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# A Socio-Ecological Model of Affordable Care Act Acceptance

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A Socio-Ecological Model of Affordable Care Act Acceptance

by

Pratiksha Vaghela

A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Science in Public Health  
Department of Occupational Medicine  
College of Public Health  
University of South Florida

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## **DEDICATION**

I dedicate my thesis work to my family to whom I am greatly indebted. To my loving husband, Dr. Vishal Vaghela, who has willingly made many personal sacrifices to support my dreams. He has been my biggest source of encouragement and inspiration throughout the past twelve years since I've known him.

To my parents, Kaaushik and Anjana Patel, who gave up a comfortable life in India so my brother and I could have a better life in the United States. They have always encouraged me to work hard and to pursue my dreams.

To my in-laws, Naresh and Varsha Vaghela, who have always encouraged me and supported me throughout this process. To my brother, Devang Patel, who has always been a great friend and my biggest supporter. And, to my brother-in-law, Aakash Vaghela, for his support.

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## ABSTRACT

**Background:** Since 1965, there have not been any major revisions of the healthcare laws in the United States, until the recent implementation of the Affordable Care Act (ACA). However, ACA is not well understood and is often controversial. The purpose of this study is to: (1) evaluate the relationship between the employers' and the employees' perceptions regarding the ACA mandates for small businesses, (2) evaluate the relationship between the self-reported and the tested knowledge of individuals regarding the ACA mandates for small businesses, and (3) determine if socio-demographic factors influence individual's perception of the law. Based on the gathered information, we aim to develop a socio-ecological model of ACA acceptance to address the barriers and facilitators to implementing the new law and recommend changes to address any deficits.

**Method:** An online questionnaire was distributed anonymously to employees and employers of small businesses. The data gathered included information on the participants' knowledge and perceptions on the law and their socio-demographic information. Kendall correlation test, generalized linear regression models and bootstrapping resampling method were employed to detect differences in the perceptions & knowledge of employees and employers, to evaluate the association between self-reported and tested knowledge, and to generate a SEM model of ACA perception and acceptance.

**Results:** Based on the analysis, we found that job status significantly affects the individual perception of the law ( $p = 0.004$ ). The study showed a statistically significant negative



association between the self-reported knowledge and the actual-tested knowledge of individuals ( $r = -0.4174$ , p-value of 0.01159). We found that interpersonal level had the highest impact on perception (coefficient of 5.67, p-value  $<0.05$ ) followed by community level (coefficient of 4.91, p-value  $<0.05$ ). The third highest impact on perception was due to society level (coefficient of 0.06, p-value of  $<0.05$ ). Intrapersonal level was noted to have a negative impact on perception; however, it was not significant (coefficient of -0.67, p-value  $>0.05$ ).

**Conclusion:** Individual perception is a key factor in adoption of new policies. A socio-ecological model of ACA acceptance can be a powerful tool in addressing the barriers and facilitators to the successful implementation of the new law and to modify the policies to address any deficits in the law.

## **INTRODUCTION**

According to a 2013 international survey, 37% of Americans, compared to 4% of individuals in the United Kingdom and 6% in Sweden, forgo recommended health care because of the high medical cost and inability to pay medical bills even with insurance coverage. The reasons Americans, including those with health insurance, struggle with affordable healthcare are thought to be the high cost-sharing liabilities as well as unrestricted out-of-pocket expenses. It is therefore, unsurprising that 75% of Americans support a major transformation of the current healthcare system in the United States (Access 2014).

Since the passage of Medicare and Medicaid in 1965, there had not been any major revisions of the healthcare laws in the United States until the recent implementation of the Affordable Care Act (ACA) or ObamaCare on March 23, 2010. The new law is 2,700 pages long and, as a result, is generally poorly understood in addition to being controversial (4). The main aim of the new legislation is to improve the overall quality and affordability of healthcare in the United States, to reduce the number of uninsured in the country, and to contain the mounting healthcare costs (ObamaCare 2014).

According to the 2012 National Health Interview Survey (NHIS), 1 in 3 Americans has difficulty paying their medical bills. The data further suggests that 54% of these individuals had employer-sponsored private insurance (ESI) compared to 30% of uninsured individuals. One of the reasons

that the majority of the individuals from the ESI group have difficulty paying their medical bills is the cost-sharing liability, which exceeds five percent of an individual's income. It is expected that the new health reform laws will minimize the medical debt problems facing many Americans by limiting the amount of cost-sharing liabilities under the private health plans, by ending the annual dollar limits on covered benefits, by providing subsidies and market reforms for individuals seeking non-group coverage, by mandating insurance policies to cover 10 essential health benefits, and by providing consumer assistance to individuals throughout the country (Pollitz et al 2014).

Despite these expected benefits, the new legislation still remains controversial and is not well accepted among small business owners. For instance, 50% of small business owners believed the new law would be bad for their businesses, according to a Gallup survey done in May 2013. Many small businesses held off hiring new employees and/or cut down current employee hours in order to avoid coverage for their employees (Vanorman et al 2013). However, there is no way of knowing the impact of the new laws on small businesses until it is fully implemented and evaluated, for which more time is needed.

Business owners and employees have many misconceptions regarding the new laws based on their own perceptions, which presents an obstacle in implementing the new laws and assessing its effectiveness. However, the status quo in healthcare system is not a feasible option, as suggested in the commonwealth fund survey (Access 2014), given the number of uninsured in the country, the rising cost of healthcare, the increasing number of individuals with medical debts, and the poor quality of healthcare when compared to other developed countries of the

world. As a result, it is fundamentally crucial to implement and test the effectiveness of the ACA and modify it accordingly.

**Perceptions:**

In psychology and the cognitive sciences, perception is defined as the process of gathering, interpreting, selecting, and organizing sensory information to give meaning to the environment. In marketing, customer perception is “critical and fundamental” as it influences purchasing decisions (Seetharaman et al 2013). Individual’s behavior is influenced by their perception (Danijela et al 2011). People rely on their perception of reality, and not on the actual reality, when they make decisions on how to behave. These perceptions of reality are often based on their personal characteristics such as “attitude, motives, interests, past experiences, and expectations” (Robbins, 2004).

Besides the influence of personal characteristics, socio-demographic characteristics also influence individuals’ perceptions and behavior (Seetharaman et al 2013). Current literature shows that factors such as job status, age, race, gender, political preference, and the socioeconomic status of the individuals independently influence their perceptions:

**Job Status:** Based on the influences of job status on perception, it is expected that the perception of the employers and the perception of the employees regarding the ACA mandates for small businesses will be different. According to the mandate, employers are required to provide insurance that covers a number of preventive care services at no cost to the employees. These added services, at no cost to the employees, will be beneficial to the employees; however, will

increase the premiums that the employers will have to pay per employee. For instance, Bastrop County, Texas estimated 4.64% increase in insurance rates, roughly \$2.65 million, to provide healthcare coverage to employees (Gardner 2014). Considering the added coverage, employees are expected to have positive perceptions; on the other hand, employers are expected to have negative perceptions due to increased cost of coverage.

**Age:** It is generally theorized that the younger population is less likely to accept the new law as they are healthier and are less likely to use health insurance than the older population, who have chronic diseases and frequently require healthcare visits. According to some analysts, healthcare plans are simply too “pricey to make sense” for the young adults (Gottlieb 2014). In addition, many of the young adults are covered under their parents’ policies until the age of 26 years (ObamaCare 2014). Considering these factors, age will likely influence the perceptions regarding the ACA.

**Political Preferences:** Similarly, it is anticipated that the political preferences of the participants will influence their perceptions of the new law. Republicans are more likely to have negative perceptions of the new law. For instance, except for Vermont, states that opted out of expanding Medicaid under the ACA have Republican governors that are against the program (ObamaCare 2014).

**Race:** Race is another factor that is expected to influence the perceptions towards the new law. Research has suggested that racial predispositions of many white Americans have influenced their opinions on health care. In his experiment over two waves, Antoine Banks induced

emotions among his subjects, and discovered that anger pushed racial conservatives to oppose the ACA health reforms; whereas, it triggered more support among racial liberals (Banks 2014). Shaw *et al* (2014) describes racial conservatives as individuals who believe that after the civil rights reforms of the 1960s race, ethnicity, and racism does not impact the public policy, and that the political and economic differences in the U.S. are due to differences in individual behavior and group cultures instead of “any systematic, institutional discrimination”. Radical liberals, on the other hand, are individuals who believe that race, ethnicity, and racism continue to significantly impact the current public policies, and that these factors are key factors affecting the political and economic differences in the U.S. (Shaw et al, 2015). Similarly, another study showed that individuals with anti-Black prejudice were more inclined to oppose the President and his policies, including healthcare reform laws (Knowles, Lowery, and Schaumberg 2010).

***Gender:*** Prior to the ACA, women were paying higher premiums (150% more) than men for insurance and were at times denied coverage because of gender-based preexisting conditions, such as breast cancer or C-section. With the new law, women will be able to get coverage at the same price as men, and will get added services such as maternity and new born care in addition to other preventive services such as mammograms and pap smears; and will be able to count birth control as part of preventive service (Arons 2012). Based on this, it is expected that women are more likely to support the new law.

***Socioeconomic Status:*** Individuals on the lower end of the socio-economic ladder may be more likely to support the new law as they stand to benefit substantially from it. Under the ACA, individuals who are at 138% of the Federal Poverty Level (~ \$23,550 for a family of four) will

be qualified for Medicaid expansion. It is estimated that over 15 million individuals, including children, will be eligible for Medicaid in States participating in Medicaid Expansion (ObamaCare 2014).

### **Our Theoretical Framework: The Socio-Ecological Model:**

As noted above, studies have shown that individual characteristics as well as socio-demographic factors independently play a role in shaping individuals' perception of the ACA. However, these studies mainly focused on a single level analysis on individuals' perception. Such approaches fail to incorporate the precise impact of the complex association between multi-level factors and their collective impact on individuals' perception. Thus, it is important to consider a comprehensive approach such as the socio-ecological model (SEM) when studying the individuals' perception of the ACA.

SEM is a comprehensive health promotion model that incorporates multiple levels of influence to promote health behavior and outcomes (McLeroy et al 1988; Stokols 1996). In this study, we will be using the four-levels model created by CDC (2007). These levels of influence include intrapersonal, interpersonal relationship, community, and society. In this study, we intend to delineate the collective impact of multiple levels of influence on individuals' perception of the ACA. The approach could potentially assist in identifying avenues susceptible to intervention strategies at multiple levels of influence to ultimately promote an improved healthcare system in the United States. To the best of our knowledge, this study is the first of its kind to explore the relationship across the complex socio-ecological factors and their cumulative role in influencing individuals' perception of the new law.

**Hypothesis:** We believe that individuals' perceptions influence their acceptability of the ACA and the socio-demographic environment within which the individual functions modulate their perceptions and acceptability of the ACA. We hypothesize that (1) there is a difference between the perceptions of the employers and the perception of the employees regarding the ACA mandates for small businesses, (2) socio-demographic factors influence individuals' perception of the law, and (3) there is a difference between the self-reported knowledge and the actual knowledge of individuals regarding the ACA mandates for small businesses. The purpose of this study is to understand the individuals' and environmental determinants that collectively influence acceptance of Affordable Care Act mandates for small businesses. This information can help create a theoretical framework, called a socio-ecological model of Affordable Care Act Acceptance. The findings from this study can help modify policies to address these barriers in facilitating the acceptance of the new law or to modify the laws to address any deficits.

**Research Objective:** The objectives of this study are to: (1) evaluate the relationship between the employers' and the employees' perceptions regarding the ACA mandates for small businesses, (2) evaluate the relationship between the self-reported and the tested knowledge of individuals regarding the ACA mandates for small businesses, and (3) determine if socio-demographic factors influence individual's perception of the law. The secondary objective of the study is to create a socio-ecological model to understand individuals' and environmental determinants that influence acceptance of ACA mandates for small businesses.



## **RESEARCH QUESTIONS**

1. Is there a correlation between the perception of the employers and the perception of the employees regarding the ACA mandates for small businesses?
2. How do socio-demographic factors modulate the individual's perception of the ACA?
3. Is there a difference between the self-reported knowledge and the actual knowledge of individuals regarding the ACA mandates for small businesses?

## METHODS

### **Study Design and Population:**

Participants are employers and employees of all businesses in the U.S. Individuals were included in the study if (1) they were between the ages of 18 and 70 years; (2) they had consented to participate in the study; and, (3) they were full-time (worked at least 30 hours a week) employees in the U.S., or were U.S. employers. The study definition of a full-time employee was directly taken from the definition used in the Patient Protection and Affordable Care Act of 2010.

Individuals were excluded from the study if (1) they were younger than 18 years of age or older than 70 years of age; (2) they had not consented to participate in the study; and, (3) they were part-time (worked less than 30 hours a week) employees in the U.S.

An online questionnaire was developed using the information from an extensive literature review. The original survey contained 29 questions on: participants' job status (employee vs. employer), their insurance coverage status before and after the implementation of the ACA, their self-reported knowledge and actual knowledge test of the law, their perception of the law (positive or negative), employees' intent on purchasing the insurance on the healthcare market exchange if their employers do not provide coverage, and the participants' socio-demographic information including age, gender, ethnicity, marital status, political views, religion, education and income level, number of household members, residential area, role at work, self-reported health and self-reported health when compared to others .

A member of the Industrial-Organizational (I/O) psychology department reviewed the questionnaire for validity and reliability using the psychometric assessment tool. The questionnaire was modified based on I/O psychology's recommendations. The updated version of the questionnaire was distributed online using a recruitment email with the survey link to students and staff members of the University of South Florida and other volunteers for further validation. Twenty-four volunteers participated and provided feedback on the questionnaire.

The final version was drafted based on the feedback from the 24 volunteers and the I/O psychology's input. This online questionnaire was distributed anonymously to employees and employers of small businesses across the United States. The survey questions were same for both the employees and the employers except for (1) one additional question for the employees that assessed their intent to purchase insurance on health exchange if their employers did not provide coverage, and (2) difference in the phrasing of the questions to make the questions more valid for the employers and the employees.

Despite distributing the recruitment email to over 300 businesses across the country, we failed to recruit a single participant. As a result, we approached the local OSHA consultation group, who provides courses to local business owners, to help us recruit participants. In addition, we also asked the American College of Occupational and Environmental Medicine to help with recruitment for this study by distributing the recruitment email to their members. And, we hired a research assistant to visit local businesses to recruit participants. Using our best efforts, we were able to obtain 27 complete surveys.

## Statistical Analysis:

The main questions in this study are: (1) whether there is a correlation between the perception of the employers and the perception of the employees regarding the ACA mandates for small businesses, (2) whether the socio-demographic factors influence these perceptions, and (3) whether there is a difference between the self-reported knowledge and the actual knowledge of individuals regarding the ACA mandates for small businesses.

***Hypothesis 1:** There is a difference between the perception of the employers and the perception of the employees regarding the ACA mandates for small businesses.*

We started with using the Fisher exact test to learn the relationship between job status and socio-demographic factors (Table 1). To determine the difference between employers' and employees' perception of the law, we used the combination of the Kendall correlation test, generalized linear regression model test and the resampling method of bootstrapping with replacement. Since our sample size is small, we used the bootstrapping methods, which allow us to make more accurate inferences (Fox, 2008).

### Simulation Steps

1. Resampling the new dataset
2. Calculate the mean of Perception for Employer and Employee
3. Perform Kendall correlation test to collect its estimator and p-value
4. Perform GLM to collect the coefficient of Job\_S and p-value
5. Repeat step 1-4 for 10000 times

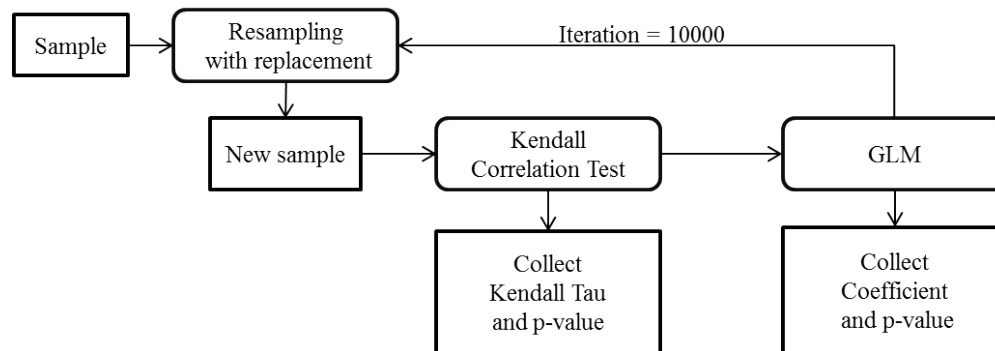


Figure 1: Diagram 1: Simulation steps used to test hypothesis 1.

Table 1. Socio-demographic Characteristics by Job Status Based on Survey Response (N=27)

	<b>Employer (n=6)</b>	<b>Employee (n=21)</b>	<b>p-value</b>
<b>Age, n (%)</b>			0.123
18-29	1 (16.67)	3 (14.29)	
30-49	1 (16.67)	12 (57.14)	
50-64	3 (50.00)	6 (28.57)	
65+	1 (16.67)	0 (0.00)	
<b>Education n (%)</b>			0.662
Postgraduate	4 (66.67)	11 (52.38)	
Others	2 (33.33)	10 (47.62)	
<b>Gender, n (%)</b>			
Male	5 (83.33)	10 (47.62)	0.182
Female	1 (16.67)	11 (52.38)	
<b>Marital Status n (%)</b>			0.628
Married	5 (83.33)	13 (61.90)	
Others	1 (16.67)	8 (38.10)	
<b>Race n (%)</b>			0.153
White	2 (33.33)	15 (55.55)	
Non-white	4 (66.67)	6 (22.22)	
<b>Ethnicity, n(%)</b>			NA
Non-hispanic	6 (100.00)	19 (90.48)	
Hispanic	0 (0.00)	2 (9.52)	
<b>Religious View n (%)</b>			0.187
Christianity	2 (33.33)	14 (51.85)	
Others	4 (66.67)	7 (25.93)	
<b>Household Member</b>			0.182
less than 3	5 (83.33)	10 (47.62)	
not less than 3	1 (16.67)	11 (52.38)	
<b>Household Income</b>			NA
less than 100k	0 (0.00)	4 (19.05)	
not less than 100k	6 (100.00)	17 (80.95)	
<b>Residential Area n (%)</b>			NA
Rural	0 (0.00)	2 (9.52)	
Others	6 (100.00)	19 (90.48)	
<b>Political View n (%)</b>			NA
Democrat	2 (33.33)	8 (38.10)	
Republican	2 (33.33)	8 (38.10)	
Others	2 (33.33)	5 (23.81)	
<b>Job Position n (%)</b>			0.004
Upper management	5 (83.33)	3 (14.29)	
Others	1 (16.67)	18 (85.71)	

**Hypothesis 2:** *Socio-demographic factors influence individuals' perception of the law.*

To understand the association between the socio-demographic factors and individuals' perception, we assumed that there are four latent variables, named intrapersonal, interpersonal, community and society. We assigned each socio-demographic factor, also known as observed variables, to one of the four levels of influence of the SEM (Table 2).

Table 2: Shows list of assigned observed variables under each latent variable.

<b>Latent Variable</b>	<b>Observed Variable</b>
Intrapersonal	Age ( <i>Age</i> ), Education ( <i>Edu</i> ), Gender ( <i>Gen</i> )
Interpersonal	Marriage ( <i>Mar</i> ), Race ( <i>Race</i> ), Ethnicity ( <i>Eth</i> ), Religious ( <i>Rel</i> ), Household member ( <i>HoS</i> )
Community	Household Income ( <i>HoI</i> ), Residential Area ( <i>Area</i> )
Society	Political Views ( <i>Pol</i> ), Job position ( <i>PoS</i> )

We ran four generalized linear regression models (*Equations 1-4*) for each latent variable to determine which observational variable had a significant impact on their assigned latent variable.

Then we combined the four latent variables to recreate a regression model (*Equation 5*) to determine the impact of each latent variable on individuals' perception of the ACA.

***Equations 1-4: Generalized linear regression model for evaluating the impact of each observational variable on their assigned latent variable:***

*Equation 1:*  $Intra = Age + \lambda_1 Edu + \lambda_2 Gen$   
*Equation 2:*  $Inter = Mar + \lambda_3 Race + \lambda_4 Eth + \lambda_5 Rel + \lambda_6 HoS$   
*Equation 3:*  $Comm = HoI + \lambda_7 Area$   
*Equation 4:*  $Socie = Pol + \lambda_8 Pos$

***Equation 5: Regression model for evaluating impact of each latent variable on perception:***

*Equation 5:*  $Perc = \beta_1 intra + \beta_2 inter + \beta_3 comm + \beta_4 socie$

We generated the following SEM diagram based on the four latent variables and observed variables of SEM (Diagram 2).

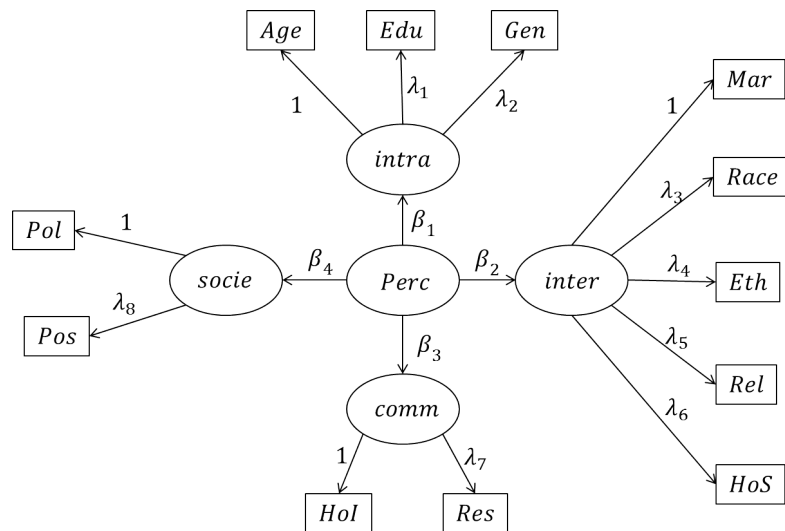


Figure 2: Diagram 2: Socio-Ecological Model of perception of the Affordable Care Act mandate for small businesses.

Due to the small sample size we used the bootstrapping method following the application of generalized linear regression method.

### Bootstrapping + SEM

#### Simulation Steps

1. Resampling the new dataset
2. Perform SEM collect all coefficients
3. Repeat step 1-2 for 10000 times

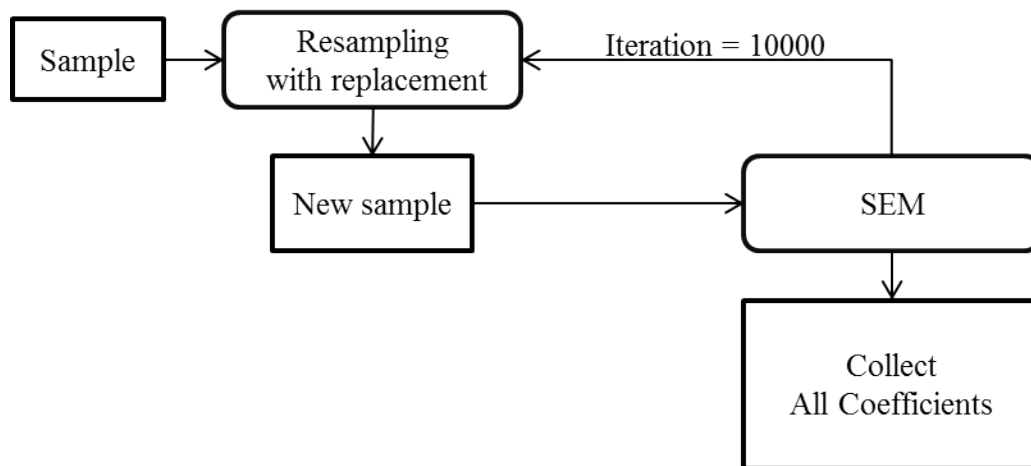


Figure 3: Diagram 3: Simulation steps used to test hypothesis 2.

***Hypothesis 3:*** *There is no difference between the self-reported knowledge and the actual knowledge of individuals regarding the ACA mandates for small businesses.*

We ran the Kendall's rank correlation test 10,000 times to determine the association between the "self-reported knowledge" and "actual knowledge".

Statistical significance was set at 0.05 levels *a priori*. R statistical package (version 2.15.1) was used for the analysis. Type I error rate at 5% was used for all hypothesis testing.



## RESULTS

Recruitment email was initially distributed to 300 employers across the country on November 1, 2014. When there was no response by the mid-November, we decided to seek help from the USF OSHA consultants, who works with local small businesses, and from the local and national chapters of the American College of Occupational and Environmental Medicine (ACOEM). We also hired a research assistant to visit the small businesses in Tampa, FL for recruitment. In addition, we had contacted the CEO of a local business, who had an established relationship with the USF College of public health, to participate in the study. However, the owners declined to participate, as they did not want their employees to take time away from work to complete the surveys.

Despite our best efforts, we recruited 32 participants. Five out of the thirty-two participants were excluded from the study because (1) they did not give their consent to the study ( $n=2$ ) or (2) they did not answer all of the questions on the survey ( $n=3$ ). Thus, the survey response rate was 84.4% ( $N=27$ ). Of these, 6 were employers and 21 were employees. The final sample available for this analysis was 27 (Table 1). Fisher exact test showed that there is no statistically significant difference between job status and socio-demographic characteristics except with the job position, where the majority of employees have non-upper management positions ( $p = 0.004$ ) (Table 1).

Based on the results (Diagram 4) of generalized linear regression model (*Equation 5*) and bootstrapping, we found that interpersonal level had the highest impact on perception (coefficient of 5.67, p-value <0.05) followed by community level (coefficient of 4.91, p-value <0.05). The third highest impact on perception was due to society level (coefficient of 0.06, p-value of <0.05). Intrapersonal level was noted to have a negative impact on perception; however, it was not significant (coefficient of -0.67, p-value >0.05).

Additionally, referring to diagram 4, we found that education had a significantly negative impact on intrapersonal level (*Equation 1*) with a coefficient of -4.44 (p-value <0.05), whereas, age and gender did not significantly impact the intrapersonal level. Likewise, number of household members was the only observational variable that significantly impacted interpersonal level (*Equation 2*). Our results showed that race, marriage status, ethnicity, and religious views did not significantly impact the interpersonal level (Diagram 4).

Furthermore, referring to diagram 4, we found that residential area had a significantly negative impact on community level (*Equation 3*) with a coefficient of -1.32 (p-value <0.05), whereas, household income did not significantly impact the community level. Lastly, we found that job position had significantly negative impact on society level (*Equation 4*) with a coefficient of -12.77 (p-value <0.05); while political views had no significant impact on society level (Diagram 4).

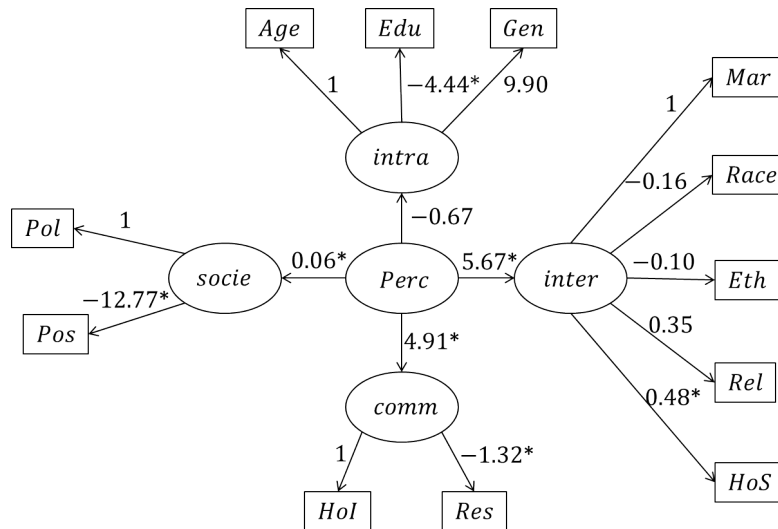


Figure 4: Diagram 4: Socio-Ecological Model, with coefficients, of perception of the Affordable Care Act mandate for small businesses with coefficients. Diagram summarizes the impact of each observational and latent variable on the perception.

\* = Statistically significant at 0.05 level.

The Kendall correlation between the self-reported knowledge and the actual knowledge is -0.4174 with a p-value of 0.01159 (<0.05), indicating a statistically significant negative association between the two variables. We consistently continued to get significantly negative correlation between the two variables even after running the Kendall correlation test 10,000 times. We found that each time (10,000 times) the p-value was less than 0.05, which means that with 100% certainty we will reject the null hypothesis. That is, there is statistically negative association (discordant pair) between self-reported knowledge and actual-knowledge at the significant level of 0.05 (Histogram 1 & 2).

Before bootstrapping, it was difficult to detect any difference between the employers' and the employees' perceptions of the new law (Diagram 5). However, after bootstrapping we noted a statistically significant difference between the two perceptions, with employees having a more positive perception of the law than the employers (Diagram 6). After running the generalized

linear model 10,000 times (Histogram 3), we found that 9976 of 10,000 times the p-value was less than 0.05 (Histogram 4). Thus, there is statistically significant job status effect on perception of the new law.

## DISCUSSION

We had hypothesized that there is a difference between the employers' and the employees' perception of the law. The results of this study supported this proposition and further added to our knowledge that employees had a more positive perception of the law than the employers (Diagram 6 & Histogram 4). As the law mandates employers to provide coverage of preventive care services at no cost to the employees, and an estimated increase in premium rates paid by employers (Gardner, 2014), it was foreseeable that employees will have a more positive perception of the laws as they will benefit from the additional coverage.

The findings from this study support the hypothesis that the socio-demographic factors influences individual's perception of the ACA. Additionally, the results provided information on the extent of impact each socio-demographic factor had on individual's perception within each level of influence, and the extent of impact each level of influence had on individual's perception. To the best of our knowledge, no other existing literature has information on the impact of individual socio-demographic factor or the level of influence on the individual's perception of the ACA. The results of this study are the first to indicate that interpersonal level, followed by community and society level, significantly impact individual's perception of the ACA, and that the intrapersonal level has the least impact on individual's perception of the law (Diagram 4). This finding has an enormous implication for future studies on perceptions and acceptance of the ACA as it suggests that interventional strategies applied at interpersonal,

community, and society levels would be more effective in addressing the barriers and facilitators of the law than the application of strategies at the intrapersonal level.

The study findings also supported the hypothesis that there is a difference between the self-reported and the actual knowledge of individuals regarding the ACA mandates for small businesses. Literature shows that many Americans do not know basic details of the ACA (Ergun, 2013; Himelfarb, 2015; Frakt, 2015). However, contrary to the popular belief, the results in this study demonstrate a negative correlation ( $r = -0.4174$ ,  $p$ -value of 0.01159) between the self-reported and the actual knowledge, suggesting that the participants possess more knowledge on the ACA mandates for small businesses compared to their self-perceived knowledge. This finding has a widespread implication for the proponents of the ACA as it implies that comprehension of the laws is not as considerable a barrier in accepting the law as suggested in the literature. It presents uncertainties on the effectiveness of currently used strategies, used by the proponents of the ACA, which mainly focuses on educating Americans on the ACA mandates, and warrants the need to explore other approaches to address the barriers to acceptance of the laws.

### **Limitations:**

Several limitations need to be addressed when considering the study findings. One of the biggest limitations is the small sample size. Despite of our best efforts, we failed to recruit more than 27 participants. We believe there were several reasons for the small sample size, including: (1) lack of any monetary incentives for the potential participants to take the survey, (2) lack of an established relationship with the businesses and the use of recruitment emails, which likely

resulted in the emails going to the spam box, (3) controversies surrounding the ACA likely kept potential subjects from participating, and (4) specific inclusion and exclusion criteria set *a priori*. Additionally, the time period when the recruitment process started, November 2014 to December 2014, may have resulted in a small sample size as it was around the holidays season and near the end of the year when individuals were likely preoccupied with holiday shopping, spending time with their families, and/or with completing reports and projects before the end of the year.

Another reason for a small sample size is likely due to the controversial topic of the study. We had approached a small business that had an established relationship with the University of South Florida; however, the CEO of the company refused to participate. Even after we hired a research assistant to visit the local businesses for recruitment we failed to recruit additional subjects. It is likely due to the controversial subject of the study and likely that the employers did not want their employees to take the survey during the work hours, which could interfere with their productivity.

**Strengths:**

The biggest strength of this study is its novel use of the SEM model to evaluate the cumulative impact of multiple levels of influence of individuals' perception on the ACA. To the best of our knowledge this study is the first study to use this comprehensive approach to understand the factors influencing the acceptance of the ACA. Prior to distribution of the questionnaire to the potential subjects, it was validated (1) using the psychometric assessment tools by a member of the I/O psychology department and (2) by pretesting the questionnaire by 24 volunteers who took

the survey and provided useful feedback on improving the validity and reliability of the questionnaire.

Given the recent implementation of the ACA in 2010, there is a considerable lack of quality research regarding the new laws and we believe that our study will lay the foundation for future studies to better understand the barriers and facilitators to effectively implement the ACA and to address any deficits in the policies to improve the ACA and the healthcare system in the U.S. Even with the small sample size, we did manage to have a diverse group of participants in the study representing diverse beliefs and socio-demographic characteristics. Also, to compensate for a small sample size, we applied bootstrapping method to provide more accurate inferences (Fox, 2008).



## **CONCLUSION**

Individual perception is a key factor in adoption of the new law. The initial report of our analysis indicates that the individual perception of the ACA was more significantly impacted at the interpersonal, community, and society level rather than at the intrapersonal level. This information can help policy makers better understand the barriers and facilitators to the acceptance of the new laws. And it can further help them identify, develop, and direct interventions at multiple levels of influence to improve the health outcomes.

Thus, a socio-ecological model of Affordable Care Act acceptance is a powerful tool to use in addressing the barriers and facilitators to successfully implement the new law and to modify the policies to address any deficits in the law. Future studies should focus on further expanding the existing model from this study by enrolling larger sample population and by incorporating additional information to the existing levels of influence, such as specific information on the participant's regional location in the country, comorbidities, and perceptions of their healthcare providers.

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## APPENDIX: ADDITIONAL FIGURES

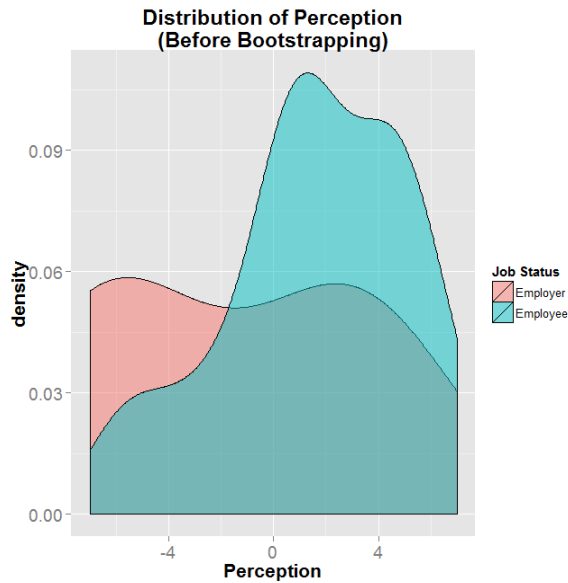


Figure 5: Diagram 5: Distribution of employers' and employees' perception of the law before bootstrapping. It is difficult to detect the difference of their perception before bootstrapping.

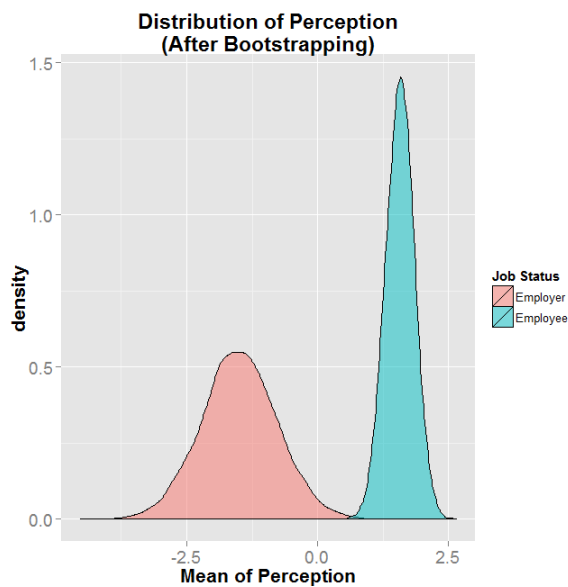


Figure 6: Diagram 6: Distribution of employers' and employees' perception of the law after bootstrapping, indicates that the mean of perception of employees is more positive than the mean of perception of employers.

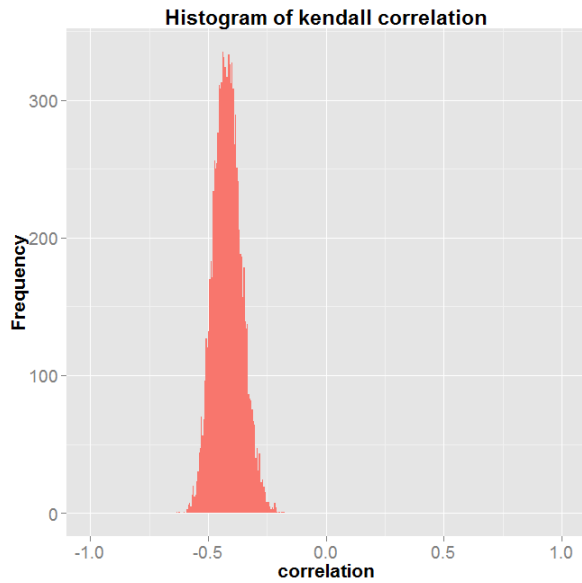


Figure 7: Histogram 1: Kendall tau distributed below after running Kendal correlation test 10000 times, suggests a negative correlation between self-reported and actual knowledge.

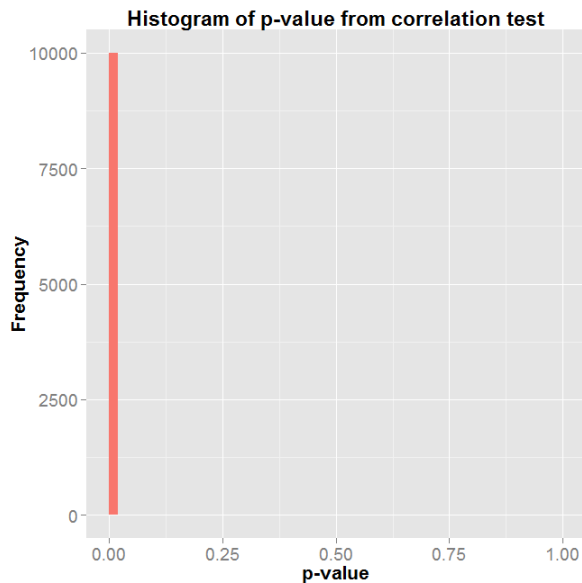


Figure 8: Histogram 2: Histogram of p-value after running the Kendall tau test 10,000 times, suggesting a statistically significant negative correlation between self-reported and actual knowledge.

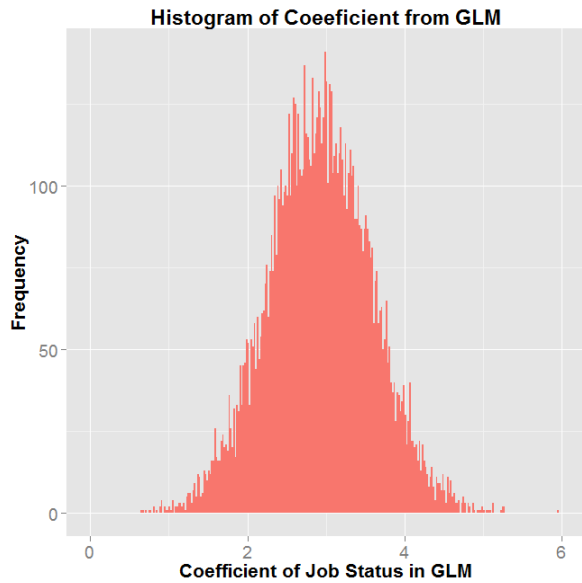


Figure 9: Histogram 3: After running GLM 10000 times, the coefficient of Job\_S is distributed below.

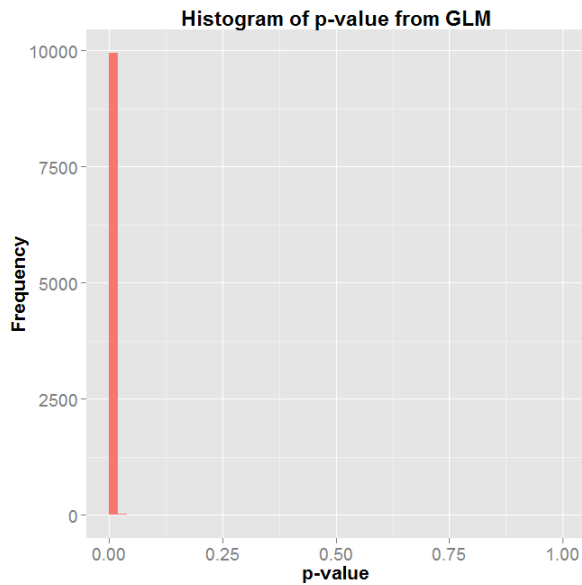


Figure 10: Histogram 4: Histogram of p-value from GLM shows that 9976 of 10000 times, the p-value is less than 0.05, suggesting a statistically significant job status effect on perception.