterectomy, Essure)
   Yes  No
65. Sterilization of a male partner (Vasectomy)
   Yes  No

Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.

For me to use a method of birth control would be:
66. Extremely Bad : __  __  __  __  __  __  __  __  Extremely Good
67. Extremely Unreliable : __  __  __  __  __  __  __  __  Extremely Reliable
68. Extremely Worthless : __  __  __  __  __  __  __  __  Extremely Valuable
69. Extremely Unnecessary : __  __  __  __  __  __  __  __  Extremely Necessary
70. Extremely Embarrassing : __  __  __  __  __  __  __  __  Extremely Comforting

71. Most people who are important to me approve of me using birth control
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
72. My partner/ significant other approves of me using birth control
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
73. Most people who are like me use birth control
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
74. It is expected of me to use birth control
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
75. Using birth control is up to me
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
76. I am confident I can find a place to receive birth control prescriptions or devices.
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
77. I intend to obtain birth control in the future
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
78. I will make an effort to obtain birth control in the future
   Strongly Disagree : __  __  __  __  __  __  __  __  Strongly Agree
79. If birth control was free from your health provider, how likely is it that you would use it?
   Very Unlikely  Not Likely  Likely  Very Likely
80. I am not at risk for becoming pregnant
   True    False

81. Are you currently using a clinical method of birth control (i.e., pill, patch, ring, injectable/ shot, arm implant, IUD)?
   Yes    No

82. If yes → What form of clinical birth control are you using (please be as specific as possible)? _____
   • How long have you been using this method of birth control? Even if you are unsure, please provide your best estimate. _______

If no → Please indicate the level to which each of these factors influences your decision NOT to use birth control (excluding condoms):

83. I do not feel that I am at risk for becoming pregnant
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

84. My doctor told me that I cannot become pregnant
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

85. The cost of birth control
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

86. I am fearful of medical environments/ doctor’s offices
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

87. A lack of transportation
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

88. A long distance or lack of transportation/ Having to go to the pharmacy to receive it
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

89. It is okay if I become pregnant/ I am not worried about becoming pregnant
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

90. I am trying to become pregnant
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

91. I am worried about side effects of birth control
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

92. I do not know enough about how to get birth control
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

93. I do not know enough about the different types of birth control/ I do not know which birth control to choose [11]
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences

94. I have had bad experiences with birth control in the past
   Does not influence  Slightly Influences  Moderately Influences  Majorly Influences
95. I do not trust birth control to prevent pregnancy  
   Does not influence   Slightly Influences   Moderately Influences   Majorly Influences

96. I have become pregnant while on birth control  
   Does not influence   Slightly Influences   Moderately Influences   Majorly Influences

97. I rely on condoms  
   Does not influence   Slightly Influences   Moderately Influences   Majorly Influences

98. Birth control violates my personal/religious beliefs  
   Does not influence   Slightly Influences   Moderately Influences   Majorly Influences

99. OTHER __________

100. Have you ever used the morning after pill/Plan-B?  
      Yes        No

101. Do you rely on the morning after pill/Plan-B as your primary method of birth control?  
      Yes        No

102. Do you rely on the morning after pill/Plan-B as a strong back-up plan if birth control fails?  
      Yes        No

103. Have you had trouble affording copays, deductibles, or other medical bills when utilizing of any of the services detailed in the previous questions (e.g., STI screenings, cancer screenings, birth control services) as required by your insurance within the past year?  
      Yes        No        I did not have health insurance this past year

Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.

For me to receive preventive cancer screenings:


109. Most people who are important to me approve of me receiving preventive cancer screenings  

110. My partner/significant other approves of me receiving preventive cancer screenings  

111. Most people who are like me receive preventive cancer screenings  
112. It is expected of me to receive preventive cancer screenings
   Strongly Disagree : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Strongly Agree

113. Receiving preventive cancer screenings is up to me
   Strongly Disagree : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Strongly Agree

114. I am confident I can find a place to receive preventative cancer screenings.
   Strongly Disagree : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Strongly Agree

115. I intend to obtain preventive cancer screenings in the future
   Strongly Disagree : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Strongly Agree

116. I will make an effort to obtain preventive cancer screenings in the future
   Strongly Disagree : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Strongly Agree

Instructions: Please answer the following questions to the best of your ability:

117. Did you experience an intended pregnancy in the last year?
   Yes   No

118. Did you experience an unintended pregnancy in the last year?
   Yes   No

119. Were you trying to become pregnant in the last year?
   Yes   No

120. Were you unconcerned with whether or not you became pregnant in the last year (i.e. not actively trying to become pregnant, but also not actively trying to prevent pregnancy)?
   Yes   No

121. All my friends say I would make a great Poodle
   True   False

122. How many times in the past year have you received STI testing?
   0 times   1 time   2-5 times   6-9 times   10+ times

123. Please indicate any of the following STIs that you have been diagnosed with in the past year:
   • Gonorrhea
   • Chlamydia
   • HIV
   • Syphilis
   • Genital Herpes
   • Genital Warts
   • Trichomoniasis (Trich)

124. Please indicate any of the following STIs that you have been diagnosed with in your lifetime:
   • Gonorrhea
   • Chlamydia
   • HIV
   • Syphilis
   • Genital Herpes
   • Genital Warts
   • Trichomoniasis (Trich)
Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.

For me to receive testing for STIs (sexually transmitted infections):


130. Most people who are important to me approve of me receiving testing for STIs
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

131. My partner/ significant other approves of me receiving testing for STIs
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

132. Most people who are like me receive testing for STIs
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

133. It is expected of me to receive testing for STIs
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

134. Receiving testing for STIs is up to me
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

135. I am confident I can find a place to receive STI testing.
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

136. I intend to obtain testing for STIs in the future
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

137. I will make an effort to obtain testing for STIs in the future
    Strongly Disagree : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Strongly Agree

138. Has a doctor ever suggested that you receive STI testing?
    Yes
    No

139. If STI testing was free from your health provider, how likely is it that you would be tested?
    Very Unlikely
    Not Likely
    Likely
    Very Likely

140. I am not at risk for contracting a sexually transmitted infection (STI)
    True
    False

141. If yes ➔ On what date did you receive your last STI screening? Even if you are unsure, please enter a numerical date. _____

    If no ➔ Please indicate the level to which each of these factors influences your decision NOT to be tested for STIs (HIV, Syphilis, Gonorrhea, Chlamydia, Herpes, etc.):
<table>
<thead>
<tr>
<th>Question</th>
<th>Not influence</th>
<th>Slightly Influences</th>
<th>Moderately Influences</th>
<th>Majorly Influences</th>
</tr>
</thead>
<tbody>
<tr>
<td>The cost of the tests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a fear of needles</td>
<td></td>
<td></td>
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<tr>
<td>I have a shy bladder (inability to urinate in public spaces)</td>
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<tr>
<td>I am fearful of medical environments/ doctor’s offices</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>A lack of transportation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I am not worried about contracting STIs</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I am not sexually active</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not know enough about the process</td>
<td></td>
<td></td>
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<tr>
<td>I am fearful of the results of the tests</td>
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<tr>
<td>I fear that I will test positive for an STI</td>
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<tr>
<td>I have been with the same partner for a long time</td>
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<tr>
<td>I always use condoms as protection for ALL sexual acts</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>STI testing violates my personal/ religious beliefs</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Access to Care**

156. If you were feeling ill or experiencing pain, how many days would it take you to go to the doctor?

_____ 

157. How hard do you think it would be to find a provider or clinic where you don’t have to wait long to get an appointment?

Not hard at all Somewhat Hard Very Hard

**Please indicate how much you agree or disagree with the following statements:**

158. I am confident I can find a place to receive prenatal care.

Strongly Disagree Slightly Disagree No Opinion Slightly Agree Strongly Agree
159. I am confident I can find a place to receive abortion care.

Strongly Disagree  Slightly Disagree  No Opinion  Slightly Agree  Strongly Agree

**Condom use/ Protection**

160. I ALWAYS use a condom with vaginal and/or anal sex

Yes  No

161. I ALWAYS use protection for oral sex (condom/dental dam)

Yes  No

162. Condoms are the only method of birth control that I use

Yes  No

163. I use condoms in addition to another birth control method(s)

Yes  No

Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.

For me to receive the vaccine for HPV (Human Papillomavirus):


169. Most people who are important to me approve of me receiving the HPV vaccine


170. My partner/significant other approves of me receiving the HPV vaccine


171. Most people who are like me get the HPV vaccine


172. It is expected of me to receive the HPV vaccine


173. Receiving the HPV vaccine is up to me


174. I am confident I can find a place to receive the Gardasil vaccine.


175. I intend to obtain the HPV vaccine in the future


176. I will make an effort to obtain the HPV vaccine in the future

177. Has a doctor ever suggested that you receive the HPV vaccine?
Yes          No

178. If the HPV vaccine was free from your health provider, how likely is it that you would receive the vaccine within 6 months?
Very Unlikely Not Likely Likely Very Likely N/A I have received it

179. Have you received at least one dose of the HPV vaccine?
Yes          No

180. If yes → How many doses have you received? Please enter a number. ______
   • If < 3 → When was your last dose? Even if you are unsure, please enter a numerical date that is your best guess. ______

   If no → Please indicate the level to which each of these factors influences your decision to NOT receive the HPV vaccine:
181. The cost of the vaccine
Does not influence Slightly Influences Moderately Influences Majorly Influences

182. I am concerned about the side effects of the vaccine
Does not influence Slightly Influences Moderately Influences Majorly Influences

183. I have a fear of needles
Does not influence Slightly Influences Moderately Influences Majorly Influences

184. I am fearful of medical environments/ doctor’s offices
Does not influence Slightly Influences Moderately Influences Majorly Influences

185. A lack of transportation
Does not influence Slightly Influences Moderately Influences Majorly Influences

186. I do not know enough about it
Does not influence Slightly Influences Moderately Influences Majorly Influences

187. I do not believe that the vaccine works
Does not influence Slightly Influences Moderately Influences Majorly Influences

188. I do not believe that the vaccine is safe
Does not influence Slightly Influences Moderately Influences Majorly Influences

189. The vaccine is too new
Does not influence Slightly Influences Moderately Influences Majorly Influences

190. I am not sexually active
Does not influence Slightly Influences Moderately Influences Majorly Influences

191. I am not worried about contracting HPV
Does not influence Slightly Influences Moderately Influences Majorly Influences

192. HPV vaccines violate my personal/ religious beliefs
Does not influence Slightly Influences Moderately Influences Majorly Influences

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193. OTHER __________

Please respond to the following items to the best of your ability. If you don’t know, please do not guess; instead, please select “Don’t Know”.

194. Genital Herpes is caused by the same virus as HIV.
   True    False    Don’t Know

195. There is a cure for Gonorrhea.
   True    False    Don’t Know

196. It is easier to get HIV if a person has another Sexually Transmitted Infection
   True    False    Don’t Know

197. Soon after infection with HIV, a person develops open sores on his or her genitals (penis or vagina).
   True    False    Don’t Know

198. There is a cure for Chlamydia.
   True    False    Don’t Know

199. A man must have vaginal sex to get Genital Warts.
   True    False    Don’t Know

200. Sexually Transmitted Infections can lead to health problems that are usually more serious for men than women.
   True    False    Don’t Know

201. A person who has Genital Herpes must have open sores to give the infection to his or her sexual partner.
   True    False    Don’t Know

202. If a person had Gonorrhea in the past, he or she is immune (protected) from getting it again.
   True    False    Don’t Know

203. A person can tell by the way their body feels if they have a Sexually Transmitted Infection (STI).
   True    False    Don’t Know

Please respond to the following items to the best of your ability. If you don’t know, please do not guess; instead, please select “Don’t Know.”

204. When putting on a condom, it is important to leave a space at the tip.
   True    False    Don’t Know

205. When using a condom, it is important for the man to pull out right after ejaculation.
   True    False    Don’t Know

206. Birth control pills are effective even if a woman misses taking them for two or three days in a row.
   True    False    Don’t Know

207. Women should “take a break” from the pill every couple of years.
   True    False    Don’t Know
208. Birth control pills reduce the chances that women will get certain types of cancer.
   True   False   Don’t Know

209. After a woman stops taking birth control pills, she is unable to get pregnant for at least two months.
   True   False   Don’t Know

210. Women using the vaginal ring, NuvaRing, must have it inserted by a doctor or health care provider every month.
   True   False   Don’t Know

211. Women using the birth control shot, Depo-Provera, must get an injection every three months.
   True   False   Don’t Know

212. Even if a woman is late getting her birth control shot, she is still protected from pregnancy for at least three more months.
   True   False   Don’t Know

213. A woman can use an IUD even if she has never had a child.
   True   False   Don’t Know

214. Women who use IUDs cannot use tampons.
   True   False   Don’t Know

215. To obtain an IUD, a woman must undergo a surgical operation.
   True   False   Don’t Know

216. An IUD can be felt in the vaginal canal by a woman’s partner during sex.
   True   False   Don’t Know

217. Long-acting methods like the implant or IUD cannot be removed early, even if a woman changes her mind about wanting to get pregnant.
   True   False   Don’t Know

218. I have been to every country in the world.
   True   False   Don’t Know

219. Have you heard of the Affordable Care Act?
   Yes   No

220. Have you heard of Obamacare?
   Yes   No

221. In general do you favor, oppose, or neither favor nor oppose the law changing the health care system (the Affordable Care Act) that the U.S. Congress passed in March 2010?
   • Favor strongly
   • Favor somewhat
   • Neither favor nor oppose
   • Oppose somewhat
   • Oppose strongly
Instructions: Please indicate whether you believe the following statements about the Affordable Care Act to be True or False. The Affordable Care Act:

222. Allows young adults to get health insurance by being included in their parents’ health insurance policies until they turn 26.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure

223. Requires insurance companies to charge an additional fee of $1,000 a year to anyone who buys insurance from them and smokes cigarettes.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure

224. Requires that anyone applying for a job must tell the employer if he or she has ever had any serious diseases.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure

225. Requires companies to sell health insurance to U.S. citizens and legal immigrants who don’t have health insurance and have a serious medical problem.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure

226. Insurance companies are able to deny coverage to individuals with pre-existing mental health disorders and substance use disorders.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure

227. Insurance companies are able to deny coverage to individuals with pre-existing conditions.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure

228. Prevents a health insurance company from limiting the amount of money that it will pay for a person’s health care costs during his or her life.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure

229. Every state must expand Medicaid coverage to include those with incomes up to 138% of the federal poverty level, childless adults, and those without disabilities.
   - True
   - False
   How sure are you about this?
   - Not sure at all
   - Slightly sure
   - Moderately sure
   - Very sure
   - Extremely sure
230. Requires some doctors to treat illegal immigrants free of charge if they cannot afford to pay
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

231. If a woman becomes pregnant and then decides to purchase insurance, she is able to gain coverage.
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

232. Non-grandfathered plans must cover select preventative care and wellness services without charging deductibles, copays, or coinsurance.
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

233. Immunizations are considered preventative care.
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

234. Non-grandfathered plans must include maternity and newborn care as an essential health benefit.
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

235. Non-grandfathered plans are not required to provide breastfeeding support, counseling, and equipment to those who are pregnant or nursing.
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

236. Non-grandfathered plans must include abortion as an essential health benefit.
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

237. Non-grandfathered plans must cover all types of birth control methods without charging deductibles, copays, or coinsurance.
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure

238. Non-grandfathered plans must cover preventative laboratory services, such as cardiovascular disease and diabetes screenings
   True    False
   How sure are you about this?
   Not sure at all  slightly sure  moderately sure  very sure  extremely sure
239. Provide discounts on prescriptions to seniors with high drug costs.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

240. Medicaid is not required to provide preventative screenings at no cost to the patient.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

241. Medicaid is not required to cover birth control methods at no cost to the patient.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

242. Grandfathered plans are not required to follow the essential health benefit requirements.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

243. Grandfathered plans must cover all types of birth control methods without charging deductibles, copays, or coinsurance.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

244. Non-grandfathered plans include preventative screenings (e.g., breast cancer screening and prostate exams) as essential health benefits, making these services free for the individual.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

245. Require that if a U.S. citizen does NOT have health insurance, that person will have to pay a fine on his or her federal income taxes unless he or she is allowed not to have the insurance for a series of specific reasons, such as having a very low income.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

246. Create committees of people who will review the medical histories of some people and decide whether they can get medical care paid for by the federal government.
   True False
   How sure are you about this?
   Not sure at all slightly sure moderately sure very sure extremely sure

247. Give money to pay for health insurance to people who are U.S. citizens and have very low incomes.
   True False
   How sure are you about this?
Not sure at all    slightly sure    moderately sure    very sure    extremely sure

248. Require companies with less than 50 employees to provide health insurance to their employees or pay a fine to the federal government if they do not
   True    False
   How sure are you about this?
   Not sure at all    slightly sure    moderately sure    very sure    extremely sure

249. Requires companies that sell health insurance to pay new fees to the federal government each year.
   True    False
   How sure are you about this?
   Not sure at all    slightly sure    moderately sure    very sure    extremely sure

250. Require companies that make drugs to pay new fees to the federal government each year.
   True    False
   How sure are you about this?
   Not sure at all    slightly sure    moderately sure    very sure    extremely sure

251. Require every American to show a government health care identification card in order to get medical care at a hospital
   True    False
   How sure are you about this?
   Not sure at all    slightly sure    moderately sure    very sure    extremely sure

252. Make health insurance available so that any American can buy if he or she wants to.
   True    False
   How sure are you about this?
   Not sure at all    slightly sure    moderately sure    very sure    extremely sure

253. In the past 3 months, how many times have you had sex after having too much to drink? **Even if you are not certain, please indicate the NUMBER that is your best estimate.** ____________

254. In the past 3 months, how many times have you had sex while you were under the influence of drugs (prescription or recreational)? **Even if you are not certain, please indicate the NUMBER that is your best estimate.** ______

255. How many total MEN have you had sex with in the last 3 months? **Even if you are not certain, please indicate the NUMBER that is your best estimate.** ____________

256. How many total MEN have you had sex with in your lifetime? **Even if you are not certain, please indicate the NUMBER that is your best estimate.** ____________

257. How many total WOMEN have you had sex with in the last 3 months? **Even if you are not certain, please indicate the NUMBER that is your best estimate.** ____________

258. How many total WOMEN have you had sex with in your lifetime? **Even if you are not certain, please indicate the NUMBER that is your best estimate.** ____________
259. In the past 3 months, how many times did you have unprotected vaginal sex? Even if you are not certain, please indicate the NUMBER that is your best estimate. _____ times

260. In the past 3 months, how many times did you have unprotected oral sex? Even if you are not certain, please indicate the NUMBER that is your best estimate. _____ times

261. In the past 3 months, how many times did you have unprotected anal sex? Even if you are not certain, please indicate the NUMBER that is your best estimate. _____ times

262. Did you use a condom during the last time you had vaginal or anal sex?
   Yes   No

263. What do you believe this study is about? ____________________________

264. Please enter in a 6-digit code (that is NOT 123456) _______________
   • Please go back to the Amazon Mechanical Turk website and enter this same code into the HIT in order to receive compensation for your participation!
Vita

Ashlee Nicole Sawyer was born on February 14th, 1991 in Norfolk, VA, and is an American citizen. She earned her Bachelor of Science degree in psychology and human services at Old Dominion University. She entered the Health Psychology doctoral program at Virginia Commonwealth University in August of 2014, and completed her Masters of Science in May of 2016.