

On the Verge of Homelessness, Incarceration and Substance Abuse:
An Analysis and Close-up of At-Risk Youth Aging out of the Foster Care System in the
United States

By
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Abstract

At first, this study was going to analyze Canadian youth aging out of the foster care system, but due to the fact that there is no national dataset compiled, this was not possible. Using national data from the United States instead, the National Youth in Transition Dataset for FY2011 was provided with special permission from the National Data Archive on Child Abuse and Neglect. This study investigates whether or not having experienced homelessness in the past has a large effect in experiencing it in the future, once the youth has aged out of the system during wave two and three. The same is done for incarceration and substance abuse. Furthermore, this study also measures other variables which may increase the probability of a youth experiencing one of these three negative outcomes. Since all variables, independent and dependant, are dichotomous, the linear probability model with fixed effects is applied. It is found that having experienced the outcome in the past does indeed play a role in experiencing it in the future, whether it be homelessness, incarceration or substance abuse. It is also found that, Asians on average, are less likely to experience homelessness compared to others, African Americans are more likely to experience incarceration but less likely to experience substance abuse out of all ethnic groups, leaving Caucasians more at-risk. Identifying who is most vulnerable among those already at-risk is important. Policy makers and different levels of government need to cooperate to improve the outcomes of those aging out of their care.

April 2019

1. Introduction

Each year, approximately 20,000 youth age out of the foster care system in the United States and are left on their own (U.S. Department of Health & Human Services, 2017). A youth emancipates from foster care when they are 18-21 years old, depending on the state.¹ Correspondingly, studies show that transitioning out of the system leaves youth more likely than their peers to experience homelessness, incarceration and/or drugs (Sharpe, 2015). According to Lindo and Hansen (2013), a past of maltreatment and abuse [which affects many foster care youth] may lead to long-term economic, physical and mental health implications.

Taking this finding from Lindo and Hansen (2013), this study alters their hypotheses to a simpler but crucial problem. Since foster care youth who age out of care are more disadvantaged, this analysis demonstrates that experiencing homelessness at some point in the past increases the probability of experiencing it later in life. The same is found for incarceration and substance abuse: experiencing it in the past has a significant influence in experiencing it after aging out of the system. Since maltreatment and abuse are found to have long-term implications, it is normal to assume that experiencing homelessness, incarceration and substance abuse in the past often also have long-term implications.

Homelessness, incarceration and substance abuse are not the only negative outcomes that youth face when aging out. However, due to the fact that data is limited

¹ States that allow youth to return to foster care past the age of 18: Alabama, Alaska, Arizona, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana (to age 20), Iowa (to age 20 and only for the purpose of completing high school or an equivalent program), Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Vermont (up to age 22), Virginia, Washington, West Virginia, and Wisconsin (refer to appendix A).

and not easily obtained, this analysis was restricted to these three outcomes. Data on the foster care system is scarce and limited in many countries, which consequently, confines research and policies. In the United States, the U.S. Department of Health established an Act called the John H. Chafee Foster Care Independence Act (1999) that obligates all states to collect and gather data (National Data Archive on Child Abuse and Neglect, 2019). In Canada, on the contrary, child welfare legislation is different across provinces and territories and the Canadian Child Welfare Research Portal (CWRP) provides research on Canadian child welfare issues (CWRP, 2011). Apart from this, the only official numbers that have been published federally in Canada, was in a 2011 Census (Families and Households Highlight Tables)².

The data, that was used to observe the findings of this paper, had to be requested from the National Data Archive on Child Abuse and Neglect. After given consent, the panel data was shared to make this study possible. This data includes data from all states and follows youths in transition during three waves. During wave one, the youth is still in foster care, while in waves two and three, a youth is typically aged out of care. Depending on the state, a youth may nevertheless still be in foster care during wave two or three (refer to appendix A). To analyze the transition waves, this study applies a linear probability regression with fixed effects for waves two and three. The fixed effects control the characteristics of the youth (Williams, 2018). In addition, both regressions consist of independent variables such as sex, state, ethnicity, foster care status,

² I contacted the Provincial Government of Nova Scotia who told me that no official dataset exists. It was recommended to me that I contact individual shelters across the province, who do keep numbers and data. I also contacted researchers through Homeless Hub who told me that the data is weak, partly due to privacy issues but more due to weak data collection protocols. I also contacted Statistics Canada who does not have much data regarding the foster care system in Canada.

connection to an adult, being enrolled in schooling, having employment skills, receiving financial and food aid, as well as homelessness, incarceration and substance abuse.

Since there is a correlation between homelessness, incarceration and substance abuse (refer to table 1), these three variables will not only be used as the dependant variables but as the independent variables as well. Table 1 shows that there is weak linear relationship between the three variables that this analysis is testing.

Table 1: Correlation between Homelessness, Incarceration and Substance Abuse among Youth in all Waves (N= 11,985)

Correlation	Homelessness	Incarceration	Substance Abuse
Homelessness	1		
Incarceration	0.1554	1	
Substance Abuse	0.1379	0.2979	1

Source: Data taken from NYTD Cohort 11 Outcomes File, NDACAN 2011

Knowing which sub-populations are more at risk can help different levels of government (Gaetz et al., 2013) work together and establish policies that target those who are at-risk in an already at-risk group. To target one area that is problematic, requires many other areas to be tackled as well. It is important to note that one single variable does not cause or influence homelessness, incarceration and/or substance abuse. Furthermore, some ethnic groups are more at risk than others. Previous work has also found this, but this paper is one of the first, regarding foster care, to analyze if having experienced the outcome in the past influences experiencing it in the future.

2. Background Information

2. A. The Foster Care System in the United States

According to data collected by the Foster Care Analysis and Reporting System (AFCARS)³, 442,995 children were in the foster care system as of September 30, 2017 (AFCARS Report, 2017). That same fiscal year, a total of 690,548 were served by government care (see appendix B for rates of children in foster care by state). As the data provided by AFCARS shows, there has been annual increase since 2013 in the number of youths being served by the foster care system during a fiscal year (refer to table 2) but a small decrease since 2016, in the amount of youth entering foster care in 2017.

Table 2: Summary of Youth Involved with the Foster Care in the United States

Fiscal Year	2013	2014	2015	2016	2017
Number in foster care on September 30 of the FY	400,394	414,129	427,328	426,551	442,995
Number entered foster care during the FY	254,622	264,357	268,808	272,952	269,690
Number exited foster care during FY	237,721	235,768	242,011	248,856	247,631
Number served by the foster care system during FY	638,041	649,802	669,202	685,165	690,548

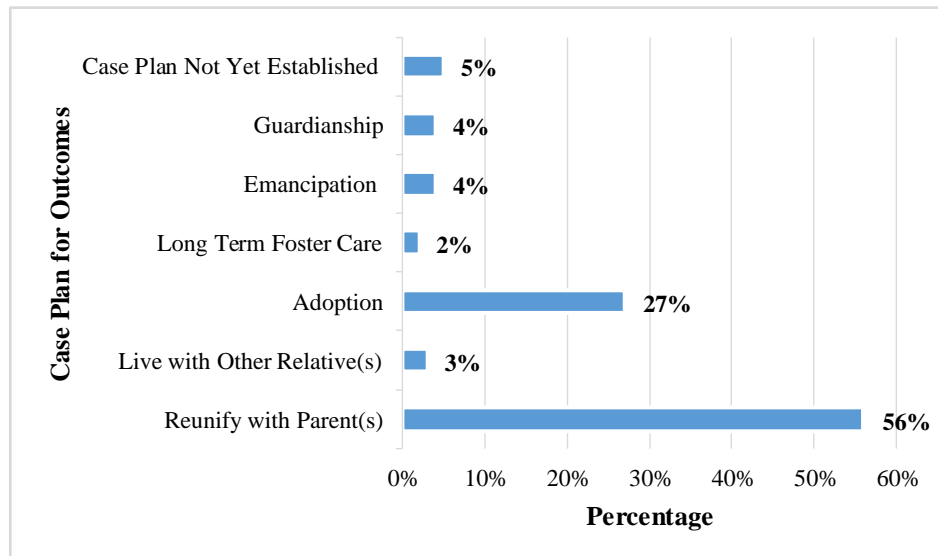
Source: Adoption and Foster Care Analysis and Reporting System (AFCARS) FY2017 Data Report

Being removed from a home and entering foster care follows a similar process in all states and territories. Despite the fact that each state has its own definition of child abuse and neglect, all American states and territories follow the federal law which allows the removal of a child from its home when the major types of maltreatment are present: neglect, physical abuse, psychological maltreatment, and sexual abuse (Child

³ The AFCARS is a section of the Children's Bureau. The Children's Bureau is also a section of the U.S. Department of Health & Human Services. AFCARS collects data on all children in the foster care as well as those who have been adopted (Children's Bureau, 2018).

Maltreatment 26th Report, 2015)⁴. A child is removed from a home when a child protective services worker and the court have concluded that it is not safe for a child to remain in that home (Child Trends, 2015). For this to take place, an allegation of abuse must firstly be made to Child Protection Services. An allegation is most commonly done by teachers, law enforcement personnel, healthcare personnel, clergy, or those who most often work with children (Lindo & Hansen, 2013) but anyone can make an allegation. The Child Protection Services then investigates these allegations through two steps. The first step analyzes whether or not the allegation/ referral matches the requirements for a removal, and the second step includes the creation of a report, and if needed, an investigation.

Figure 1: Case Plan Goal for Foster Care Youth, for all U.S. States, 2017



Source: Adoption and Foster Care Analysis and Reporting System (AFCARS) FY2017 Data Report

⁴ These reports are available for each fiscal year. They are created by the Children’s Bureau, which falls under the U.S. Department of Health and Human Services (U.S. Department of Health & Human Services, 2017).

The objective of foster care is to find a safe and stable home for all children that go through the system—whether it be through reunification with the biological family or finding an adoptive family (National Data Archive on Child Abuse and Neglect, 2014). As Figure 1 shows, about 4% or 17,147 youth age out of foster care and lose their safety nets when they turn 18-or 21 depending on the state (Fowler et al., 2017). These youth are “emancipated.” Emancipation describes a youth who has aged out of foster care and who has legally reached majority (Child Trends, 2015).

2. B. Related Research on Foster Care

Existing literature highlights how all children, whether in the foster care system or aging out from it, are more at-risk than those who are not in government care. Children and adolescents who become involved with the child welfare system often go through poverty, abuse, and neglect (Lidquist & Santavirta, 2014). Since official statistics show that youth who are involved in government care tend to come from disadvantaged backgrounds (Pac et al., 2017), a major increase in research has spurred in recent years. In general, previous studies examine the positive relationship between having been involved in the foster care system and experiencing homelessness (Nichols et al., 2016), facing academic difficulties (Sanders & Fallon, 2018), undergoing suicidal behaviours and increases in referrals for mental health services (Baiden & Fallon, 2018), the correlation between injection and having been in government care (Barker et al., 2015) and so forth.

The majority of published papers regarding this subject has been written by researchers in the fields of Social Work and Sociology. Research done by economists is not prominent and in fact, is non-existent. Although predominantly analyzed from a

social aspect, there are several economic costs to the negative outcomes that youth may face while aging out. An example of this can include homelessness. MacEwan and Saulnier (2010) found that from an economics perspective, poverty has health costs, crime costs, intergenerational costs, productivity losses and government transfers replaced by market income which in total adds to total private and social costs. This is the result of only one of the negative outcomes that youth aging out are at risk of experiencing.

One important and significant study that was published by the Canadian Observatory on Homelessness shed light on the relationship between child welfare and youth homelessness in Canada. The researchers in this study partnered with the National Learning Community on Youth Homelessness⁵ and 57 individual shelters throughout Canada (Nichols et al., 2016). The shelters then encouraged youth to fill out the survey designed by the researchers in this study. They found that youth who experience homelessness “are more likely to be involved with child protection services, experience multiple episodes of homelessness, be tested for ADHD [Attention Deficit Hyperactivity Disorder], experience bullying, be victims of crime once homeless, including sexual assault, have greater mental health and addictions symptoms, experience poorer quality of life, attempt suicide and become chronically homeless” (Nichols et al., 2016). Another study that also used data from the National Data Archive on Child Abuse (but a different dataset), tested how aging out of foster care impacted housing problems and if receiving any type of service made a difference in the outcome of the youth (Fowler et al., 2017). They found that youth involved in the child welfare system are likely to be at-risk of

⁵ A community consisting of youth serving organizations to end homelessness.

having housing problems later in life and that foster care services and extended care is not associated with reduced risk for having housing problems (Fowler et al., 2017).

A negative outcome that is studied even less than homelessness is incarceration. Youth preparing to age out of foster care are potentially the most at-risk for criminal involvement during their transition to adulthood (Crawford et al., 2018). Courtney and Dworsky (2006) were some of the first who analyzed this topic. Their results show that incarceration rates are higher for males (57%) than females (34%) in foster care. The Midwest Study⁶ which also follows up with youth after emancipating, calculated that aged out youth had an incarceration rate of 30%- 45%. At the national level, only 20% of males and 3% of females had an experience with the legal system. As might be expected, it is noted that there is a significant difference between imprisonment/incarceration for criminal activity and engaging in criminal activity (Crawford et al., 2018). Odds of felony adjudication⁷ were found to be seven times higher for males than females in care (Crawford et al., 2018). This may be attributed to the fact that there is a correlation between traumatic childhood experience and the likelihood for juvenile delinquency (Lansford et al., 2009). Other research finds that a youth's experience in care is a main influence on an outcome. This includes the number of placements undergone while in the system. Crawford, Pharris, and Dorsett-Burrell (2018) also found that those committing offences and who are found to be guilty are more likely to be receiving mental health and substance abuse services.

⁶ The Midwest study is a longitudinal study of youth from Iowa, Wisconsin Illinois transitioning from foster care into adulthood.

⁷ Felony adjudication nonetheless places a youth in probation. The Court may also make jail time, fines, community service, or whatever it chooses, compulsory. For a youth, this can affect many factors such as student loans, subsidized housing, employment and welfare (Kids Legal, 2018).

Substance abuse, another negative outcome among youth in care, has been studied even less than homelessness and incarceration. Rates of substance abuse, alcohol and marijuana have not been calculated among foster youth until Vaughn et al. (2006) created a study. It is found that 46% of youth had tried marijuana and 49% had been exposed to an illicit drug. A main observable problem is that many of those who experienced neglect in the past are more likely to be polysubstance users at the age of 18 (Narendorf, 2010). This means that youth are likely to be addicted to the state of being intoxicated and have no preference as to which drug to use in the process (Fernandez-Calderon et al., 2014). There also seems to be a difference between youth who are in care until the age of 18 and those who leave before. Those who leave foster care earlier acknowledged being drunk at a rate of 28% while those who stayed until the age of 18 had a rate of 16% (Narendorf, 2010). Barn and Tan (2015) found that homelessness, and not being educated were some of the main influences predicting high levels of drug use among foster care youth.

All these findings take into account that the children, who were firstly removed from their homes due to abuse, experienced some form of adverse childhood experience which may subsequently impact adulthood (Crawford, 2011). The aim of most papers about youth in foster care seem to have two motives: (1) to shed light about the issues that youth experience going through foster care (2) to prove the reality of the situation in hopes that policy makers and governments will take action (Gaetz et al., 2016). This paper contributes to existing literature by being one of the first to analyze whether or not experiencing homelessness, incarceration and substance abuse in the past increases the likelihood of experiencing them in the future among youth aging out of foster care.

3. The Data

3. A. Data Specifications

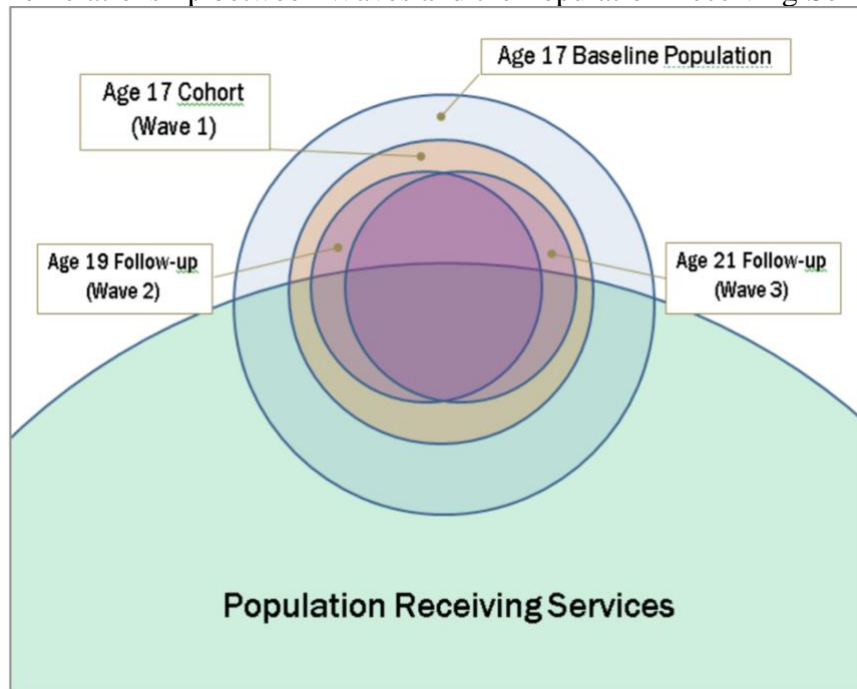
The data was taken from the National Youth in Transition Database (NYTD) and provided upon request with special permission from the National Data Archive on Child Abuse and Neglect in order to analyze what factors, have a large impact on outcomes such as homelessness, incarceration and substance abuse in the second and third wave. Since personal information is provided about youth aging out of the foster care system, a Terms of Use Agreement has to be signed before receiving the data. The data follows youth during three waves (every two years after aging out), ergo, the dataset is longitudinal (also known as panel data). The first wave happened in 2011, the second wave in 2013 and the third (final) wave was in 2015. There are multiple variables provided about each person, including sex, ethnicity, services received, state of residence, and more (refer to appendix C for a complete list of variables in the dataset). All 50 states including the District of Columbia and Puerto Rico are included in the baseline population (NDACAN, 2018).

There are 29,104 foster care youth in the Baseline Population and 15,597 who responded in wave one. This results in a total response rate of 54 percent. As seen in the tables in the appendixes D to F and mentioned in the User's Guide, responses vary greatly depending by state. Perhaps, this is due to data collection procedures because each state has its own laws as to how they collect data (e.g. in person, by phone, etc.). California, the state with the most youth in foster care (5,116) who are 17 years old, had a response rate of 36%, while Louisiana with a baseline population of 372 youth, had a response rate of 92%. Furthermore, wave two had a total response rate of 27% on average

(in proportion to the baseline population). In this wave, Puerto Rico and New York did not participate and the reason is not given. This is unfortunate because youth from these states that may have answered in wave one cannot be included in wave two, even if they answered in wave three. In the third wave, the response rate was 24% (refer to Figure 2). New York participated in this wave with a response rate of 6%, but Puerto Rico did not.

In view of the fact that each state has different laws as to how they collect data about foster care children, some states chose to continue to survey only those who responded in the previous wave, while other states chose participants randomly—whether or not they answered in the previous wave(s). States that chose participants only if they had answered in the previous wave are marked by an asterisk (*) in appendixes E and F. Those that are not marked with an asterisk, indicate that youth were included randomly.

Figure 2. Relationship between Waves and the Population Receiving Services



Source: Outcomes Cohort 1, NYTD User's Guide, page 7, 2016

A final but important issue with this dataset is that there were many variables with blank or declined answers. For example, many declined to answer if they had or had not experienced homelessness at some point in the past. There could be many reasons as to why youths may have chosen not to answer. Anonymity, fear of someone finding out about their situation, not seeing the importance of answering the question or simply because they did not understand the question well (many youths have high school education if not less, see table 3). Due to this, all the participants who left their answers blank or declined (instead answering yes or no) with respect to homelessness, incarceration or substance abuse were dropped. The same was done for the other variables that were used in this study (refer to section 4).

Table 3: Education Level Received by Youth in All Waves (1-3)

Highest Education Certification Received	Freq.	Percent	Cum.
High School or Ged	5,372	45.39	45.39
Vocational Certificate	233	1.97	47.36
Vocational License	66	0.56	47.92
Associate Degree	109	0.92	48.84
Bachelor's degree	10	0.08	48.92
Higher Degree	15	0.13	49.05
None of the above	7,723	48.36	97.41
Declined	181	1.53	98.94
Blank	126	1.06	100
Total	11,835	100	

Source: Data taken from NYTD Cohort 11 Outcomes File, NDACAN 2011

Nonetheless, a total of 11,985 observations are left after dropping blank or declined observations with respect to relevant variables. Regarding the three outcomes being analyzed, homelessness had 9,756 observations deleted, substance abuse had 398 deleted and incarceration had 305 deleted. Homelessness, the first dependant variable

analyzed, is defined as a youth not having a suitable place to live. This definition includes situations where the youth is living in “a car, on the street, or staying in a homeless or other temporary shelter” (NYTD Outcomes File Code Book, 2016). The second dependant variable, substance abuse, is when the youth in foster care has been referred to counseling or an alcohol/drug abuse assessment. This paper will assume that those receiving alcohol/drug assessments have some form of addiction. The third dependant variable is incarceration which means that the youth has either been in a jail, prison, correctional facility, or juvenile or community detention facility (NYTD Outcomes File Codebook, 2016) for committing a crime of any sort. For any of these three dependant variables, when a youth answers “yes” in wave one as a 17-year-old, it means that the youth experienced the given outcome at some point in the past. For a 19 or 21-year-old (wave two or three), answering yes signifies that the youth experienced the outcome in the past two years (refer to appendix G for all variable definitions).

Table 4: Cumulative Homelessness, Incarceration and Substance Abuse by Sex for Waves 1-3

		Male	Female	Total
Homelessness	Yes	1,062	1,452	2,514
	No	4,249	5,222	9,471
Incarceration	Yes	1,642	1,006	2,648
	No	3,669	5,668	9,337
Substance Abuse	Yes	912	903	1,815
	No	4,399	5,771	10,170

Source: Data taken from NYTD Cohort 11 Outcomes File, NDACAN 2011

Note: Adding the two totals for homelessness equals the number of observations in the “clean” dataset (11,985). The result is the same for incarceration and substance abuse individually.

3. B. General Data Availability in the USA and Canada

The recent growth of interest in the foster care system has led to more data collection. In spite of this, data is still currently very limited. Foster care systems vary

around the world and so does data collection. For example, in Canada, there is a lack of national data which means, no official numbers exist as to how many children enter and exit the foster care system on a national level (Barron, 2017). Each province in Canada collects its own information and does not share it publicly⁸. In fact, in the province of Nova Scotia (located in Eastern Canada), data is collected through registered institutions and shelters. It is sometimes almost impossible to receive data on a provincial level. Since data collection varies provincially, it is very difficult to put it together and analyze it from a national level, especially when there is no accountability as to how the data is collected (Barron, 2017).

In the USA, the John H. Chafee Foster Care Independence Program⁹ is enforced to support youth aging out of the foster care system due to the fact that rates of “homelessness, incarceration, poor educational outcomes, unemployment, unplanned parenthood, poverty, and lack of health insurance at much higher rates than other children” (NDACAN, 2019). This program gives grants to States and Tribes¹⁰ to help youth transition to adulthood. This program is enacted by the John H. Chafee Foster Care Independence Act (1999). According to the National Data Archive on Child Abuse and Neglect (2017):

The Act also obligates all 50 states, the District of Columbia, and Puerto Rico to collect:

⁸ I contacted the Provincial Government of Nova Scotia who told me that there is no “official dataset” that exists. It was recommended to me that I contact individual shelters across the province who do keep numbers and data. I also contacted researchers through Homeless Hub who told me that the data is weak, partly due to privacy issues but more due to weak data collection protocols. I also contacted Statistics Canada who does not have much data regarding the foster care system in Canada.

⁹ Under the Children’s Bureau and the U.S. Department of Health and Human Services.

¹⁰ Approximately 600 Indian tribes are recognized by the U.S government. These federally recognized Indian tribes are eligible to receive grants and financial support from the Bureau of Indian Affairs (Usagov, 2018).

- 1) Information about services and who receives them, including “the number and characteristics of children receiving services”, and “the type and quantity of services being provided.”
- 2) Outcome data, including “measures of educational attainment, high school diploma, employment, avoidance of dependency, homelessness, nonmarital childbirth, incarceration, and high-risk behaviour” (p. 4).

This data is submitted by each state to the U.S Department of Health and Human Services (DHHS). By comparing both countries, it is noticeable that, unless states or provinces are mandated by law to provide data on foster care youth, it is very difficult to analyze what is happening on a national level. Even when it is mandated by the law, datasets are limited. The dataset that is being used for this study starts with 58,729 observations, but only 11,985 can be used after the data cleansing. Regardless, NDACAN promotes secondary analysis by researchers by providing datasets upon request (National Data Archive on Child Abuse and Neglect, 2016).

4. MODEL

4. A. Variables

Demographics

Sex, race (including Hispanic ethnicity), state and wave were some of the main independent variables that were used in measuring the three negative outcomes: homelessness, incarceration and substance abuse. Sex is defined as the youth’s gender. Gender is a dummy variable with male=1 and female=2 (NYTD Outcomes File Code Book, 2016) and all participants are divided into either category. The variable race is

represented by RaceEthn and moreover includes ethnicity due to the fact that Hispanic ethnicity is not a race but an ethnic group (NYTD Outcomes File Code Book, 2016). This variable includes eight different coded values: non-Hispanic white (1), Black/ African-American (2), American Indian/ Native (3), non- Hispanic Asian (4), Pacific Islander (5), more than one race (6), Hispanic ethnicity (7), or race unknown (99). State was denoted by the variable StFIPS, which by definition is the Federal Information Processing Standard code assigned to each state in the United States (refer to appendix G for the list of variables and definitions). Wave has only three values since there are three waves: wave one is when the youth is 17 years of age and in the foster care system, wave two is a follow-up of those who answered in wave one, or the entry of new participants at the age of 19, while the third wave is the second follow-up of youths at the age of 21. Both wave two and three are follow-ups of youths in the previous wave(s) or include the entry of new participants.

Service Assistance

During each wave, participants were asked to fill out surveys with their personal information. A section of the survey includes any form of assistance. The binary variables used in this study are public financial assistance and public food assistance. Receiving aid in the form of financial or food assistance may increase the likelihood of experiencing homelessness (Federal Student Aid, 2018) but not the likelihood of incarceration and substance abuse. Hence, this analysis will include these two services to analyze whether or not they increase the probabilities of any of the three outcomes. Since services are a form of intervention, those receiving services may be more at-risk.

Youth's History

Any information regarding a youth's past (apart from experiencing homelessness, incarceration, substance abuse or gaining employment skills) is excluded in this dataset. For example, the type of abuse the youth may have experienced in the past or the age of entry into foster care, is excluded, due to data limitations. The only measure of past experiences this analysis includes is if a youth has experienced homelessness, incarceration and/or substance abuse at some point in the past. If a youth answers yes to any of these outcomes during wave one (at the age of 17), a youth has experienced this negative outcome in their history (how long this lasted, or the time of occurrence is not included). Homelessness, incarceration and substance abuse during wave one will be included in the two regressions, where youth age out at the age of 19 (wave two) and 21 (wave three). Additionally, homelessness, incarceration and substance abuse in both waves one and two will be included in the regression where youths are 21 years old (wave three). It is important to note that the results of these variables do not cause an outcome. For instance, experiencing homelessness in the past does not necessarily cause homelessness in the future, although there may be a relationship between both experiences. This also applies to the other two independent variables, incarceration and substance abuse.

The second variable that applies to a youth's past is employment skills. A youth is said to have employment skills if he/she has completed an on-the-job training within the past year of the survey (NYTD Outcomes File Codebook, 2016). Yes=1 if the youth has had some sort of training (paid or unpaid) and if not, no=0. As also stated in the definition, having some sort of training can help a youth find a job, and in return, he/she

may be less likely to become homeless. Current Enrollment and Attendance is also used as an independent variable to analyze if enrolment in school—whether high school, university college, or a learning institution has an impact on homelessness, incarceration and substance abuse. Lastly, if a youth can go to an adult for guidance as of the date of the data collection (NYTD Outcomes File Code Book, 2016), the variable “connection to an adult” may decrease the probabilities of experiencing negative outcomes when aging out of care. If the adult can be reached in any form and the youth has a person whom they can turn to, yes=1 or no=0.

4. B. Empirical Strategy

This study applied the linear probability model although the logit model for binary data was also tested. After analyzing both models, the linear probability model (linear regression) was found to be the most effective (ease of interpretation). The linear probability model is also effective in this case due to the fact that Y is a binary variable (Harvard University, 2010) where 0=no and 1=yes, and the sample size (N) is large. Heteroskedasticity is removed by adding “nocons robust” at the end of each regression in Stata¹¹.

Using the Outcomes File dataset for 2011, I measure which variables significantly increase the probability Y for wave two and three (independently) while controlling for state fixed effects and wave fixed effects (Lindo & Hansen, 2013). The variable Y in this model is either homelessness, incarceration or substance abuse (see section 5. Results). However, since these three variables also seem to have a positive correlation, they are included in each other’s regressions (as dependent variables). For example, substance

¹¹ Stata version 15.1.

abuse in wave one may affect the outcome of incarceration in waves two and three, and so forth. Generated dependent variables for the regressions can be seen in Appendix G. Each variable is included individually for each wave.

The data had to firstly be sorted by Recnumbr and Wave. Sorting by Recnumbr and Wave allowed for all the waves to be in order for each child¹². Therefore, if a child answered for all three waves, all waves would be together, in order. If a child only answered during one wave, then that wave would be single. To continue cleaning the data, I dropped all the youths who declined to participate in the data collection as a whole (outcmrpt==2) or because they were unable to be located by the state agency (outcmrpt==7). Furthermore, all variables that were used as independent variables (as shown in appendix G) are also cleansed. This includes dropping any observations with blanks, declines or empty cells. Since I am looking at the outcomes of youth aging out, if there are any youths who only answered in wave one, but did not answer in wave two or three, they are dropped because they cannot be used in this study. Once the dataset is all organized, variables are generated (by Recnumbr) for each of the independent variables in the analysis.

5. Results

5. A. Homelessness

Similar to Crawford et al. (2015) and other researchers who found that having a past of maltreatment or abuse has long-term implications for the future, there was reason to believe and hypothesize that experiencing homelessness in the past increases the likelihood of experiencing it in the future. It was found that this hypothesis is true. Other

¹² Recnumbr is a child's unique ID that can be linked to other datasets for further research.

variables that have a large influence on homelessness were also found and who (with respect to race and ethnicity) in the United States is more at-risk (section 5.D.).

As seen in Table 5, column 1 only shows which variables were found to be significant (+/- 1.96) or relevant towards experiencing homelessness after aging out in wave two or three (refer to appendix G for variable definitions). Additionally, the table in appendix H contains all variables used in the analysis, whether significant or not. Both waves two and three were analyzed separately since youths tend to age out of foster care during this time frame in United States. Table 5 also shows that having been in foster care during wave one increases the likelihood of experiencing homelessness for both waves two and three. It is important to note that being in foster care during wave one does not cause homelessness. There is another underlying problem experienced by the youth that this model does not take into account. Recent research emphasizes the mental health problems that youths face due to past abuse or circumstances and this could be why being in foster care shows as being positively correlated with homelessness. Being in foster care during the base year (at age 17) increases the likelihood of experiencing homelessness by 36.2 percent in wave two while increasing the probability of experiencing homelessness by 25.2 percent in the third wave. Note however, that being in foster care for an extra two years (row 2) during wave two (at age 19), has an opposing result. It seems that being in foster care longer reduces the likelihood of experiencing homelessness as an outcome by 8.5 percent. This is consistent with previous literature and may be due to the fact that many states have increased the emancipation age above 18 (National Conference of State Legislatures, 2017). Increasing the emancipation age to a certain threshold, does have a positive and significant effect in reducing the probability

of experiencing homelessness for youths in foster care during wave two, but not during wave three.

Table 5: Linear Probability Model Predicting the Likelihood of Experiencing Homelessness in Wave 2 and Wave 3

Variable	Wave 2			Wave 3		
	Coef.	Robust Std. Err.	t-value	Coef.	Robust Std. Err.	t-value
FCm1	0.362	0.065	5.56	0.252	0.074	3.42
FCm2	-0.085	0.015	-5.55			
H1	0.157	0.018	8.53	0.057	0.018	3.14
H2				0.305	0.02	14.9
S1	0.037	0.017	2.11			
S2	0.079	0.023	3.51			
S3				0.146	0.026	5.7
I2	0.098	0.02	4.98	-0.044	0.021	-2.08
I3				0.176	0.021	8.22
cadult2	-0.187	0.028	-6.66			
cadult3				-0.17	0.025	-6.73
Enroll2	-0.076	0.013	-5.82			
Enroll3				-0.037	0.014	-2.71
Employsk2				0.03	0.014	2.16
Employsk3						
Food2	0.129	0.02	6.53			
Food3				0.093	0.018	5.3
Sex						
Female	0.015	0.012	1.28	0.03	0.013	2.26

Note 1: The dependant variable is the binary variable homelessness. See appendix G for definitions of independent variables.

Note 2: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 3: $p < 0.05$

The most important finding of this analysis is that experiencing homelessness at some point in the past (either in wave one, two, or both) does significantly increase the likelihood of experiencing homelessness as an outcome. During wave two, experiencing

homelessness in the past (wave one) has a significant impact of 15.7 percent. Analyzing for wave three (at age 21), results show that experiencing homelessness in the base year results in a probability of 5.7 percent, while experiencing homelessness in wave two is much more significant with a probability of 30.5 percent. This was unexpected and previous literature does not contradict or support these findings. This is the first time a comparison between two waves (after aging out of foster care) was analyzed.

Other variables that significantly influence homelessness positively or negatively can be found in Table 5. Having both a connection to an adult and being enrolled in schooling significantly decreases the likelihood of homelessness in the wave that is being analyzed. Receiving financial aid does not have a significant effect but receiving public food assistance has a positive correlation with the outcome homelessness. Therefore, receiving public food assistance may be an indication to services as to which youth are most at-risk.

It is found that females have a higher likelihood of being homeless than males, but it is not significant in wave two (a probability of 1.5 percent higher than males). During wave three, the probability increased to 3 percent which is significant in this model. Women are slightly higher at-risk of experiencing homelessness after leaving the foster care system than males.

5. B. Incarceration

With a total of 3,995 observations in each wave, it is found that there are less significant variables with respect to incarceration than homelessness (refer to appendix I for a complete list of variables in the regression). This may explain why research about emancipated youth who experience incarceration after aging out is not as common as

research done with regards to homelessness. With incarceration, sex is statistically significant. As shown in Table 6, this study found that females are 10.4 percent less likely to be incarcerated than males in wave two and 9.4 percent less likely in wave three. It is found that incarceration rates are higher among men than women (Crawford et al., 2018).

If a youth was under the placement and responsibility of the State during wave one (FCm1), a youth has the probability of experiencing incarceration by 27.2 percent in wave two and 23.3 in wave three. In this analysis, FCm1 is the most significant variable that contributes to the likelihood of experiencing incarceration. Once again, it is important to note that foster care is not the cause of incarceration and that the number of variables in this study is limited. It may be possible that as explained in the previous section (5.A. Homelessness), youths may psychologically suffer from past abuse or neglect (Crawford et al., 2015). The history of the youth in this study is not included, nor is the background information of the youth's parents. Regardless, being in foster care during wave two significantly reduces the likelihood of experiencing incarceration by 4.6 percent. Enrolment in schooling reduces incarceration by 3.7 percent in wave two while in wave three, enrolment in schooling reduces the likelihood of incarceration with a total of 5.8 percent. This is compatible with the idea that school dropouts are 3.5 times more likely to face arrestment than those who graduate from high school (Hanson & Stipek, 2014).

At first glance, there is a positive correlation between incarceration, homelessness and substance abuse (refer to Table 1). The regression analysis shows that this holds true. Experiencing incarceration in the past increases the probability of experiencing incarceration as an outcome (in the future). For wave two, having been incarcerated in the past increases the probability of incarceration as an outcome by 21 percent. For wave

three, experiencing incarceration in the past increases the likelihood of incarceration after aging out by 6.9 percent but by 29 percent if incarceration happens in wave two (refer to Table 6). This was also unexpected and previous literature does not contradict or support these findings. This is the first time a comparison between two waves (after aging out of foster care) was analyzed.

Table 6: Linear Probability Model Predicting the Likelihood of Experiencing Incarceration in Wave 2 and Wave 3

Variable	Wave 2			Wave 3		
	Coef.	Robust Std. Err.	t-value	Coef.	Robust Std. Err.	t-value
FCm1	0.272	0.066	4.12	0.233	0.072	3.26
FCm2	-0.046	0.015	-3.01			
H2	0.087	0.017	4.97	0.041	0.018	2.32
H3				0.128	0.016	8.04
S1	0.044	0.017	2.58			
S2	0.267	0.022	11.93			
S3				0.219	0.024	8.94
I1	0.21	0.016	13.04	0.069	0.015	4.51
I2				0.29	0.021	13.9
Enroll2	-0.037	0.012	-3.02	-0.029	0.012	-2.42
Enroll3				-0.029	0.011	-2.57
Food3				-0.034	0.015	-2.29
Sex						
Female	-0.105	0.012	-9	-0.094	0.012	-8.12

Note 1: Dependant variable is the binary variable incarceration. See appendix G for a full list of independent variables.

Note 2: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 3: $p < 0.05$

Substance abuse and homelessness also increase the probability of incarceration.

It is estimated that having substance abuse issues in wave two significantly increases the likelihood of experiencing incarceration in wave two. The same is observed for wave three (refer to Table 6). Once again, it is important to note that it may not be substance

abuse itself causing incarceration. There may be reasons as to why a youth might turn to alcohol/ drugs, and that underlying issue could be a factor in causing incarceration.

5. C. Substance Abuse

Significant variables contributing to substance abuse were found to be: homelessness in wave two and three, substance abuse in waves one and two and incarceration in waves two and three. Services, enrollment in school, having a connection to an adult or having gained work experience through an internship for example, are not statistically significant (refer to appendix J for all variables included in the regression). Out of the three outcomes being analyzed in this paper, substance abuse has the least number of significant variables, mainly due to a lack of data. Although Vaughn et al. (2007) suggest that staying in foster care longer had a “protective effect against substance abuse,” my findings show that there is no real significant difference. In this dataset however, there is no distinction between using alcohol, drugs (whether illegal or prescription/over-the-counter medicine) or tobacco. The data, for example, also does not include family history (with regards to addiction), which may be of high importance.

Firstly, this analysis assumes that youths who receive substance abuse referrals, have some form of addiction. It is not directly mentioned in the code book but for simplicity, it is an assumption. If a youth receives a substance abuse referral, it is to determine if the youth has a problem with drugs or alcohol¹³ (NYTD Outcomes File Codebook, 2016). As shown in appendix J, being in foster care during wave one or two does not increase or decrease the probability of experiencing substance abuse significantly, hence, the results are not included in Table 7. If the results in the analysis

¹³ Through self-referral or referral by a doctor, nurse, or other adult.

are correct, research should focus more on the background/environment the youth grew up in (Narendorf & McMillen, 2010).

Table 7: Linear Probability Model Predicting the Likelihood of Experiencing Substance Abuse in Wave 2 and Wave 3

Variable	Wave 2			Wave 3		
	Coef.	Robust Std. Err.	t-value	Coef.	Robust Std. Err.	t-value
H2	0.055	0.016	3.49			
H3				0.074	0.013	5.55
S1	0.218	0.017	13.06	0.062	0.014	4.43
S2				0.188	0.021	8.84
I2	0.211	0.018	11.67			
I3				0.152	0.017	8.75
Sex						
Female	-0.006	0.01	-0.56	-0.003	0.009	-0.28

Note 1: Dependant variable is the binary variable incarceration. See appendix G for a full list of independent variables.

Note 2: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 3: p<0.05

Experiencing homelessness in the wave that is being analyzed, has a significant influence in experiencing substance abuse. Homelessness in wave two has a probability of increasing substance abuse by 5.5 percent in wave two while homelessness in wave three expects to increase the probability of substance abuse by 7.4 percent. Experiencing substance abuse in the previous waves also has a significant contribution. Substance abuse in wave one increases the probability of experiencing substance abuse in wave two by 21.2 percent. Substance abuse in wave one and two increases the probability of experiencing substance abuse in wave three by a total of 25 percent. As shown in Table 7, a history of substance abuse during foster care has the most influence on the outcome

substance abuse itself. Having been incarcerated in the past also has a significant effect on substance abuse. In wave two a total of 21.1 percent in the past increases the probability of having substance abuse issues in the present. Also, sex is not a significant variable in this analysis.

5. D. Ethnicity

To analyze who is most at-risk, ethnicity was included in the analysis. All races/ethnic groups are compared to Caucasians in Table 8 and 9. For the outcome homelessness (wave 3), Asians are significantly less likely than other groups to experience homelessness. Compared to Caucasians, they are 11.9 percent less likely to become homeless. The results for homelessness in Table 8 are not significant. However, African Americans are more at risk of experiencing incarceration than all other ethnic groups in wave two, but they are less likely to experience substance abuse along with Hawaiians/other Pacific Islanders than other ethnicities. Literature also mentions that Caucasians are more likely to receive treatment for drug abuse than other groups (Wilkinson & Winslow, 2019). It is important to note that being of a certain race does not cause an outcome. The disparity between ethnic groups found in the tables below could signify that systematic racial discrimination is present (Ontario Human Rights Commission, 2016).

Table 8: Homelessness, Incarceration and Substance Abuse in Wave 2

Race/ Ethnicity	Homelessness			Incarceration			Substance Abuse		
	Coef.	Robust Std. Err.	t value	Coef.	Robust Std. Err.	t value	Coef.	Robust Std. Err.	t value
Black	0.025	0.015	1.69	0.033	0.014	2.32	-0.032	0.012	-2.7
American Native	-0.004	0.059	-0.08	0.040	0.059	0.67	-0.022	0.049	-0.45

Asian	-0.059	0.046	-1.3	0.062	0.048	1.29	-0.032	0.050	-0.64
Hawaiian	-0.172	0.150	-1.15	0.108	0.146	0.74	-0.204	0.084	-2.41
More than One	0.020	0.031	0.64	-0.006	0.029	-0.21	0.008	0.026	0.29
Hispanic	-0.011	0.017	-0.62	0.028	0.015	1.82	-0.016	0.015	-1.08
Unknown	0.050	0.055	0.91	-0.021	0.047	-0.45	-0.059	0.048	-1.22

Note 1: Hawaiian includes Pacific Islander

Note 2: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 3: $p < 0.05$

Table 9: Homelessness, Incarceration and Substance Abuse in Wave 3

Race / Ethnicity	Homelessness			Incarceration			Substance Abuse		
	Coef.	Robust Std. Err.	t value	Coef.	Robust Std. Err.	t value	Coef.	Robust Std. Err.	t value
Black	0.000	0.016	-0.01	0.019	0.014	1.31	-0.013	0.011	-1.16
American Native	-0.044	0.057	-0.77	0.075	0.054	1.4	0.010	0.043	0.23
Asian	-0.119	0.049	-2.4	-0.044	0.051	-0.85	0.074	0.055	1.35
Hawaiian	-0.032	0.180	-0.18	0.127	0.123	1.03	-0.101	0.133	-0.76
More than One	0.052	0.035	1.48	0.015	0.028	0.54	0.002	0.024	0.1
Hispanic	-0.024	0.019	-1.28	0.013	0.015	0.86	-0.008	0.013	-0.63
Unknown	-0.024	0.056	-0.44	0.039	0.050	0.79	-0.064	0.033	-1.92

Note 1: Hawaiian includes Pacific Islander

Note 2: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 3: $p < 0.05$

6. Discussion of Findings

There are some important limitations that are needed to be taken into account with the results found in this paper. The most fundamental limitation is the data. Other studies that analyze children and youths in the foster care system all list this as one of the main issues that is encountered. Although datasets provided by the National Data Archive on Child Abuse and Neglect are rich in observations compared to other datasets, many youths declined or left answers blank. The reason as to why answers were left blank or declined is not given. Furthermore, Puerto Rico and New York did not participate in

wave two (the first follow-up) and then Puerto Rico did not participate in wave three (the second follow-up). If youths from Puerto Rico answered in wave one, there would be no follow-ups for them included in the data. As previously stated, the reason is not given as to why these states did not participate in the follow-up(s).

The number of observations before cleaning the dataset is equal to 58,729 but once the dataset is cleaned, 11,985 observations are left. Regardless of all the dropped observations, there were nonetheless thousands of observations that were able to be used. It is not unlikely to find papers with about 100 observations i.e. analyzing youths in foster care, since data is hard to find and obtain. Hence, this study does not have an issue with the number of observations that can be worked with because it is collected and mandated by the government.

Secondly, homelessness, incarceration and substance abuse in wave one all relate to a youth's past experience. If a youth has answered yes to experiencing homelessness in wave one, the youth has experienced homelessness at some point in the past, but the "when" is not specified. For example, it is not possible to compare youth who have experienced homelessness as children or as teenagers. It could be possible that most youths who answered yes in wave one (to homelessness, incarceration or substance abuse) experienced it as a young child. But the data does not allow for such analysis.

It is also important to note that the findings in this paper do not cause an outcome: homelessness, incarceration and/or substance abuse. Being a male for example does not cause incarceration (refer to section 5.B.) even though males are more at-risk than females of experiencing incarceration after aging out of foster care. The results in this study simply show who is more at-risk (through probabilities) of experiencing a negative

outcome. Further research will need to further analyze the different factors that cause these three negative outcomes.

This study applies the linear probability model which in itself has some limitations. It is one of the most popular statistical models used in social sciences (Chatla & Shmueli, 2016) and therefore, is most commonly used in the literature. In this study, the LPM is easy to interpret and also useful when dealing with binary variables (Chatla & Schmueli, 2016). It is also practical in this case because the sample size is large and finding the probabilities are more useful in this context. This current study provided an overview of some of the outcomes that youth aging out of foster care face. Future research will need to append and merge several datasets so that more variables can be included and analyzed. Variables that will need to be included include: the number of homes foster care youths have been in, the type of abuse they experienced/ the removal reason, mental health, any disabilities, sexual orientation (this dataset only provided male and female as options), and the services youth receive.

Child protection does not only involve responding to child abuse reports or finding safe homes for children found to be maltreated. It also provides services to children and youths, also known as Child protective services (U.S. Department of Health and Human Services, 2017). It is reported in the Child Maltreatment Report of 2015 that Child protective services (CPS) has different ways as to how services are given. They may provide services directly to children and their families, work with health care agencies or other relevant agencies, or hire a service provider¹⁴ to work and do follow-ups with children/youth in care. It is possible that some services are more impactful than others and this also needs to be analyzed. As more research is done in this field, more

¹⁴ Can include doctors, therapists, nurses and counselors.

policies and services can be created to target and help those transitioning from foster care into adulthood. Services need not only target those aging out of the system, they need to be provided to youths before they age out and before they experience a negative outcome (Courtney, 2005).

7. Conclusion

Results show that youths in foster care, who experienced homelessness in the past, have a higher risk of experiencing homelessness after aging out of the foster care system in the United States. The same findings apply to incarceration and substance abuse. It has also been found that being in foster care during wave one (at the age of 17) increases the likelihood of experiencing homelessness, incarceration and substance abuse. Foster care is not the cause (Gaetz et al., 2016) of these negative outcomes. Instead, future research will need to analyze many different factors including, but not limited to: the type of abuse the youth has experienced in the past, the removal reason, the number of foster care homes the child has been in, and the birth parent's physical and mental health histories. These could all be variables that contribute to the negative outcomes that youth may face.

There are also certain ethnic groups that are more at-risk. Asians are the least likely to be homeless when aging out of the system, African American males are most at-risk of experiencing incarceration and Caucasians also have a higher probability of suffering from substance abuse. Data in this area is especially important for future research, because future research will need to further analyze why certain groups are also more at-risk than others. It is important for countries to collect data about the youths that go through their government care.

This paper contributes to existing literature by being one of the first to find that experiencing homelessness, incarceration and substance abuse in the past increases the likelihood of experiencing them in the future among youths aging out of foster care.

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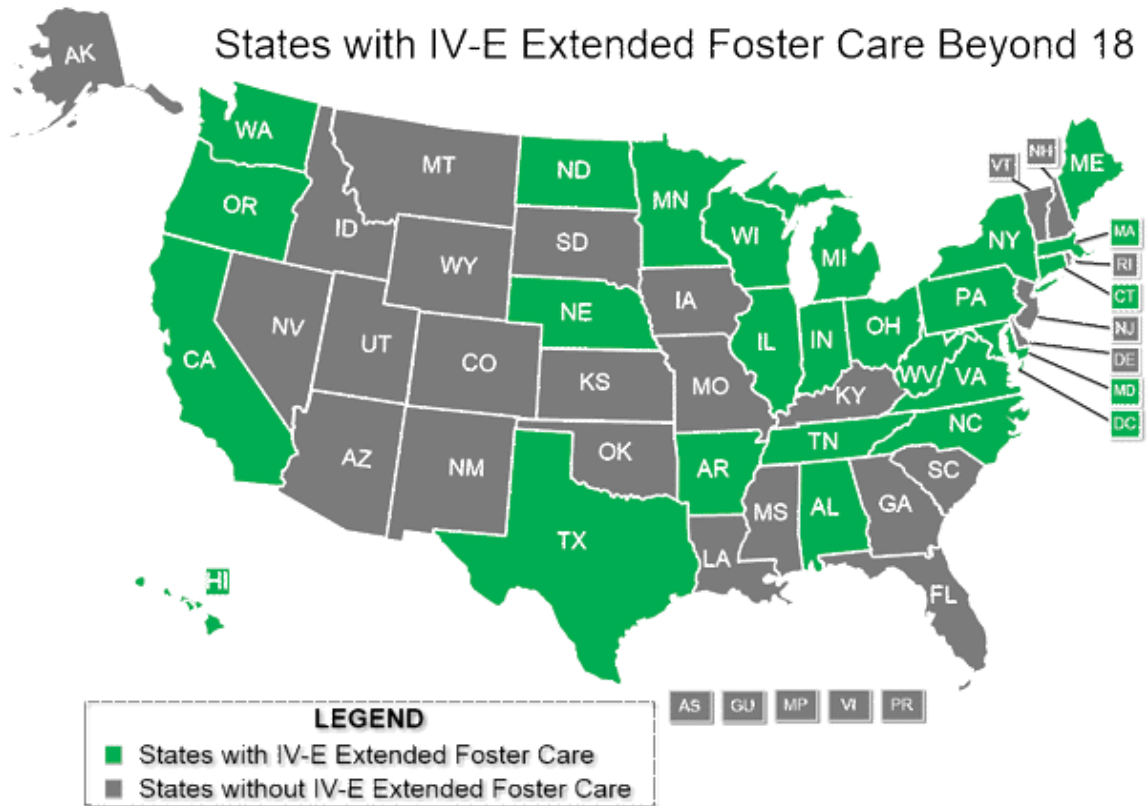
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Appendix A



Source: National Conference of State Legislatures, 2017

Note 1: 25 states have extended foster care

Note 2: Although some do not have extended foster care, many other states also have extended services for youth who are over 18 years of age

Appendix B

5.8 of every 1,000 U.S. children were in foster care in 2017

Rate of children (per thousand) 17 and younger in each state who were in foster care on the last day of FY2017



Source: Foster care rates are calculated using the federal Adoption and Foster Care Analysis and Reporting System (AFCARS) and data from the U. S. Census Bureau. AFCARS data represents the federal fiscal year 2017 reporting period (October 1, 2016 – September 30, 2017). Data from the U. S. Census Bureau is from 2017 and is publicly available at the Kids Count Data Center.

Source: Child Trends, 2017

Note: States that allow youth to return to foster care past the age of 18: Alabama, Alaska, Arizona, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana (to age 20), Iowa (to age 20 and only for the purpose of completing high school or an equivalent program), Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Vermont (up to age 22), Virginia, Washington, West Virginia, and Wisconsin (Child Trends, 2017).

Appendix C

NYTD Outcomes Variables- By Position		
Element	Variable Name	Variable Label
D	Wave	1= Baseline (age 17); 2= Age; 3= Age 21
#1	StFIPS	State FIPS Code
D	StFIPS	Two-letter USPS code for state
#3	Recnumbr	AFCARS Unique Child ID (Encrypted)
#2	Repdata	Report Date
#4	DOB	Date Of Birth
#5	Sex	Sex
#6	Amiakn	Race – American Indian Or Alaskan Native
#7	Asian	Race – Asian
#8	Blkafram	Race – Black Or African American
#9	Hawaiipi	Race – Native Hawaiian Or Other Pacific Islander
#10	White	Race – White
#11	Raceunkn	Race – Unknown
#12	Racedcln	Race – Declined
#13	Hisorgin	Hispanic Or Latino Ethnicity
#34	OutcmRpt	Outcomes Reporting Status
#35	OutcmDte	Date Of Outcome Data Collection
#36	OutcmFCS	Foster Care Status At Outcomes Collection
#37	CurrFTE	Current Full Time Employment
#38	CurrPTE	Current Part-Time Employment
#39	EmplySkills	Employment Related Skills
#40	SocSecrty	Social Security
#41	EducAid	Educational Aid
#42	PubFinAs	Public Financial Assistance
#43	PubFoodAs	Public Food Assistance
#44	PubHousAs	Public Housing Assistance
#45	OthrFinAs	Other Financial Support
#46	HighEdCert	Highest Educational Certification Received
#47	CurrEnroll	Current Enrollment And Attendance
#48	CnctAdult	Connection To Adult
#49	Homeless	Homelessness
#50	SubAbuse	Substance Abuse Referral
#51	Incarc	Incarceration
#52	Children	Children
#53	Marriage	Marriage At Child's Birth

#54	Medicaid	Medicaid
#55	OthrHlthIn	Other Health Insurance Coverage
#56	MedicalIn	Health Insurance Type: Medical
#57	MentlHlthIn	Health Insurance Type: Mental Health
D	Prescripin	Health Insurance Type: Prescription Drugs
D	Baseline	Youth is in the Baseline Population
D	FYCoort	Youth meets requirements for membership in the Cohort
D	Elig19	Youth is eligible for Wave 2 (Age 19 Follow-up)
D	Elig21	Youth is Eligible for Wave 3 (Age 21 Follow-up)
D	SampleState	This state opted to sample for followup surveys
D	InSample	Youth is in the sample
D	Responded	Responded to At Least One Survey Question
D	Race	Race
D	RaceEthn	Race or Ethnicity
D	StFCID	St and RecNumbr (for linking)

Source: NYTD Outcomes File Codebook, 2016

Appendix D

Response Rates for NYTD Wave 1 2011 (Age 17 in Foster Care)				
FIPS	State	Baseline Population	Wave 1 Responses	Wave 1 Rate
1	Alabama	262	102	39%
2	Alaska	66	49	74%
4	Arizona	673	83	12%
5	Arkansas	262	150	57%
6	California	5,116	1,819	36%
8	Colorado	552	467	85%
9	Connecticut	469	362	77%
10	Delaware	102	71	70%
11	District of Columbia	138	92	67%
12	Florida	1,170	530	45%
13	Georgia	529	375	71%
15	Hawaii	72	31	43%
16	Idaho	67	43	64%
17	Illinois	818	551	67%
18	Indiana	664	517	78%
19	Iowa	543	472	87%
20	Kansas	563	443	79%
21	Kentucky	670	516	77%
22	Louisiana	372	342	92%
23	Maine	74	55	74%
24	Maryland	267	266	100%
25	Massachusetts	924	632	68%
26	Michigan	635	233	37%
27	Minnesota	353	252	71%
28	Mississippi	310	95	31%
29	Missouri	698	373	53%
30	Montana	85	58	68%
31	Nebraska	395	167	42%
32	Nevada	176	107	61%
33	New Hampshire	65	51	78%
34	New Jersey	419	171	41%
35	New Mexico	65	46	71%
36	New York	1,878	282	15%

37	North Carolina	584	335	57%
38	North Dakota	95	87	92%
39	Ohio	1,075	361	34%
40	Oklahoma	287	249	87%
41	Oregon	477	116	24%
42	Pennsylvania	1,249	1,022	82%
44	Rhode Island	170	170	100%
45	South Carolina	359	287	80%
46	South Dakota	71	68	96%
47	Tennessee	1,004	196	20%
48	Texas	1,563	1,227	79%
49	Utah	323	256	79%
50	Vermont	48	48	100%
51	Virginia	552	352	64%
53	Washington	456	378	83%
54	West Virginia	398	252	63%
55	Wisconsin	714	272	38%
56	Wyoming	101	42	42%
72	Puerto Rico	126	75	60%
Total		29,104	15,596	54%

Source: Outcomes Cohort 1, NYTD User's Guide 2016

Appendix E

Response Rates for Wave 2 (Age 19 Follow-up)				
FIPS	State	Baseline Population	Wave 2 Responses	Wave 2 Rate
1	Alabama	262	83	32%
2	Alaska	66	46	70%
4	Arizona	673	31	5%
5	Arkansas	262	92	35%
6	California	5,116	1,239	24%
8	Colorado	552	256	46%
9	Connecticut	469	268	57%
10	Delaware	102	50	49%
11	District of Columbia	138	79	57%
12	Florida	1,170	327	28%
13	Georgia*	529	153	29%
15	Hawaii	72	26	36%
16	Idaho	67	27	40%
17	Illinois*	818	152	19%
18	Indiana*	664	169	25%
19	Iowa*	543	129	24%
20	Kansas	563	313	56%
21	Kentucky*	670	167	25%
22	Louisiana*	372	98	26%
23	Maine	74	28	38%
24	Maryland	267	200	75%
25	Massachusetts*	924	189	20%
26	Michigan	635	222	35%
27	Minnesota	353	195	55%
28	Mississippi	310	74	24%
29	Missouri	698	295	42%
30	Montana	85	44	52%
31	Nebraska	395	61	15%
32	Nevada	176	93	53%
33	New Hampshire	65	40	62%
34	New Jersey	419	110	26%
35	New Mexico	65	28	43%
36	New York	1,878	0	0%

37	North Carolina	584	221	38%
38	North Dakota	95	55	58%
39	Ohio*	1,075	142	13%
40	Oklahoma	287	163	57%
41	Oregon	477	86	18%
42	Pennsylvania*	1,249	128	10%
44	Rhode Island	170	138	81%
45	South Carolina	359	220	61%
46	South Dakota	71	61	86%
47	Tennessee*	1,004	91	9%
48	Texas*	1,563	265	17%
49	Utah	323	178	55%
50	Vermont	48	32	67%
51	Virginia	552	207	38%
53	Washington*	456	187	41%
54	West Virginia	398	125	31%
55	Wisconsin	714	116	16%
56	Wyoming	101	11	11%
72	Puerto Rico	126	0	0%
Total		29,104	7,710	26%

Source: Outcomes Cohort 1, NYTD User's Guide 2016

Note: States that chose participants only if they had answered in the previous wave are marked by an asterisk (*). Those that are not marked with an asterisk, indicate that youth were included randomly.

Appendix F

Response Rates for Wave 3 (Age 21 Follow-up)				
FIPS	State	Baseline Population	Wave 3 Responses	Wave 3 Rate
1	Alabama	262	66	25%
2	Alaska	66	38	58%
4	Arizona	673	23	3%
5	Arkansas	262	92	35%
6	California	5,116	1,280	25%
8	Colorado	552	110	20%
9	Connecticut	469	160	34%
10	Delaware	102	47	46%
11	District of Columbia	138	76	55%
12	Florida	1,170	310	26%
13	Georgia*	529	166	31%
15	Hawaii	72	25	35%
16	Idaho	67	17	25%
17	Illinois*	818	137	17%
18	Indiana*	664	39	6%
19	Iowa*	543	136	25%
20	Kansas	563	236	42%
21	Kentucky*	670	150	22%
22	Louisiana*	372	141	38%
23	Maine	74	16	22%
24	Maryland	267	194	73%
25	Massachusetts*	924	182	20%
26	Michigan	635	168	26%
27	Minnesota	353	191	54%
28	Mississippi	310	81	26%
29	Missouri	698	228	33%
30	Montana	85	39	46%
31	Nebraska	395	106	27%
32	Nevada	176	81	46%
33	New Hampshire	65	32	49%
34	New Jersey	419	98	23%
35	New Mexico	65	24	37%
36	New York	1,878	117	6%

37	North Carolina	584	165	28%
38	North Dakota	95	57	60%
39	Ohio*	1,075	137	13%
40	Oklahoma	287	163	57%
41	Oregon	477	74	16%
42	Pennsylvania*	1,249	101	8%
44	Rhode Island	170	124	73%
45	South Carolina	359	207	58%
46	South Dakota	71	49	69%
47	Tennessee*	1,004	93	9%
48	Texas*	1,563	248	16%
49	Utah	323	164	51%
50	Vermont	48	18	38%
51	Virginia	552	262	47%
53	Washington*	456	172	38%
54	West Virginia	398	155	39%
55	Wisconsin	714	57	8%
56	Wyoming	101	25	25%
72	Puerto Rico	126	-	0%
Total		29,104	7,077	24%

Source: Outcomes Cohort 1, NYTD User's Guide 2016

Note: States that chose participants only if they had answered in the previous wave are marked by an asterisk (*). Those that are not marked with an asterisk, indicate that youth were included randomly.

Appendix G

Generated Variables	Definition
FCm1	Youth is in foster care during wave 1 at the age of 17 (base year)
FCm2	Youth is in foster care during wave 2 at the age of 19 (follow-up)
FCm3	Youth is in foster care during wave 3 at the age of 21 (follow-up)
S1	Youth received a substance abuse referral at some point in the past
S2	Youth received a substance abuse referral within the last 2 years of the wave 2 follow-up
S3	Youth received a substance abuse referral within the last 2 years of the wave 3 follow-up
I1	Youth was incarcerated due to committing a crime (misdemeanor or felony) at some point in the past
I2	Youth was incarcerated due to committing a crime (misdemeanor or felony) within the last 2 years of the wave 2 follow-up
I3	Youth was incarcerated due to committing a crime (misdemeanor or felony) within the last 2 years of the wave 3 follow-up
H1	Youth experienced homelessness at some point in the past
H2	Youth experienced homelessness within the last 2 years of the wave 2 follow-up
H3	Youth experienced homelessness within the last 2 years of the wave 3 follow-up
cadult1	Youth can go to an adult for advice or guidance as of the date of the outcome collection- wave 1
cadult2	Youth can go to an adult for advice or guidance as of the date of the outcome collection- wave 2
cadult3	Youth can go to an adult for advice or guidance as of the date of the outcome collection- wave 3
Enroll1	Youth is in attending high school, GED classes, postsecondary vocational training, college, etc. as of the date of the outcome collection- wave 1
Enroll2	Youth is in attending high school, GED classes, postsecondary vocational training, college, etc. as of the date of the outcome collection- wave 2

Enroll3	Youth is attending high school, GED classes, postsecondary vocational training, college, etc. as of the date of the outcome collection- wave 3
Employsk1	Youth has obtained skills for a job in the past year through an internship, apprenticeship or on the-job training (unpaid or paid)- wave 1
Employsk2	Youth has obtained skills for a job in the past year through an internship, apprenticeship or on the-job training (unpaid or paid)- wave 2
Employsk3	Youth has obtained skills for a job in the past year through an internship, apprenticeship or on the-job training (unpaid or paid)- wave 3
Finance1	Youth is receiving public financial assistance through welfare payments as of the date of the outcome data collection- wave 1
Finance2	Youth is receiving public financial assistance through welfare payments as of the date of the outcome data collection- wave 2
Finance3	Youth is receiving public financial assistance through welfare payments as of the date of the outcome data collection- wave 3
Food1	Youth is receiving public food assistance through food stamps as of the date of the outcome data collection- wave 1
Food2	Youth is receiving public food assistance through food stamps as of the date of the outcome data collection- wave 2
Food3	Youth is receiving public food assistance through food stamps as of the date of the outcome data collection- wave 3
Sex	Youth is either male or female
StFIPS	Each state in the United States has a unique state Federal Information Processing Standard (FIPS) code (NDACAN, 2016)
RaceEthn	Includes races such as: White, Black, Native American, Asian, Pacific Islander, More than 1 race and Hispanic Ethnicity
RecNumbr	Every person in the dataset has a unique record number (AFCARS Child ID encrypted) that is the same across all periods

Note: In the base year, the data relates the youth's history. No specific dates are given.

Appendix H

Table 5: Linear Probability Model Predicting the Likelihood of Experiencing Homelessness in Wave 2 and Wave 3 including Sex, State and Ethnicity

Variable	Wave 2			Wave 3		
	Coef.	Robust Std. Err.	t-value	Coef.	Robust Std. Err.	t-value
FCm1	0.3619	0.0651	5.5600	0.2516	0.0736	3.4200
FCm2	-0.0853	0.0154	-5.5500	-0.0074	0.0195	-0.3800
FCm3				-0.0353	0.0213	-1.6600
H1	0.1570	0.0184	8.5300	0.0572	0.0182	3.1400
H2				0.3047	0.0204	14.9000
H3						
S1	0.0368	0.0174	2.1100	0.0087	0.0179	0.4900
S2	0.0793	0.0226	3.5100	-0.0213	0.0233	-0.9200
S3				0.1455	0.0255	5.7000
I1	0.0103	0.0155	0.6700	0.0313	0.0166	1.8800
I2	0.0980	0.0197	4.9800	-0.0443	0.0213	-2.0800
I3				0.1762	0.0214	8.2200
cadult1	-0.0282	0.0307	-0.9200	-0.0300	0.0334	-0.9000
cadult2	-0.1872	0.0281	-6.6600	-0.0047	0.0287	-0.1600
cadult3				-0.1696	0.0252	-6.7300
Enroll1	-0.0091	0.0313	-0.2900	-0.0370	0.0333	-1.1100
Enroll2	-0.0764	0.0131	-5.8200	-0.0126	0.0143	-0.8800
Enroll3				-0.0370	0.0137	-2.7100
Employsk1	0.0119	0.0144	0.8200	-0.0244	0.0152	-1.6100
Employsk2	-0.0079	0.0126	-0.6300	0.0299	0.0138	2.1600
Employsk3				0.0227	0.0135	1.6800
Finance1	-0.0069	0.0299	-0.2300	-0.0240	0.0361	-0.6600
Finance2	0.0340	0.0288	1.1800	-0.0050	0.0283	-0.1800
Finance3				0.0319	0.0279	1.1400
Food1	-0.0139	0.0375	-0.3700	-0.0476	0.0420	-1.1300
Food2	0.1293	0.0198	6.5300	0.0390	0.0200	1.9500
Food3				0.0935	0.0176	5.3000
sex						
female	0.0154	0.0120	1.2800	0.0303	0.0134	2.2600

stfips						
Alaska	0.0145	0.0968	0.1500	0.3607	0.1051	3.4300
Arizona	0.0701	0.0905	0.7800	0.1914	0.1293	1.4800
Arkansas	-0.0034	0.0617	-0.0600	0.0073	0.0679	0.1100
California	0.0057	0.0395	0.1400	0.1023	0.0454	2.2500
Colorado	0.0575	0.0650	0.8900	0.1786	0.0669	2.6700
Connecticut	0.0219	0.0483	0.4500	0.1100	0.0540	2.0400
Delaware	0.1184	0.0854	1.3900	0.2217	0.0783	2.8300
Florida	-0.0531	0.0514	-1.0300	0.1065	0.0583	1.8300
Georgia	0.0361	0.0527	0.6900	0.1613	0.0592	2.7300
Hawaii	0.1425	0.1276	1.1200	0.1047	0.1532	0.6800
Illinois	-0.0540	0.0429	-1.2600	0.0191	0.0624	0.3100
Indiana	0.0186	0.0735	0.2500	-0.0491	0.0732	-0.6700
Iowa	-0.0416	0.0592	-0.7000	-0.0472	0.0583	-0.8100
Kentucky	0.0158	0.0570	0.2800	0.0728	0.0580	1.2600
Louisiana	-0.0668	0.0595	-1.1200	-0.0142	0.0634	-0.2200
Maine	-0.0083	0.0780	-0.1100	0.1994	0.1390	1.4300
Massachusetts	0.0488	0.0496	0.9800	0.1578	0.0555	2.8500
Michigan	0.0562	0.0517	1.0900	0.1510	0.0578	2.6100
Minnesota	0.1021	0.0523	1.9500	0.1614	0.0563	2.8700
Mississippi	-0.0281	0.0561	-0.5000	0.0549	0.0660	0.8300
Missouri	0.0635	0.0476	1.3400	0.0609	0.0519	1.1700
Montana	0.2287	0.1158	1.9800	0.2675	0.1145	2.3400
Nebraska	0.0982	0.0945	1.0400	0.1902	0.0830	2.2900
Nevada	-0.0666	0.0616	-1.0800	0.1328	0.0685	1.9400
New Hampshire	-0.0954	0.0722	-1.3200	0.2204	0.1037	2.1300
New Jersey	-0.0785	0.0507	-1.5500	0.0921	0.0634	1.4500
New Mexico	-0.1790	0.0914	-1.9600	0.0849	0.1144	0.7400
New York	-0.0141	0.0498	-0.2800	0.0433	0.0545	0.7900
North Dakota	0.0754	0.0813	0.9300	0.0343	0.0758	0.4500
Ohio	0.0762	0.0610	1.2500	0.1554	0.0673	2.3100
Oklahoma	0.0946	0.0606	1.5600	0.0323	0.0576	0.5600
Oregon	-0.0401	0.0634	-0.6300	-0.0006	0.0692	-0.0100
Rhode Island	-0.1121	0.0506	-2.2200	0.0496	0.0569	0.8700
South Carolina	0.0155	0.0506	0.3100	0.0163	0.0550	0.3000
South Dakota	-0.0449	0.0757	-0.5900	0.1803	0.0886	2.0300
Tennessee	-0.1074	0.0644	-1.6700	-0.0143	0.0707	-0.2000
Texas	-0.0002	0.0470	0.0000	0.0536	0.0528	1.0200
Utah	0.0380	0.0524	0.7300	0.0955	0.0579	1.6500
Vermont	0.1030	0.1804	0.5700	0.0958	0.1685	0.5700

Virginia	-0.0623	0.0447	-1.3900	0.0692	0.0525	1.3200
Washington	0.0027	0.0519	0.0500	0.0640	0.0575	1.1100
West Virginia	-0.0630	0.0590	-1.0700	0.0461	0.0647	0.7100
Wisconsin	-0.1360	0.0809	-1.6800	0.1695	0.0862	1.9600
Wyoming	-0.0067	0.1469	-0.0500	0.1289	0.1976	0.6500
Race/ethn						
Black	0.0254	0.0151	1.6900	-0.0001	0.0163	-0.0100
Am Indian/ Native	-0.0045	0.0589	-0.0800	-0.0436	0.0566	-0.7700
Asian	-0.0593	0.0458	-1.3000	-0.1187	0.0495	-2.4000
Hawaiian / Other Pac Islander	-0.1718	0.1497	-1.1500	-0.0319	0.1802	-0.1800
More than One Race	0.0202	0.0315	0.6400	0.0517	0.0350	1.4800
Hispanic (Any Race)	-0.0107	0.0174	-0.6200	-0.0242	0.0189	-1.2800
Race/Ethnicity Unknown	0.0496	0.0547	0.9100	-0.0242	0.0557	-0.4400
R ²	0.328			0.44		
F	18.19			31.2		
N	3,995			3,995		

Note 1: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 2: $p < 0.05$

Note 3: Sex (female) is compared to male

Note 4: States are compared to Alabama

Appendix I

Table 6: Linear Probability Model Predicting the Likelihood of Experiencing Incarceration in Wave 2 and Wave 3 including Sex, State and Ethnicity

Variable	Wave 2			Wave 3		
	Coef.	Robust Std. Err.	t-value	Coef.	Robust Std. Err.	t-value
FCm1	0.2722	0.0662	4.1200	0.2335	0.0716	3.2600
FCm2	-0.0456	0.0151	-3.0100	0.0032	0.0161	0.2000
FCm3				-0.0335	0.0172	-1.9400
H1	-0.0292	0.0152	-1.9200	0.0001	0.0150	0.0100
H2	0.0867	0.0174	4.9700	0.0413	0.0179	2.3200
H3				0.1283	0.0160	8.0400
S1	0.0437	0.0169	2.5800	0.0069	0.0160	0.4300
S2	0.2669	0.0224	11.9300	-0.0114	0.0214	-0.5400
S3				0.2185	0.0244	8.9400
I1	0.2105	0.0161	13.0400	0.0685	0.0152	4.5100
I2				0.2904	0.0209	13.9000
I3						
cadult1	-0.0311	0.0292	-1.0700	-0.0068	0.0274	-0.2500
cadult2	-0.0334	0.0240	-1.3900	0.0240	0.0226	1.0600
cadult3				-0.0150	0.0205	-0.7300
Enroll1	-0.0417	0.0293	-1.4200	-0.0145	0.0283	-0.5100
Enroll2	-0.0365	0.0121	-3.0200	-0.0290	0.0120	-2.4200
Enroll3				-0.0291	0.0113	-2.5700
Employsk1	-0.0048	0.0133	-0.3600	0.0222	0.0130	1.7100
Employsk2	0.0152	0.0122	1.2400	-0.0097	0.0119	-0.8100
Employsk3				-0.0133	0.0114	-1.1700
Finance1	-0.0222	0.0279	-0.8000	0.0096	0.0298	0.3200
Finance2	-0.0313	0.0247	-1.2700	0.0170	0.0244	0.7000
Finance3				-0.0229	0.0228	-1.0000
Food1	0.0200	0.0303	0.6600	-0.0149	0.0358	-0.4200
Food2	0.0014	0.0177	0.0800	0.0087	0.0173	0.5000
Food3				-0.0345	0.0151	-2.2900
sex						
female	-0.1050	0.0117	-9.0000	-0.0935	0.0115	-8.1200

stfips						
Alaska	0.0290	0.0943	0.3100	-0.1129	0.0955	-1.1800
Arizona	0.0003	0.1177	0.0000	-0.1615	0.1024	-1.5800
Arkansas	0.0071	0.0660	0.1100	-0.0490	0.0711	-0.6900
California	-0.0504	0.0464	-1.0900	-0.1103	0.0543	-2.0300
Colorado	-0.0233	0.0635	-0.3700	-0.0908	0.0702	-1.2900
Connecticut	-0.0055	0.0530	-0.1000	-0.1088	0.0588	-1.8500
Delaware	0.0544	0.0857	0.6400	-0.0118	0.0792	-0.1500
Florida	-0.0855	0.0552	-1.5500	-0.1294	0.0598	-2.1600
Georgia	0.0182	0.0606	0.3000	-0.0508	0.0633	-0.8000
Hawaii	-0.1250	0.0965	-1.3000	-0.1323	0.0980	-1.3500
Illinois	-0.0316	0.0632	-0.5000	-0.0989	0.0689	-1.4400
Indiana	-0.0375	0.0767	-0.4900	-0.0800	0.0791	-1.0100
Iowa	-0.0281	0.0602	-0.4700	-0.0552	0.0680	-0.8100
Kentucky	-0.0150	0.0586	-0.2600	-0.0610	0.0653	-0.9300
Louisiana	0.0034	0.0663	0.0500	-0.0543	0.0672	-0.8100
Maine	-0.1323	0.0791	-1.6700	-0.2010	0.0618	-3.2500
Massachusetts	-0.0623	0.0511	-1.2200	-0.1089	0.0594	-1.8300
Michigan	0.0876	0.0560	1.5600	-0.0951	0.0620	-1.5300
Minnesota	-0.0085	0.0567	-0.1500	-0.1217	0.0602	-2.0200
Mississippi	-0.1057	0.0545	-1.9400	-0.1408	0.0601	-2.3400
Missouri	0.0278	0.0527	0.5300	-0.0167	0.0616	-0.2700
Montana	0.0126	0.0829	0.1500	-0.1806	0.0987	-1.8300
Nebraska	0.1795	0.0919	1.9500	-0.1290	0.0883	-1.4600
Nevada	-0.0642	0.0601	-1.0700	-0.0332	0.0739	-0.4500
New Hampshire	0.0428	0.0812	0.5300	-0.1347	0.0889	-1.5100
New Jersey	-0.1275	0.0514	-2.4800	-0.1396	0.0598	-2.3400
New Mexico	0.0854	0.1629	0.5200	0.0349	0.1476	0.2400
New York	0.0313	0.0578	0.5400	-0.1833	0.0588	-3.1200
North Dakota	-0.0084	0.0808	-0.1000	-0.0420	0.0811	-0.5200
Ohio	0.0128	0.0677	0.1900	0.0068	0.0716	0.1000
Oklahoma	-0.1297	0.0539	-2.4100	-0.1381	0.0612	-2.2600
Oregon	-0.0579	0.0569	-1.0200	-0.0837	0.0684	-1.2200
Rhode Island	-0.0140	0.0597	-0.2400	-0.1076	0.0659	-1.6300
South Carolina	-0.0207	0.0539	-0.3800	-0.0864	0.0603	-1.4300
South Dakota	0.0572	0.0819	0.7000	-0.0193	0.0788	-0.2500
Tennessee	-0.0184	0.0710	-0.2600	0.1434	0.0738	1.9400
Texas	0.0244	0.0529	0.4600	-0.0800	0.0588	-1.3600
Utah	-0.0817	0.0586	-1.3900	-0.1253	0.0631	-1.9900
Vermont	0.0568	0.1742	0.3300	-0.1136	0.1033	-1.1000

Virginia	-0.0513	0.0518	-0.9900	-0.0985	0.0589	-1.6700
Washington	-0.0454	0.0559	-0.8100	-0.0748	0.0637	-1.1700
West Virginia	0.0477	0.0646	0.7400	-0.0245	0.0734	-0.3300
Wisconsin	-0.0682	0.0784	-0.8700	-0.0215	0.0895	-0.2400
Wyoming	0.0523	0.1622	0.3200	0.0357	0.1653	0.2200
Race/ethn						
Black	0.0328	0.0141	2.3200	0.0187	0.0142	1.3100
Am Ind/ Native	0.0397	0.0593	0.6700	0.0750	0.0536	1.4000
Asian	0.0618	0.0478	1.2900	-0.0438	0.0514	-0.8500
Hawaiian / Other Pac Islander	0.1081	0.1455	0.7400	0.1268	0.1230	1.0300
More than One Race	-0.0060	0.0289	-0.2100	0.0152	0.0283	0.5400
Hispanic (Any Race)	0.0281	0.0154	1.8200	0.0131	0.0152	0.8600
Race/Ethnicity Unknown	-0.0210	0.0470	-0.4500	0.0395	0.0500	0.7900
R ²	0.386			0.43		
F	21.100			23.13		
N	3,995			3,955		

Note 1: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 2: $p < 0.05$

Note 3: Sex (female) is compared to male

Note 4: Note 3: States are compared to Alabama

Appendix J

Table 7: Linear Probability Model Predicting the Likelihood of Experiencing Substance Abuse in Wave 2 and Wave 3 including Sex, State and Ethnicity

Variable	Wave 2			Wave 3		
	Coef.	Robust Std. Err.	t-value	Coef.	Robust Std. Err.	t-value
FCm1	0.0235	0.0528	0.4500	0.0370	0.0549	0.6700
FCm2	-0.0238	0.0137	-1.7300	-0.0043	0.0136	-0.3200
FCm3				0.0170	0.0149	1.1400
H1	0.0145	0.0148	0.9800	0.0107	0.0131	0.8200
H2	0.0554	0.0159	3.4900	-0.0159	0.0145	-1.1000
H3				0.0739	0.0133	5.5500
S1	0.2178	0.0167	13.0600	0.0625	0.0141	4.4300
S2				0.1879	0.0212	8.8400
S3						
I1	-0.0056	0.0130	-0.4300	0.0029	0.0119	0.2400
I2	0.2107	0.0181	11.6700	0.0120	0.0166	0.7200
I3				0.1523	0.0174	8.7500
cadult1	-0.0443	0.0249	-1.7800	0.0060	0.0213	0.2800
cadult2	0.0300	0.0209	1.4300	-0.0153	0.0200	-0.7600
cadult3				0.0063	0.0167	0.3700
Enroll1	0.0240	0.0248	0.9700	0.0006	0.0241	0.0200
Enroll2	-0.0114	0.0110	-1.0400	-0.0036	0.0100	-0.3600
Enroll3				0.0017	0.0096	0.1700
Employsk1	0.0102	0.0122	0.8300	-0.0110	0.0107	-1.0300
Employsk2	0.0138	0.0110	1.2500	0.0027	0.0101	0.2700
Employsk3				0.0045	0.0095	0.4800
Finance1	0.0207	0.0275	0.7500	-0.0030	0.0209	-0.1400
Finance2	0.0083	0.0231	0.3600	0.0099	0.0212	0.4700
Finance3				0.0031	0.0179	0.1700
Food1	-0.0227	0.0272	-0.8300	-0.0069	0.0268	-0.2600
Food2	-0.0029	0.0155	-0.1900	-0.0128	0.0144	-0.8900
Food3				-0.0153	0.0123	-1.2400
sex						
female	-0.0057	0.0101	-0.5600	-0.0026	0.0094	-0.2800

stfips						
Alaska	0.0751	0.0874	0.8600	0.0193	0.0807	0.2400
Arizona	-0.0104	0.0782	-0.1300	-0.0204	0.0713	-0.2900
Arkansas	-0.0416	0.0493	-0.8400	-0.0163	0.0565	-0.2900
California	0.0606	0.0337	1.8000	-0.0436	0.0410	-1.0600
Colorado	-0.0442	0.0494	-0.8900	-0.0083	0.0555	-0.1500
Connecticut	0.1231	0.0452	2.7200	0.1042	0.0505	2.0700
Delaware	0.0727	0.0717	1.0100	0.0963	0.0795	1.2100
Florida	0.0193	0.0404	0.4800	-0.0133	0.0464	-0.2900
Georgia	0.0097	0.0434	0.2200	-0.0484	0.0454	-1.0700
Hawaii	0.0979	0.0947	1.0300	0.1766	0.1142	1.5500
Illinois	0.0753	0.0580	1.3000	0.1090	0.0698	1.5600
Indiana	0.0631	0.0736	0.8600	0.0126	0.0723	0.1700
Iowa	0.0194	0.0473	0.4100	-0.0102	0.0510	-0.2000
Kentucky	-0.0006	0.0467	-0.0100	-0.0599	0.0456	-1.3100
Louisiana	-0.0936	0.0418	-2.2400	-0.0328	0.0491	-0.6700
Maine	0.0512	0.0913	0.5600	0.0150	0.1030	0.1500
Massachusetts	-0.0001	0.0393	0.0000	-0.0330	0.0464	-0.7100
Michigan	-0.0089	0.0397	-0.2200	0.0581	0.0501	1.1600
Minnesota	0.0144	0.0423	0.3400	0.0283	0.0492	0.5800
Mississippi	0.0204	0.0409	0.5000	-0.0488	0.0411	-1.1900
Missouri	0.0740	0.0400	1.8500	-0.0107	0.0450	-0.2400
Montana	0.0154	0.0606	0.2500	0.0699	0.0863	0.8100
Nebraska	0.0144	0.0712	0.2000	-0.0759	0.0619	-1.2300
Nevada	0.0078	0.0505	0.1500	0.0217	0.0573	0.3800
New Hampshire	-0.0330	0.0663	-0.5000	-0.0203	0.0636	-0.3200
New Jersey	0.0610	0.0493	1.2400	0.0229	0.0522	0.4400
New Mexico	-0.0166	0.1370	-0.1200	0.0856	0.1356	0.6300
New York	0.0736	0.0449	1.6400	-0.0283	0.0476	-0.6000
North Dakota	0.0041	0.0680	0.0600	-0.0312	0.0637	-0.4900
Ohio	-0.0435	0.0496	-0.8800	-0.0507	0.0507	-1.0000
Oklahoma	-0.0168	0.0430	-0.3900	0.0047	0.0477	0.1000
Oregon	-0.0250	0.0524	-0.4800	-0.0682	0.0432	-1.5800
Rhode Island	0.0074	0.0457	0.1600	0.0366	0.0530	0.6900
South Carolina	-0.0302	0.0386	-0.7800	-0.0329	0.0436	-0.7500
South Dakota	0.0416	0.0643	0.6500	0.0449	0.0701	0.6400
Tennessee	0.1222	0.0669	1.8300	-0.0262	0.0623	-0.4200
Texas	-0.0197	0.0383	-0.5100	-0.0289	0.0442	-0.6500
Utah	-0.0210	0.0432	-0.4900	-0.0050	0.0492	-0.1000

Vermont	0.0970	0.1339	0.7200	-0.1316	0.0591	-2.2300
Virginia	0.0568	0.0405	1.4000	0.0507	0.0476	1.0700
Washington	0.0173	0.0434	0.4000	-0.0355	0.0467	-0.7600
West Virginia	-0.0385	0.0467	-0.8200	0.0396	0.0578	0.6900
Wisconsin	-0.0055	0.0533	-0.1000	0.0092	0.0633	0.1400
Wyoming	0.2773	0.1658	1.6700	-0.1891	0.0580	-3.2600
Race/ethn						
Black	-0.0325	0.0120	-2.7000	-0.0131	0.0113	-1.1600
Am Ind/ Native	-0.0218	0.0486	-0.4500	0.0100	0.0429	0.2300
Asian	-0.0321	0.0499	-0.6400	0.0737	0.0548	1.3500
Hawaiian / Other Pac Islander	-0.2035	0.0844	-2.4100	-0.1011	0.1335	-0.7600
More than One Race	0.0078	0.0263	0.2900	0.0024	0.0238	0.1000
Hispanic (Any Race)	-0.0161	0.0150	-1.0800	-0.0082	0.0131	-0.6300
Race/Ethnicity Unknown	-0.0587	0.0481	-1.2200	-0.0636	0.0331	-1.9200
R ²	0.305			0.27		
F	12.240			7.77		
N	3,995			3,995		

Note 1: Robust standard errors were used to obtain unbiased standard errors. Robust standard errors may be larger than normal standard errors.

Note 2: $p < 0.05$

Note 3: Sex (female) is compared to male

Note 4: States are compared to Alabama