An Analysis of the Association Between Adverse Childhood Experiences and Food Insecurity within the United States

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within the United States

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By

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Abstract

Adverse childhood experiences and food insecurity are significant public health issues within the United States. Previous studies have established the overall relationship between ACEs and food insecurity. This research investigates the statistical relationship between individual ACE indicators and food insecurity as well as the relationship between having two or more ACEs and food insecurity.

Keywords: adverse childhood experiences, food insecurity

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Introduction

Within the United States, research into Adverse Childhood Experiences, or ACEs, is demonstrating that these childhood trauma experiences are frequently occurring and have significant influences on health outcomes. These traumas can be various forms of abuse, neglect, or even household dysfunction and are seen throughout all populations within the U.S. (CDC, 2019b). ACEs are considered to be preventable occurrences yet are highly prevalent throughout the country. Recent studies have shown that there is a link between ACEs and food insecurity within the United States. Research has shown that there are extensive short-term and long-term negative health outcomes related to ACEs and food insecurity.

The purpose of this study is to further investigate the relationship of individual ACEs and food insecurity within the United States, specifically within the year 2017. This research also investigates the relationship for individuals with two or more ACEs and food insecurity using statistical analysis methods.

Literature Review

Adverse Childhood Experiences

Research into Adverse Childhood Experiences, or ACEs, first began in the mid-1990s with the CDC-Kaiser Permanente ACE study, which revealed the connection between traumatic events occurring in childhood and negative health outcomes experienced in adulthood. This study took place from 1995 to 1997 and involved two groups of data collection, which done at Kaiser Permanente in Southern California (Centers for Disease Control and Prevention [CDC], 2019a). The CDC-Kaiser study divided ACEs into three distinct categories: abuse, household challenges, and neglect (CDC, 2019a). This study also established the mechanisms by which ACEs impact an individual's overall health and wellbeing through the course of their life (CDC 2019a). More recently, the Behavioral Risk Factor Surveillance System and the National Survey of Children's Health have each collected ACE data on a state-based level. Both are annual surveys used to collect data on the health and wellbeing of children with the United States.

ACEs have been shown to be strong predictors of negative behavioral, physical, and mental health outcomes. The more ACEs an individual has, then the higher their chance is for partaking in risky behavior and experiencing these outcomes. Research has shown that 61% of adults have at least one ACE and 16% of adults have four or more (CDC, 2019b). One in ten children have three or more ACEs, deeming them to be high risk (Sacks & Murphy, 2018). Arizona, Arkansas, Montana, New Mexico, and Ohio see a rate of one in seven children experiencing childhood trauma (Sacks & Murphy, 2018).

Nine Indicators

Within the National Survey of Children's Health, there are nine indicators of childhood trauma. Survey participants are asked to report information on whether or not said parent is separated or divorced, if a parent has served time in jail, or if a parent has died (Sacks & Murphy, 2018). The NSCH also measures parental domestic violence, neighborhood violence, racial discrimination, history of substance abuse from someone living in the home, and if anyone living within the home has a history of mental health disorders (Sacks & Murphy, 2018). A final childhood trauma measure seen within the National Survey of Children's Health is whether or not the surveyed family has ever had difficulty getting by on their income (Sacks & Murphy, 2018). Across U.S. states, children with more or more of these nine indicators of ACEs ranges from 38.1% to 55.9% (Bethell et al., 2017). The range for children within the states with two or more ACEs is 15.0% to 30.6% (Bethell et al., 2017).

Economic Hardships

Much of the ACE research has focused specifically on childhood abuse and neglect, with little attention to economic hardships. Among women, childhood trauma including economic adversity has been linked to effects on physical and mental functions in adulthood (Mäkinen et al., 2006). Within the Mäkinen (2006) study, economic difficulties were seen as being one of the most common experienced adverse childhood events. Childhood socioeconomic situations can strongly influence adult socioeconomic situations; thus, if a child experiences economic adversity, then they are highly likely to continually experience this adversity into adulthood (Braveman et al., 2017). Economic adversity, home health, and food insecurity are all linked (Higashi et al., 2017). In a recent study, participants reported that economic-induced stress

resulted in feelings of being overwhelmed when trying to meet basic household needs such as food supply (Higashi et al., 2017).

Food Insecurity

Food insecurity can be defined as a reduction in food intake and a disruption of eating patterns (United States Department of Agriculture [USDA], 2019). In 2018, 11.1% of households within the United States were considered to be food insecure (USDA, 2019). Of this 11.1%, 6.8% were considered to have had low food security and 4.3% were considered to have very low food security (USDA, 2019). Children living in food insecure households in 2018 totaled 6.0 million (USDA, 2019). Food insecurity has been associated with ACEs and can result in similar short-term and long-term negative health outcomes (Hecht et al., 2018).

Health Disparities

In regard to ACEs, there are significant disparities seen in regard to gender and race. Females and racial/ethnic minorities are more likely to have four or more ACEs (CDC, 2019b). Non-Hispanic African American children account for 12.7% of children within the U.S., and have the highest rate of experiencing at least one ACE at 63.7% (Bethell et al., 2017). Non-Hispanic Other and Hispanics have the next highest rates for experiencing at least one ACE, with 51.5% and 51.4% respectively (Bethell et al., 2017). In addition to racial disparities for ACEs, there are disparities seen within socioeconomic status. Although ACEs are prevalent in all income brackets, 58% of children with one or more ACEs are within households that have income levels that are less than 200% of the federal poverty line (Bethell et al., 2017).

There are also significant health disparities seen in regard to food insecurity within the

U.S. Non-Hispanic African Americans have an 21.2% rate of food insecurity, with 9.1%

experiencing very low food security (USDA, 2019). Both of these rates are higher than the

national averages. Hispanic household experience rates of food insecurity at 16.2% and very low

food security at 5.1% (USDA, 2019). Low-income households whose incomes fall below 185%

of the federal poverty line have a food insecurity rate of 29.1% (USDA, 2019).

Negative Health Outcomes

Throughout childhood, individuals can experience varying amounts of stress. A positive

stress response is normal, as these responses are typically short-lived and relatively mild (Franke,

2010). Tolerable stress, although more severe than positive stress, still allows for the body to

fully recover once the stressor is removed (Franke, 2010). The most severe form of stress is toxic

stress. Adverse Childhood Experiences are shown to initiate a toxic stress response in children

and this "prolonged activation" means the body is unable to fully recover (Franke, 2010). This

chronic stress exposure can lead to many negative health outcomes seen later in adulthood.

Toxic stress as it is relative to ACEs can impact a child's immune system, increasing the

overall risk of infection, as well as frequency (Franke, 2010). In addition to immune issues,

various disorders like depression, PTSD, and psychosis are also possible negative health

outcomes (Franke, 2010). The adverse effects of ACEs also show physical negative outcomes.

Individuals that experience toxic stress and specific ACEs are at an increased risk for chronic

conditions such as obesity, chronic obstructive pulmonary disease (COPD), asthma, and stroke

(Merrick et al., 2019). In addition to these potential chronic negative health outcomes,

individuals with ACEs are more at risk of a premature death than those without (Brown, 2009). It

has been found that individuals with more than six ACEs died roughly 20 years on average

before individuals without an ACE (Brown, 2009). Years of potential life lost are 1.5 times

greater for people with 6 or more ACEs than for people without ACEs (Brown, 2009).

Methods

The National Survey of Children's Health (NSCH) is a national-level, self-reported

survey collecting data on child health and overall well-being. Data are gathered on children aged

0-17 investigating emotional and physical health. The survey was redesigned in 2015, with the

updated design being implemented since. From 2016, the NSCH has been administered by the

U.S. Census Bureau with data collection taking place through mail or internet surveys. The

current survey consists of two questionnaires. The first is a household screener that is used to

determine if there is a child within the home and to choose a specific child to collect data about.

The second questionnaire is a topical questionnaire targeted to three age groups: 0-5 years, 6-11

years, and 12-17 years.

The 2016 and 2017 surveys used address-based sampling across all 50 states and the

District of Columbia. The 2017 survey was specifically aimed at obtaining an equal number of

samples between states. Household addresses were randomly chosen from the Census Master

Address File (MAF) and received an invitation letter with instructions to complete the initial

screener survey. If the screener survey was completed and it was identified that there was a child

within the home, then the respondent could choose to participate in the more detailed topical

questionnaire for the selected child. In the 2017 NCSH, there were a total of 21,599 respondents.

Connecticut had the highest frequency of 470 respondents and Arkansas had the lowest

frequency of 343 respondents.

The independent variables for this research are the nine indicators of Adverse Childhood Experiences in addition to the indicator for an individual having two or more ACEs. Food insecurity is being measured as the dependent variable. Race, age, and gender are used as control variables. Age is divided into two groups: young than nine years old, and nine years or older. The dichotomous racial groups are white and non-white. Overall, for each of the independent variables and dependent variable, missing data is recoded to 99 No valid response. All data points marked as 99 will be recoded for all variables to factor out missing data.

STATA is used as the analytic statistical software for this research.

Analytic Strategy

In order to create a dichotomous variable, food insecurity data is also recoded. Data points labeled "We could always afford to eat good nutritious meals" will be considered in this research as being "Food Secure". The other three responses for this variable will be relabeled and considered as being "Food Insecure". After recoding, there are 5,556 children deemed as being food insecure. Control variables are analyzed using a Chi-squared test to investigate the possibility of a significant relationship, in addition to providing a breakdown of the sociodemographic factors and ACEs or food insecurity experienced.

Once all data has been recoded, a Chi-squared test is used to investigate the relationship between each of the nine individual ACEs and food insecurity. A Chi-squared test is used as it is the most ideal for tests involving nominal and/or ordinal variables. Level of significance is set to $\alpha=0.05$. The null hypothesis is that there will not be a significant relationship between the individual ACE being tested and food insecurity. The alternative hypothesis is that there is a significant relationship between the individual ACE being tested and food insecurity. A Chi-

squared test is also used to investigate the relationship between having two or more ACEs and food insecurity. The level of significance is also set at α=0.05. The null hypothesis is that there will not be a significant relationship between having two or more ACEs and food insecurity. The alternative hypothesis is that there is a significant relationship between having two or more ACEs and being food insecure.

Results

Chi-squared tests investigating the relationship between each individual ACE and food insecurity revealed that there are statistically significant relationships. All nine ACE variables were shown to have significance levels of $p \leq 0.05$. Thus, the null hypothesis is rejected. The ACE1 variable shows an inverse relationship. With respondents reporting having never experienced difficulty covering basics like food or housing, 95.25% were considered food secure while 4.77% were food insecure. Respondents reporting that it was very often difficult to cover basics like food or housing showed 85.13% as being food insecure and 14.87% as being food secure. Similar results can be seen in many of the other ACE indicators. For the ACE5, ACE6, and ACE7 variables, a majority (>50%) of respondents that reported the child experiencing the ACE also reported being food insecure. Logistic regression for each individual ACE supports the Chi-squared tests. STATA results from the logistic regressions show that all nine ACE variables have significance levels of $p \leq 0.05$ and supports the rejection of the null hypothesis.

The overall relationship comparison between ACEs and food insecurity is demonstrated when the relationship between having two or more ACEs and food insecurity is investigated. As with each individual ACE, a Chi-squared test was performed. This Chi-squared test shows a p-value ≤ 0.05. Therefore, the null hypothesis is rejected. Of the 21,174 recorded data points for the ACE2more_17 variable, 3,949 reported having children that experienced more than two

ACEs. A majority of these respondents reported being food insecure, meaning 2,201 (55.74%) respondents experienced more than two ACEs and were also considered to be food insecure. Results can be seen in Tables 3A-3J in the appendix.

Discussion

The purpose of this research is to investigate the relationship between ACEs and food insecurity based on the national level survey conducted by the national survey of Children's Health. Overall, this research emphasizes the continued relationship between childhood traumatic experiences and economic hardships such as food insecurity experienced within the home. Adverse childhood experience research is continually evolving within the field of public health. ACEs alone have been indicated as being significant influences towards negative health outcomes later in life (CDC, 2019b). When combined with other factors like food insecurity, the likelihood of these negative health outcomes increases. Certain portions of the surveyed population are shown to be at greater risk of having an adverse childhood experience or experiencing food insecurity. Older children and teenagers are more likely to have at one or more ACEs given their increased age. In addition to age disparities there are also racial disparities seen with ACEs, with non-whites being more affected by ACEs than whites. Based on the National Survey of Children's Health, both genders are relatively equally affected by ACEs. In regard to food insecurity, the surveyed population indicates that racial disparities are significant. Age and gender demographics are equally affected by food insecurity.

Health disparities are a significant issue within the field of public health, and this research continues to highlight this issue. Although the issue of health disparities is one that will always be a problem, there are ways that the gaps between population subgroups can be

minimized. This research expands on that by demonstrating which particular ACE indicators that affect certain population subgroups more than others. Future policies and interventions can therefore be targeted towards these specific ACEs that affect certain population subgroups more than others. Although no causal relationship is established in this research, ACEs are shown to be linked to economic hardships. While one indicator of adverse childhood experiences includes difficulty covering basics like food or housing, food insecurity is a specific economic hardship that is being further investigated in this research.

The three categories of ACEs are abuse, neglect, and household dysfunction. The National Survey of Children's Health ACE indicators predominantly focus on household dysfunction experiences. Researching the relationship between food insecurity and adverse childhood experiences delves into a deeper investigation of household dysfunction for the surveyed participants. There are three ACE indicators where a majority of respondents were deemed to have experienced that indicator and were also considered food insecure. Two of these three indicators fall within the household disparity ACE category and the other within the abuse category. This exemplifies the household dysfunction dynamic between traumatic experiences and food insecurity.

ACEs and food insecurity are both seen as initiators of a toxic stress response. An increased and prolonged amount of toxic stress has significant impacts to an individual's overall health and well-being and can further perpetuate the cycle of adverse childhood experiences. As a child experiences an increased number of traumatic events the level of toxic stress also increases. Toxic stress has been shown to alter brain function and the genetic impact from continual toxic stress can create a cycle that is repeated in future generations (CHAMI, n.d.).

Determining the causes are the contributors to toxic stress can significantly influence potential policies and interventions and can reduce the cyclical nature of adverse childhood experiences.

From a health behavior standpoint, ACEs and childhood food insecurity are seen at an interpersonal level of social interaction. Children can be heavily influenced based on the interactions between them, family members, friends, and general members of society. The relationships that children experienced within their social networks, particularly within the household, can influence their experience of childhood trauma. As children have a more external locus of control, they are unable to control whether or not they experience these traumatic events. As these children age, locus of control shifts to internal, which can be seen in the increased likelihood of participating in risky behaviors. Determining the level of social interaction shows the need for outside intervention to help break the cycle of adverse childhood experiences and food insecurity within these surveyed homes.

Implications

When looking at policies and interventions, a holistic approach can better target each ACE indicator in regard to food insecurity since there is no causal relationship established. Primary prevention methods are used to prevent illness and disease from ever occurring, and for ACE-specific methods, primary prevention is seen in home visits and parental training programs for those with newborns (Philip, 2018). Secondary ACE prevention involves screening for individuals considered at risk. This level of prevention is when resilience against childhood trauma and stress can be increased (Philip, 2018). Lastly, tertiary prevention in relation to ACEs treats resulting chronic conditions (Philip, 2018). There are also various domains in which these levels of ACE prevention can be applied. Resource centers and training for local businesses can

establish a community connection, while volunteer opportunities and school behavior

management programs connect with students (Verbitsky-Savitz et al., 2016).

By demostrating that there is a relationship between ACEs and food insecurity within the

U.S., potential policies and interventions could be targeted towards both public health issues.

Trauma informed nutrition assistence programs are a step in that direction. Nutrition assistence

programs alone may not completely close the gap in food insecurity (Jackson et al., 2019).

However, nutrition assistence programs that are integrated with community and family-focused

approachs to economic support have the potential to reduce food insecurity seen with ACEs

(Jackson et al., 2019). An increase in the Supplemental Nutrition Assistence Program (SNAP)

and the Special Supplemental Nutrition Program for Woman, Infants, and Children (WIC) can

both decrease economic adversity, thus decreasing rates of food insecurity.

Trauma informed care (TIC) and relevant policies have recently been pushed to the

forefront of ACE intervention discussions. Understanding the root cause of economic adversity

such as food insecurity results in holistic policies. The use of TIC has been shown to increase

resilience towards childhood adversity, as well as improved outcomes for high-risk populations

(Oral et al., 2015). Trauma-informed policy framework can potentially target community and

peer support, individual empowerment, and choice, all while maintaining individual autonomy

while addressing childhood trauma and economic adversity (Hecht et al., 2018).

Limitations

One limitation within this study is the sample size for each state. While one goal of the

NSCH survey was to obtain similar response frequencies across all 50 states, the frequencies in

comparison to the total U.S. population aged 0-17 is relatively small. Connecticut was the state

with the highest frequency of responses, yet only had 470 respondents participating in the survey. Sample sizes that are relatively small to the state's population may not be truly indicative of the rates of ACEs and food insecurity within the state.

These statistical tests have shown that there are statistically significant relationships between ACEs and food insecurity. This data however is representing whether or not a child has experienced these variables. The survey data do not factor in the time in which the variable was experienced. Therefore, a causal relationship direction cannot be determined as it is unclear if the independent or dependent variable was experienced first by the child.

Another limitation with this study is the nature of the survey. The National Survey of Children's Health is a cross-sectional survey that is completed by the parent or guardian of the child in question. Many of the topics within the survey, particularly the ACE and food insecurity variable, can be considered by the respondent to be highly sensitive material. This could potentially create a social desirability bias (Althubaiti, 2016). There is also the issue of possible self-reporting bias. If the parent or guardian completing the survey recalls information incorrectly, then it can be mislabeled and create a recall error. Therefore, data may not be completely accurate if information is incorrectly recalled.

Adverse childhood experiences and food insecurity are both significant public health concerns that research is continually investigating. These issues have both shown to result in many negative health outcomes that can decrease overall quality of life and life expectancy. Primary, secondary, tertiary, and trauma-informed interventions all have the possibility to improve outcomes associated with ACEs and food insecurity.

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Appendix

Table 3A: Chi-Squared Test Results

Hard to Cover Basics Like Food or Housing	Food Secure	Food Insecure	Total
Very often or Somewhat often	1,163 (7.46%)	2,939 (53.05%)	4,102 (19.42%)
Rarely or Never	14,420 (92.54%%)	2,601 (46.95%)	17, 021 (80.58%)
Total	15,583	5,540	
		Pearson chi2 = 5.4e+03	Pr = 0.000

Table 3B: Chi-Squared Test Results

Child Experienced – Parent or Guardian Divorce	Food Secure	Food Insecure	Total
Yes	2,661 (17.22%)	1,982 (36.25%)	4,643 (22.19%_)
No	12,795 (82.78%)	3,485 (63.75%)	16,280 (77.81%)
Total	15,456	5,467	
		Pearson chi2 = 847.6694	Pr = 0.000

Table 3C: Chi-Squared Test Results

Child Experienced – Parent or Guardian Died	Food Secure	Food Insecure	Total
Yes	390 (2.53%)	267 (4.87%)	657 (3.14%)
No	15,028 (97.47%)	5,213 (95.13%)	20,241 (96.86%)
Total	15,418	5,480	
		Pearson chi2 = 72.8733	Pr = 0.000

Table 3D: Chi-Squared Test Results

Child Experienced – Parent or Guardian Time in Jail	Food Secure	Food Insecure	Total
Yes	603 (3.91%)	684 (12.50%)	1,287 (6.16%)
No	14,815 (96.09%)	4,789 (87.50%)	19,604 (93.84%)
Total	15,418	5,473	
		Pearson chi2 = 515.1603	Pr = 0.000

Table 3E: Chi-Squared Test Results

Child Experienced – Adults Slap, Hit, Kick, Punch Others	Food Secure	Food Insecure	Total
Yes	482 (3.13%)	540 (9.89%)	1,022 (4.90%)
No	14,904 (96.87%)	4,922 (90.11%)	19,826 (95.10%)
Total	15,386	5,462	
		Pearson chi2 = 394.4104	Pr = 0.000

Table 3F: Chi-Squared Test Results

Child Experienced – Victim of Violence	Food Secure	Food Insecure	Total
Yes	364 (2.36%)	418 (7.66%)	782 (3.75%)
No	15,035 (97.64%)	5,041 (92.34%)	20,076 (96.25%)
Total	15,399	5,459	
		Pearson chi2 = 312.9290	Pr = 0.000

Table 3G: Chi-Squared Test Results

Child Experienced – Lived with Mentally Ill	Food Secure	Food Insecure	Total
Yes	935 (6.08%)	793 (14.53%)	1,728 (8.30%)
No	14,437 (93.92%)	4,664 (85.47%)	19,101 (91.70%)
Total	15,372	5,457	
		Pearson chi2 = 377.9158	Pr = 0.000

Table 3H: Chi-Squared Test Results

Child Experienced – Lived with Person with Alcohol/Drug Problem	Food Secure	Food Insecure	Total
Yes	1,060 (6.89%)	826 (15.16%)	1,886 (9.05%)
No	14,327 (93.11%)	4,623 (84.84%)	18,950 (90.95%)
Total	15,387	5,449	
		Pearson chi2 = 334.2917	Pr = 0.000

Table 3I: Chi-Squared Test Results

Child Experienced – Treated Unfairly Because of Race	Food Secure	Food Insecure	Total
Yes	321 (2.08%)	298 (5.45%)	619 (2.96%)
No	15,110 (97.92%)	5,165 (94.55%)	20,275 (97.04%)
Total	15,431	5,463	
		Pearson chi2 = 159.8280	Pr = 0.000

Table 3J: Chi-Squared Test Results

Child Experienced – 2 or more ACEs	Food Secure	Food Insecure	Total
Yes	1,748 (11.19%)	2,201 (39.63%)	3,949 (18.65%)
No	13,872 (88.81%)	3,353 (60.37%)	17,225 (81.35%)
Total	15,620	5,554	
		Pearson chi2 = 2.2e+03	Pr = 0.000

ACEs by Age group

Table 4A: Chi-Squared ACE and Age Test Results

Hard to Cover Basics Like Food or Housing	Under 9	9 or older	Total
Somewhat often or very often	1,731 (19.15%)	2,392 (19.67%)	4,123 (19.45%)
Never or Rarely	7,309 (80.85%)	9,769 (80.33%)	17,087 (80.55%)
Total	9,040	12,161	
	Pearson chi2 = 0.8992	Pr = 0.343	

Table 4B: Chi-Squared ACE and Age Test Results

Child Experienced – Parent or Guardian Divorce	Under 9	9 or older	Total
Yes	1,186 (13.22%)	3,471 (28.81%)	4,657 (22.16%)
No	7,784 (86.78%)	8,575 (71,19%)	16,359 (77.84%)
Total	8,970	12,046	
	Pearson chi2 = 724.7107	Pr = 0.000	

Table 4C: Chi-Squared ACE and Age Test Results

Child Experienced – Parent or Guardian Died	Under 9	9 or older	Total
Yes	126 (1.41%)	533 (4.43%)	659 (3.14%)
No	8,832 (98.59%)	11,492 (95.57%)	20,324 (96.86%)
Total	8,958	12,025	
	Pearson Chi2=154.5145	Pr=0.000	

Table 4D: Chi-Squared ACE and Age Test Results

Child Experienced – Parent or Guardian Time in Jail	Under 9	9 or older	Total
Yes	391 (4.37%)	908 (7.55%)	1,299 (6.19%)
No	8,566 (95.63%)	11,116 (92.45%)	19,682 (93.81%)
Total	8,957	12,024	
	Pearson Chi^2= 89.7269	Pr=0.000	

Table 4E: Chi-Squared ACE and Age Test Results

Child Experienced – Adults Slap, Hit, Kick, Punch Others	Under 9	9 or older	Total
Yes	288 (3.22%)	741 (6.18%)	1,029 (4.92%)
No	8,656 (96.78%)	11,249 (93.82%)	19,905 (95.08%)
Total	8,944	11,990	
	Pearson Chi^2 = 96.0379	PR = 0.000	

Table 4F: Chi-Squared ACE and Age Test Results

Child Experienced – Victim of Violence	Under 9	9 or older	Total
Yes	165 (1.84%)	618 (5.15%)	783 (3.74%)
No	8,789 (98.16%)	11,373 (94.85%)	20,162 (96.26%)
Total	8,954	11,991	
	Pearson Chi^2 = 156.1729	Pr = 0.000	

Table 4G: Chi-Squared ACE and Age Test Results

Child Experienced – Lived with Mentally Ill	Under 9	9 or older	Total
Yes	497 (5.56%)	1,236 (10.32%)	1,733 (8.29%)
No	8,441 (94.44%)	10,742 (89.68%)	19,183 (91.71%)
Total	8,938	11,978	
	Pearson Chi^2 = 152.5135	Pr = 0.000	

Table 4H: Chi-Squared ACE and Age Test Results

Child Experienced – Lived with Person with Alcohol/Drug Problem	Under 9	9 or older	Total
Yes	509 (5.69%)	1,387 (11.57%)	1,896 (9.06%)
No	8,429 (94.31%)	10,600 (88.43%)	19,029 (90.94%)
Total	8,938	11,987	
	Pearson Chi^2 = 214.5546	Pr = 0.000	

Table 4I: Chi-Squared ACE and Age Test Results

Child Experienced – Treated Unfairly Because of Race	Under 9	9 or older	Total
Yes	128 (1.43%)	493 (4.10%)	621 (2.96%)
No	8,830 (98.57%)	11,532 (95.90%)	20,362 (97.04%)
Total	8,958	12,025	
	Pearson Chi^2 = 127.5168	Pr = 0.000	

Table 4J: Chi-Squared ACE and Age Test Results

Child Experienced – 2 or more ACEs	Under 9	9 or older	Total
Yes	7,980 (88.01%)	9,328 (76.42%)	17,308 (81.36%)
No	1,087 (11.99%)	2,878 (23.58%)	3,965 (18.64%)
Total	9,067	12,206	
	Pearson Chi^2 = 460.8349	Pr = 0.000	

Table 4K: Chi-Squared Food Security and Age Test Results

Food Situation in Household	Under 9	9 or older	Total
Food Secure	6,702 (74.24%)	8,921 (73.42%)	15,623 (73.77%)
Food Insecure	2,326 (25.76%)	3,230 (26.58%)	5,556 (26.23%)
Total	9,028	12,151	
	Pearson Chi^2 = 1.7905	Pr = 0.181	

ACEs by Race group

Table 5A: Chi-Squared ACE and Race Test Results

Hard to Cover Basics Like Food or Housing	White	Non-White	Total
Somewhat often or very often	2,984 (18.41%)	1,139 (22.83%)	4,123 (19.45%)
Never or Rarely	13,228 (81.59%)	3,850 (77.17%)	17,087 (80.55%)
Total	16.212	4,989	
	Pearson chi2 = 47.6659	Pr = 0.000	

Table 5B: Chi-Squared ACE and Race Test Results

Child Experienced – Parent or Guardian Divorce	White	Non-White	Total
Yes	3,436 (21.36%)	1,221 924.75%0	4,657 (22.16%)
No	12,647	3,712 (75.25%)	16,359 (77.84%)
Total	16,083	4,933	
	Pearson chi2 = 25.1144	Pr = 0.000	

Table 5C: Chi-Squared ACE and Race Test Results

Child Experienced – Parent or Guardian Died	White	Non-White	Total
Yes	422 (2.63%)	237 (4.80%)	659 (3.14%)
No	15,628 (97.37%)	4,696 (95.20	20,324 (96.86%)
Total	16,050	4.933	
	Pearson Chi2=58.6835	Pr=0.000	

Table 5D: Chi-Squared ACE and Race Test Results

Child Experienced – Parent or Guardian Time in Jail	White	Non-White	Total
Yes	853 (5.31%)	446 (9.06%)	1,299 (6.19%)
No	15,205 (94.69%)	4,477 (90.94%)	19,682 (93.81%)
Total	16,058	4.923	
	Pearson Chi^2= 91.1082	Pr=0.000	

Table 5E: Chi-Squared ACE and Race Test Results

Child Experienced – Adults Slap, Hit, Kick, Punch Others	White	Non-White	Total
Yes	711 (4.44%)	318 (6.47%)	1,029 (4.92%)
No	15,306 (95.56%)	4,599 (93.53%)	19,905 (95.08%)
Total	16,017	4.917	
	Pearson Chi^2 = 33.1155	PR = 0.000	

Table 5F: Chi-Squared ACE and Race Test Results

Child Experienced – Victim of Violence	White	Non-White	Total
Yes	519 (3.24%)	264 (5.37%)	783 (3.74%)
No	15,514 (96.76%)	4,648 (94.63%)	20,162 (96.26%)
Total	16,033	4,912	
	Pearson Chi^2 = 47.7395	Pr = 0.000	

Table 5G: Chi-Squared ACE and Race Test Results

Child Experienced – Lived with Mentally Ill	White	Non-White	Total
Yes	1,352 (8.44%)	381 (7.77%)	1,733 (8.29%)
No	14,663 (91.56%)	4,520 (92.23%)	19,183 (91.71%)
Total	16,015	4,901	
	Pearson Chi^2 = 2.2046	Pr = 0.138	

Table 5H: Chi-Squared ACE and Race Test Results

Child Experienced – Lived with Person with Alcohol/Drug Problem	White	Non-White	Total
Yes	1,466 (9.15%)	430 (8.76%)	1,896 (9.06%)
No	14,553 (90.85%)	4,476 (91.24%)	19,029 (90.94%)
Total	16,019	4,906	
	Pearson Chi^2 = 0.6821	Pr = 0.409	

Table 5I: Chi-Squared ACE and Race Test Results

Child Experienced – Treated Unfairly Because of Race	White	Non-White	Total
Yes	187 (1.16%)	434 (8.82%)	621 (2.96%)
No	15,873 (98.84%)	4,489 (91.18%)	20,362 (97.04%)
Total	16,060	4,923	
	Pearson Chi^2 = 768.0869	Pr = 0.000	

Table 5J: Chi-Squared ACE and Race Test Results

Child Experienced – 2 or more ACEs	White	Non-White	Total
Yes	13,443 (82.70%)	3,865 (77.02%)	17,308 (81.36%)
No	2,812 (17.30%)	1,153 (22.98%)	3,965 (18.64%)
Total	16,255	5,018	
	Pearson Chi^2 = 81.5165	Pr = 0.000	

Table 5K: Chi-Squared Food Security and Race Test Results

Food Situation in Household	White	Non-White	Total
Food Secure	12,269 (75.75%)	3,354 (67.32%)	15,623 (73.77%)
Food Insecure	3,928 (24.25%)	1,628 (32.68%)	5,556 (26.23%)
Total	16,197	4,982	
	Pearson Chi^2 = 139.7926	Pr = 0.000	

Table 6A: Chi-Squared ACE and Gender Test Results

Hard to Cover Basics Like Food or Housing	Male	Female	Total
Somewhat often or very often	2,099 (19.34%)	2,024 (19.56%)	4,123 (19.45%)
Never or Rarely	8,753 (80.66%)	8,325 (80.44%)	17,087 (80.55%)
Total	10,852	10,349	
	Pearson chi2 = 0.1569	Pr = 0.692	

Table 6B: Chi-Squared ACE and Gender Test Results

Child Experienced – Parent or Guardian Divorce	Male	Female	Total
Yes	2,373 (22.04%)	2,284 (22.28%)	4,657 (22.16%)
No	8,393 (77.96%)	7,966 (77.72%)	16,359 (77.84%)
Total	10,766	10,250	
	Pearson chi2 = 0.1773	Pr = 0.674	

Table 6C: Chi-Squared ACE and Gender Test Results

Child Experienced – Parent or Guardian Died	Male	Female	Total
Yes	323 (3.00%)	336 (3.28%)	659 (3.14%)
No	10,431 (97.00%)	9,893 (96.72%)	20,324 (96.86%)
Total	10,754	10,229	
	Pearson Chi2=1.3632	Pr=0.243	

Table 6D: Chi-Squared ACE and Gender Test Results

Child Experienced – Parent or Guardian Time in Jail	Male	Non-Female	Total
Yes	682 (6.34%)	617 (6.03%)	1,299 (6.19%)
No	10,070 (93.66%)	9,612 (93.97%)	19,682 (93.81%)
Total	10,752	10,229	
	Pearson Chi^2= 0.8737	Pr=0.350	

Table 6E: Chi-Squared ACE and Gender Test Results

Child Experienced – Adults Slap, Hit, Kick, Punch Others	Male	Female	Total
Yes	537 (5.01%)	492 (4.82%)	1,029 (4.92%)
No	10,188 (94.99%)	9,717 (95.18%)	19,905 (95.08%)
Total	10,725	10,209	
	Pearson Chi^2 = 0.3943	PR = 0.530	

Table 6F: Chi-Squared ACE and Gender Test Results

Child Experienced – Victim of Violence	Male	Female	Total
Yes	416 (3.87%)	367 (3.60%)	783 (3.74%)
No	10,321 (96.13%)	9,841 (96.40%)	20,162 (96.26%)
Total	10,737	10,208	
	Pearson Chi^2 = 1.1338	Pr = 0.287	

Table 6G: Chi-Squared ACE and Gender Test Results

Child Experienced – Lived with Mentally Ill	Male	Female	Total
Yes	845 (7.89%)	888 (8.70%)	1,733 (8.29%)
No	9,865 (92.11%)	9,318 (91.30%)	19,183 (91.71%)
Total	10,710	10,206	
	Pearson Chi^2 = 4.5226	Pr = 0.033	

Table 6H: Chi-Squared ACE and Gender Test Results

Child Experienced – Lived with Person with Alcohol/Drug Problem	Male	Female	Total
Yes	946 (8.82%)	950 (9.31%)	1,896 (9.06%)
No	9,780 (91.18%)	9,249 (90.69%)	19,029 (90.94%)
Total	10,726	10,199	
	Pearson Chi^2 = 1.5543	Pr = 0.213	

Table 6I: Chi-Squared ACE and Gender Test Results

Child Experienced – Treated Unfairly Because of Race	Male	Female	Total
Yes	317 (2.95%)	304 (2.97%)	621 (2.96%)
No	10,438 (97.05%)	9,924 (97.03%)	20,362 (97.04%)
Total	10,755	10,228	
	Pearson Chi^2 = 0.0112	Pr = 0.916	

Table 6J: Chi-Squared ACE and Gender Test Results

Child Experienced – 2 or more ACEs	Male	Female	Total
Yes	8,898 (81.67%)	8,410 (81.04%)	17,308 (81.36%)
No	1,997 (18.33%)	1,968 (18.96%)	3,965 (18.64%)
Total	10,895	10,378	
	Pearson Chi^2 = 1.4074	Pr = 0.235	

Table 6K: Chi-Squared Food Security and Gender Test Results

Food Situation in Household	Male	Female	Total
Food Secure	7,995 (73.73%)	7,628 (73.81%)	15,623 (73.77%)
Food Insecure	2,849 (26.27%)	2,707 (26.19%)	5,556 (26.23%)
Total	10,844	10,335	
	Pearson Chi^2 = 0.0175	Pr = 0.895	