Leaving the Nest: The Effect of Moving Out on Victimization Rates Among Young Adults

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Abstract

This paper utilizes data from the National Crime Victimization Survey to explore the discontinuous change in victimization rates between individuals aged 15–29 associated with moving out of one's family home. I find a discrete decrease in the proportion of young adults living at home and a discrete increase in the victimization rate starting at 18 years of age, due to factors such as leaving home for college or entering the labor market. I utilize a two-stage least squares regression to first predict the likelihood of an individual leaving home after turning 18, and subsequently find that moving away from home after turning 18 ultimately increases the average victimization rate in the 18-and-up group by up to 13 percentage points.[1]

1 Introduction

Safety on and around university campuses is an ongoing concern for both students and their parents. While the violent victimization rate among college students has declined in parallel with violent victimization rates nationwide over the past two decades, incidents such as rape and other sex-related crimes among college students has increased significantly particularly in the last ten years (US Department of Justice Office for Victims of Crime, 2017).

College campuses are usually perceived as safe havens built to protect students from the various forms of victimization that may affect the general population. However, that does not mean college students are immune to both violent and nonviolent victimization. With the rise of social media and other forms of technology, college students today find themselves at a greater risk for stalking victimization compared to previous decades (Brady, Nobles, and Bouffard, 2017). American college students also find themselves more likely to be victims of theft and sexual victimization (Mustaine and Tewksbury, 1998). Nearly one-third of female college students report some type of sexual, physical, and/or emotional victimization during their four years at college, and in particular, college women who report any of the three forms of victimization subsequently face an eight-fold increase in suicidality compared to women who have not been victimized in the same group (Leone and Carroll, 2016).

There are several factors that may help explain why college students in the United States become victimized at greater rates than the general population in certain categories of crime. Exposure to alcohol and drugs, being a member of a Greek organization, and spending time in places that are predominantly male are all factors that increase a student's exposure to crime while attending college (Brady, Nobles, and Bouffard, 2017). Moreover, many college students are living on their own for the first time in their lives, and may inadvertently become exposed to risks that they may not have experienced while living with their families. I am, however, not aware of any paper that explores the role of living at home on the frequency of victimization among high school and college students.

This paper utilizes data from the National Crime Victimization Survey to explore the discontinuous change in victimization rates between young adults aged 15–29 associated with moving out of one's family home. I hypothesize that moving out and away from parents may increase the likelihood of being victimized due to an absence of parental supervision. Given that a significant proportion of high school graduates leave home after turning 18 to attend college, I also expect to see an increase in victimization rates among those who leave home for college due to an increase in independence and individual responsibility when living away at school.

I begin by exploring both the average victimization rate and the proportion of young adults living at home by single year of age for individuals 15 to 29 years of age. I find a discrete decrease in the proportion living at home and a discrete increase in the victimization rate at 18 years of age. Both changes are sizable – an increase of 200% in the proportion living away from home and an increase of 175% in the victimization rate occur – and are statistically significant. I then conduct regressions to test whether these are statistically significant differences attributable to age differences, and find evidence suggesting the presence of exogenous factors that may explain whether an individual chooses to live at home after turning 18. I utilize a dummy variable, `over17`, in a two-stage least squares regression and estimate a coefficient on my variable for those no longer living at home to be 0.132. What this suggests is that moving away from the watchful eye of one's parents at home after turning 18 ultimately increases one's chances of being victimized and can increase the average victimization rate in the 18-and-up group by up to 13 percentage points.

2 Description of the National Crime Victimization Survey

The National Crime Victimization Survey (NCVS) is a semi-annual survey administered by the Bureau of Justice Statistics under the U.S. Department of Justice. The NCVS surveys 49,000 to 75,000 households on the frequency and nature of crime victimizations experience by the household (for example, a home burglary) as well as personal victimizations experience by individual members of the household (for example, a violent assault). The Survey also collects information on basic demographic and socioeconomic household and individual characteristics. Respondents in the Survey have the option to discuss information on crimes including assault, motor vehicle theft, theft, rape, sexual assault robbery, and burglary.

The NCVS provides significant insight into incidents of victimization and crime that may have been unreported and undiscovered in conventional crime statistics measures. Since 1992, the NCVS categorizes crimes as personal crimes or property crimes, and gathers details on the incident itself along with descriptors of each incident in four distinct category levels: address, household, person, and incident. The address and household level files contain information pertaining to information about each surveyed household and characteristics of the physical surrounding area. The person level data aggregates victimization data for each household member aged 12 or above and contains one record entry for each qualifying member for every household. General descriptors of any incidents of victimization for each household individual can be found in the person level data along with basic demographic information, such as age, race, gender, income, and education level. Meanwhile, the incident level data enables further analysis of the types of victimization by collecting information drawn from specific incident reports based on the person level data pertaining to each household member. **I use the National Crime Victimization Survey as my dataset with the**

primary objective of examining the effect of leaving home on the frequency of victimization of individuals in my selected age group of individuals aged 15–29.

The NCVS labels data with uniquely identifying variables to facilitate merging of the four separate files. **For the purposes of this paper I use information from the person and incident level files.** I merge the incident level data with person level data using the household ID (IDHH) and person ID (IDPER) variables in both datasets to produce a merged person/incident type file that indicates the frequency of victimization among all household members and if applicable, descriptors of any incidents pertaining to each household member.

2.a   Variables

I identify key variables that help illustrate the nature of living at home on victimization rates, and also identify variables that are specific to the 15–29 age group in question. One variable deserving of addition attention is that of notathome. The National Crime Victimization Survey does not ask survey respondents about their living arrangements. I utilize variable V3012 from the person level data, which asks each respondent their relationship to the primary reference person in each surveyed household, to identify those responding as either the son or daughter of the reference person. In doing so, I identify a proportion of my sample who are living at home with their parents (i.e., sons and daughters) and categorize the remainder of the respondents as those who do not live at home with their parents.

Original Variable Name	Renamed or New Variable	Significance
V3034	Stolen	1 or "yes" if respondents reported having something stolen
V3036	Broken	1 or "yes" if respondents reported having their primary residence broken into
V3038	motor	1 or "yes" if respondents reported a car break-in and other motor vehicle theft
V3046	coerced	1 or "yes" if respondents reported being coerced into any unwanted sexual activity
V3079	college	1 or "yes" if respondents are currently attending college
V3013	age	Age of respondents, constrained to 15 to 29 years of age
N/A	age1	Age of respondents, minus 18. This makes all ages in the range relative to 18 (i.e., age1 = 0 for an 18 year-old)
N/A	victim	1 or "yes" if respondents responded "yes" to stolen, broken, motor, and/or coerced
V3017	sex or male	1 or "yes" if respondents are male
N/A	agesq	Age of respondents, squared (i.e., ranges from 225–841)
N/A	over17	1 or "yes" if the age of the respondent is over 17 (i.e., 18 or older)
N/A	notathome	1 or "yes" if individuals do not reside at home with their parents

Table 1: Variables Considered

3 Estimation Strategy

Determining how living at home affects whether an individual is victimized is difficult using a cursory analysis of the merged data from the person and incident level data. The sheer size of the merged dataset, along with over 200 variables, makes it necessary to estimate the effects of living at home using a select group of variables from both person and incident level data.
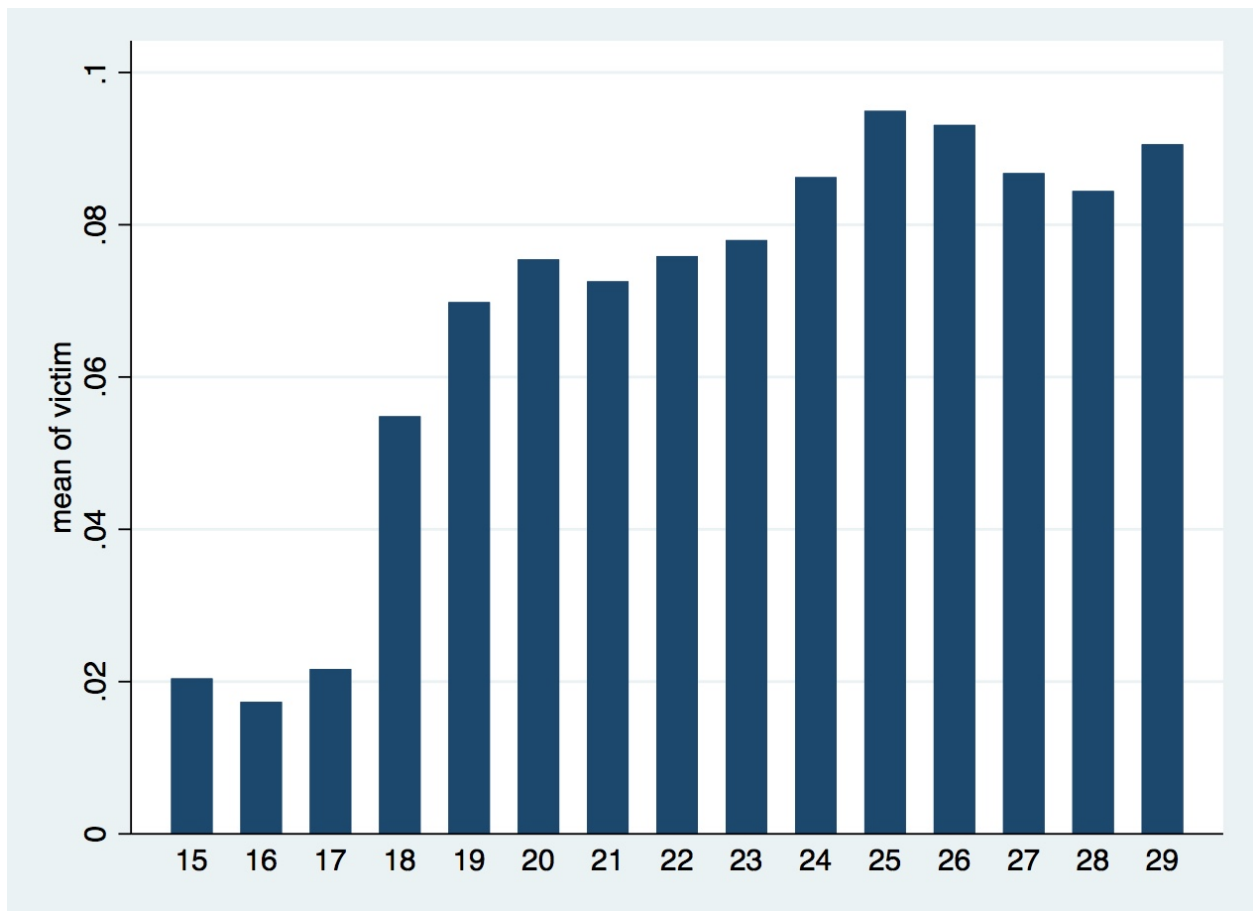
3.a Exploration of Data and Trends

Figure 1: Average Victimization Rate by Age

I begin exploring changes in victimization over age within my particular age group of individuals aged 15–29. The overall trend indicates that the average victimization rate increases with an increase in age; however, an approximate 175% jump in the victimization rate from 17 to 18 indicates that discontinuity in how victimization changes over time. It is worth noting that between the ages of 15–29, the greatest increases in victimization rate occur in the two years between the ages of 17 to 19.
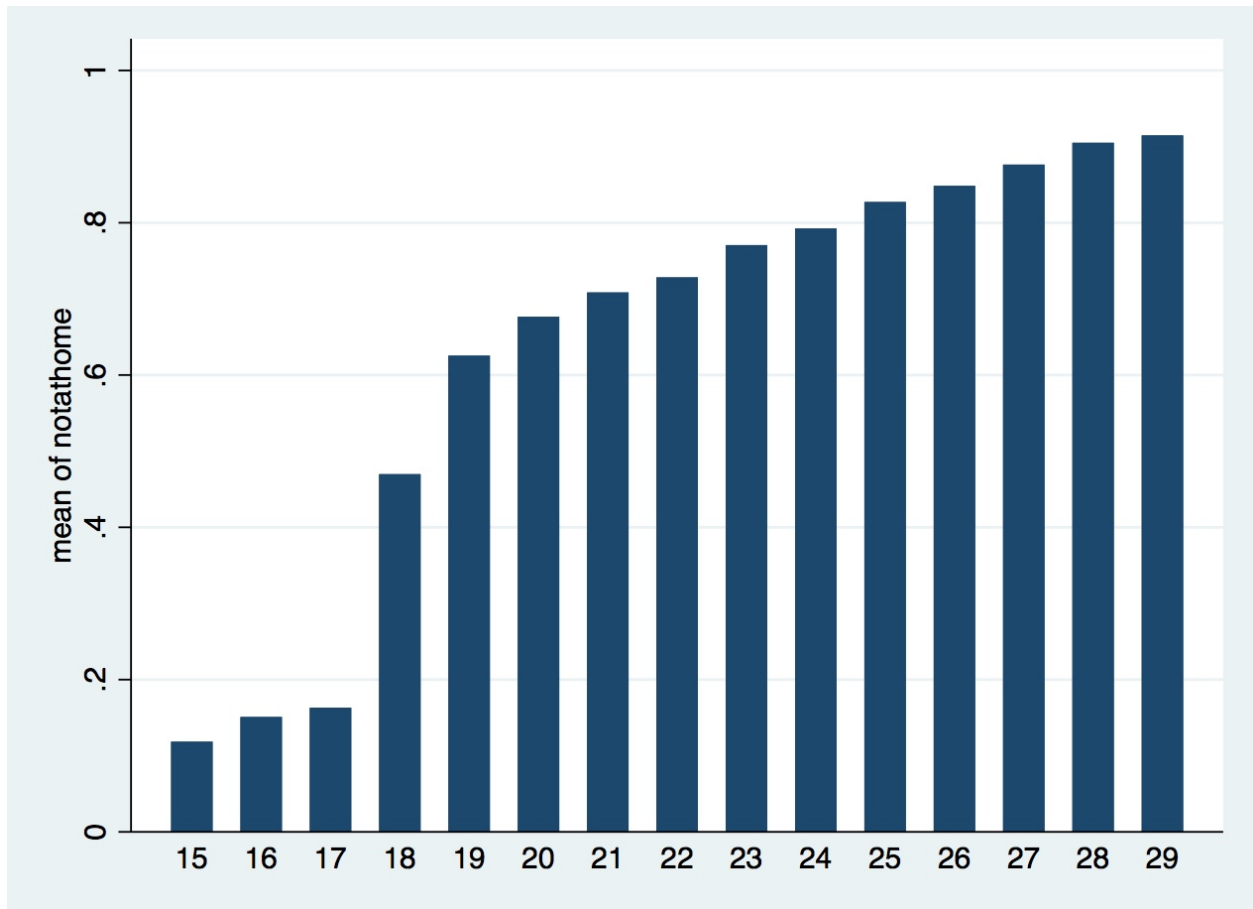
Figure 2: Percentage of Individuals Living Away from Home, by Age

I continue this analysis by examining changes in the rate of victimization over age by looking at the percentage of individuals who are no longer living with their parent(s). A similar pattern emerges with the `notathome` variable where 18 years of age sees an approximate 200% increase in the rate at which individuals are no longer living at home. It is once again evident that the greatest changes in the proportion of individuals living away from home occur in the 17–19 age range.
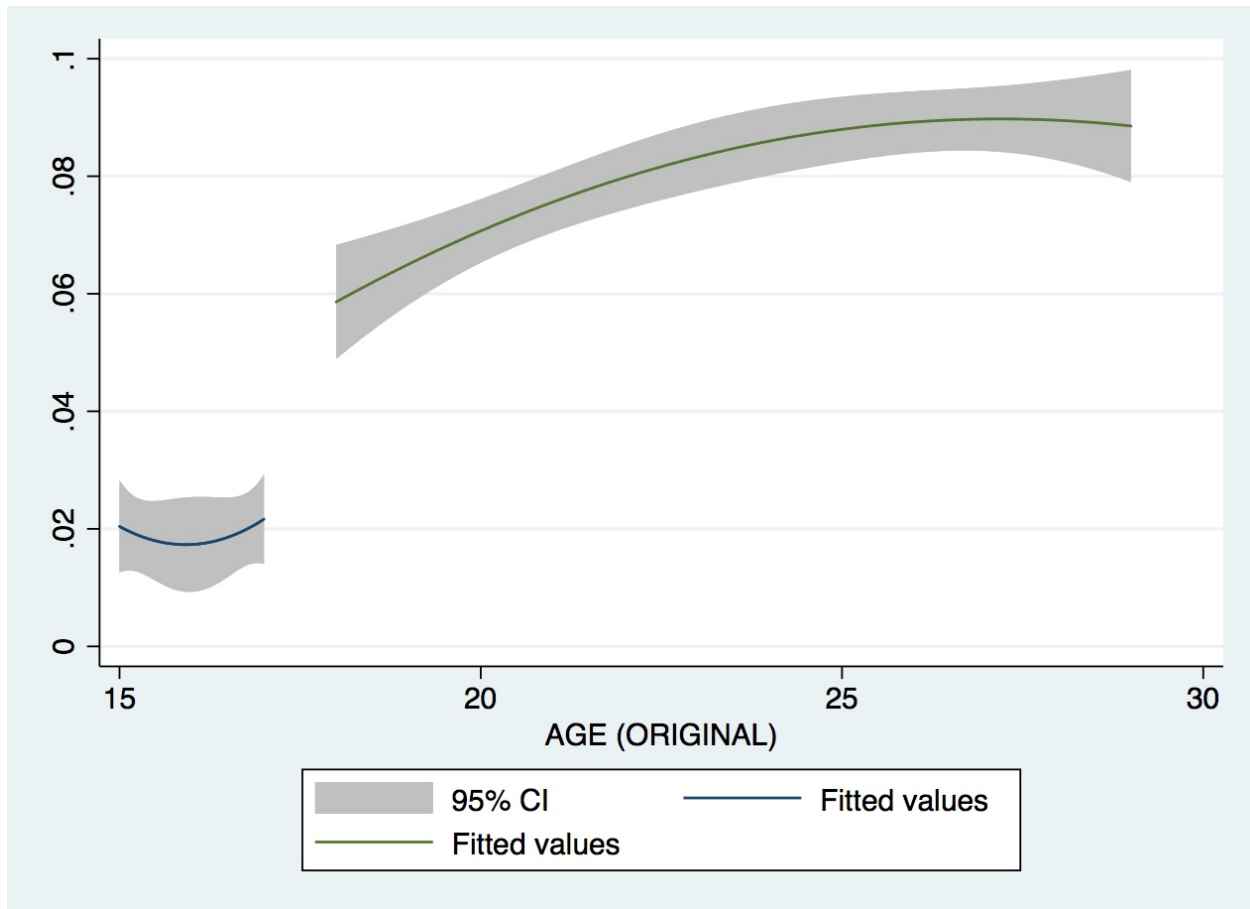
Figure 3: Mean Victimization Rates Over Age, Under 18 and 18 or Older

Furthermore, by plotting changes in the victimization rate against age with a break at the age of 18, it becomes apparent that a discontinuity occurs where an exogenous factor contributes to a substantial increase in the victimization rates of individuals once reaching adulthood. The discontinuity suggests the possibility of an exogenous factor affecting the rates at which individuals live at home once they turn 18 or older. Such factors could be attributed to high school students moving away for college at the age of 18, or leaving home to enter the workforce.

3.b   Regression Discontinuities

Given the presence of a discontinuity in victimization rates once respondents turn 18, I utilize a regression discontinuity design (RDD) in an attempt to elicit the causal effects of an individual's status at home on victimization rates. In particular, I assign a threshold – whether an individual is over 17 – and examine observations on either side of the age threshold to estimate the average effect that living at home may have on victimization rates.

The main problem with estimating the causal effect of living at home on victimization rates is the endogeneity of living at home on the rate of which individuals are victimized. Since those living at home tend to be younger on average and spend a majority of their time in a school setting under the supervision of teachers and other adults, comparing the outcomes of victimization rates among those living and not living at home would provide insufficient estimates of the causal effects of living at home.

A regression discontinuity design would be able to utilize exogenous characteristics to elicit causal effects in exploring the role of living at home, otherwise known as a treatment, on victimization rates. RDDs require that treatment assignment must also be "as good as random" at the cut-off with respect to treatment in order to facilitate comparisons between those who did receive treatment and those who did not (Angrist and Pischke, 2014). It is therefore necessary to pick an exogenous characteristic such as whether an individual is over 17 as an instrument for determining whether an individual resides at home with their parents. Since 18 years of age corresponds with the transition of high school graduates into either college students or as members of the workforce – both of which often involve moving away from home – comparing victimization rates across the cut-off age of 18 will quantify the effect of living at home on victimization rates.

Many existing regression discontinuity designs center upon the assumption that there exists a sharp and distinct cut-off for which a discontinuity is apparent. The use of "sharp" RDs in the case of the legal drinking age and dying (Carpenter and Dobkin, 2011) allows for a close examination on how mortality risks increases noticeably in the days following an individual's 21$^{\text{st}}$ birthday. In contrast, a "fuzzy" RD consists of a discontinuity not characterized by a discrete one-time change at a particular threshold but rather one that is characterized by higher treatment (i.e., moving away from home/status at home) for individuals who cross a specified cut-off (i.e., reaching the age of 18 or older). The "fuzzy" regression discontinuity design will therefore serve as the basis for analyzing the effect of living at home on victimization rates.

3.c   Reduced Form and Two-Stage Least Squares Regression

I begin to quantify the effect of age on victimization rates with the following reduced form equation:

$$\texttt{victim}_i = \alpha_0 + \alpha_1 \texttt{over17}_i + \alpha_2 \texttt{age1}_i + \alpha_3 \texttt{agesq}_i + \alpha_4 \texttt{male}_i + \alpha_5 \texttt{college}_i + \varepsilon_i \qquad (1)$$

Where $\texttt{victim}$ is the victimization rate, $\texttt{over17}$ is a dummy for whether an individual is over the age of 17, $\texttt{age1}$ is the normalized age value where 18 years of age corresponds to a value of 0, $\texttt{agesq}$ is $\texttt{age1}$ squared, $\texttt{male}$ is a dummy for whether an individual is male, and $\texttt{college}$ is a dummy for whether a surveyed individual is currently attending college. The use of a reduced form equation allows the endogenous variable, $\texttt{victim}$, to be expressed as a function of the exogenous variable, $\texttt{over17}$. While the coefficient of $\texttt{over17}$

does not give the true effect or magnitude of living at home on victimization rates, it is nonetheless possible to see the sign of the relationship between the exogenous variable and the outcome variable.

I then use a two-stage least squares regression to obtain a causal coefficient of an endogenous variable, living at home, on the outcome variable, victimization rates. This process begins by first regressing the endogenous variable, `notathome`, on all variables including the exogenous instrument, `over17`. In the second stage, the **predicted** value of `notathome` (denoted by $\widehat{\texttt{notathome}}_i$) replaces the `notathome` variable and consequently the coefficient of the predicted `notathome` represents an isolated coefficient for the effect of living at home on victimization rates.

The first stage equation of the two-stage least squares regression is as follows:

$$\widehat{\texttt{notathome}}_i = \beta_0 + \beta_1 \texttt{over17}_i + \beta_2 \texttt{age1}_i + \beta_3 \texttt{agesq}_i + \beta_4 \texttt{male}_i + \beta_5 \texttt{college}_i + \sigma_i \tag{2}$$

The second stage equation would be given by:

$$\texttt{victim}_i = \gamma_0 + \gamma_1 \widehat{\texttt{notathome}}_i + \gamma_2 \texttt{age1}_i + \gamma_3 \texttt{agesq}_i + \gamma_4 \texttt{male}_i + \gamma_5 \texttt{college}_i + \upsilon_i \tag{3}$$

By substituting the first stage equation into the second stage equation, we have:

$$\texttt{victim}_i = \gamma_0 + \gamma_1 (\beta_0 + \beta_1 \texttt{over17}_i + \beta_2 \texttt{age1}_i + \beta_3 \texttt{agesq}_i + \beta_4 \texttt{male}_i + \beta_5 \texttt{college}_i + \sigma_i)$$
$$+ \gamma_2 \texttt{age1}_i + \gamma_3 \texttt{agesq}_i + \gamma_4 \texttt{male}_i + \gamma_5 \texttt{college}_i + \upsilon_i$$

$$\begin{aligned} \texttt{victim}_i = (\gamma_0 + \gamma_1 \beta_0) + (\gamma_1 \beta_1) \texttt{over17}_i + (\gamma_1 \beta_2 + \gamma_2) \texttt{age1}_i + (\gamma_1 \beta_3 + \gamma_3) \texttt{agesq}_i \\ + (\gamma_1 \beta_4 + \gamma_4) \texttt{male}_i + (\gamma_1 \beta_5 + \gamma_5) \texttt{college}_i + (\gamma_1 \sigma_i + \upsilon_i) \end{aligned} \tag{4}$$

Which can be simplified to:

$$\texttt{victim}_i = \beta_0' + \beta_1' \texttt{over17}_i + \beta_2' \texttt{age1}_i + \beta_3' \texttt{agesq}_i + \beta_4' \texttt{male}_i + \beta_5' \texttt{college}_i + \phi_i \tag{5}$$

In particular, β_1' from equation 5 or $(\gamma_1 \beta_1)$ from equation 4 serves as the effect of living at home on victimization, as instrumented through the `over17` dummy variable. It is also worth noting that equation 5 is equivalent to equation 1. However, equation 5 expresses coefficients from the reduced form equation as a function of the structural parameters in the first and second stage regression models.

	Reduced Form Regression	Two-Stage Least Squares Regression	
	Equation 1 (Dependent variable: $\texttt{victim}_i$)	Equation 2 (Dependent variable: $\widehat{\texttt{notathome}}_i$)	Equation 3 (Dependent variable: $\texttt{victim}_i$)
over17	0.0283001 (0.0079647)	0.2061566 (0.0146647)	–
notathome	–	–	0.1372747 (0.0457246)
age1	0.0149883 (0.0069375)	0.1267294 (0.0112249)	−0.0024084* (0.0121623)
agesq	−0.0002628* (0.0001492)	−0.0018629 (0.0002386)	−0.00000702* (0.000222)
male	−0.0200238 (0.0033631)	−0.0344322 (0.0052694)	−0.0152971 (0.003733)
college	−0.0003112* (0.0043157)	0.1093678 (0.006512)	−0.0153246 (0.0073975)
constant	0.1274523 (0.051984)	0.8906486 (0.0838703)	0.0051888* (0.0886656)

Table 2: Victimization Models Estimating the Reduced Form Effects of Being Over 17 and the Structural Effects of Being at Home on Criminal Victimization[2]

The first equation helps to quantify the effects of the dummy variable, over17, on the overall victimization rate. An estimated coefficient of 0.0283 indicates that on average, we expect an individual that is over 17 (anyone aged 18–29 in the sample) to have a victimization rate that is 2.83% higher than the rate seen across the 15–17 age group. In addition, a positive coefficient of 0.0149 on age1 further confirms the positive relationship between age and victimization rates as seen in graph 1.

With respect to equation 2 (i.e., the first stage regression from the two-stage least squares regression), note that the dependent variable is $\widehat{\texttt{notathome}}_i$, not victim. The coefficient estimate of 0.206 for over17 provides strong evidence showing a large decline in the percentage of individuals living at home in the age group 18 and up. On average, this indicates that being over 17 alone helps to increase the not-at-home probability by over 20%, while on the other hand a coefficient of 0.126 on age1 confirms the general trend that older individuals are generally less likely to remain living at home with their parents. An estimated coefficient of 0.109 on the dummy college points towards the fact that going to college is also a significant factor in causing an individual to move away from home.

It is ultimately the coefficient of notathome from the third equation that helps quantify the effect of moving away from home on changes in the victimization rate. With an estimated coefficient of 0.132, the net effect of moving away from home is reflected in a 13% increase in victimization rates. It is also possible to examine the net effect of both being at college and living away from home (i.e., moving away from home

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[2]All robust standard errors for estimated coefficients are given in parentheses. Estimated coefficients with an asterisk are **not** statistically significant at the 5% level.

to attend college). By adding the coefficients on college and `notathome` from equation 3, the sum of 0.117 ($0.13272747 - 0.0153246$) suggests a slightly lower increase in victimization rates for individuals who leave home for the purposes of attending college. Contrary to current debate surrounding the lack of college campus safety, what this demonstrates is that going to college is in fact protective for those leaving home for the first time.

3.d Comparison to 1996 Data

	Reduced Form Regression	Two-Stage Least Squares Regression	
	Equation $1 - 1996$ (Dependent variable: `victim`$_i$)	Equation $2 - 1996$ (Dependent variable: $\widehat{\texttt{notathome}}_i$)	Equation $3 - 1996$ (Dependent variable: `victim`$_i$)
`over17`	0.0535911 (0.012317)	0.1817443 (0.0140366)	—
`notathome`	—	—	0.2948707 (0.0670871)
`age1`	−0.0009796* (0.009346)	0.2074286 (0.0111139)	−0.0621443 (0.0221559)
`agesq`	−0.0000637* (0.0001969)	−0.0035711 (0.0002357)	0.0009893 (0.00413)
`male`	−0.0010634* (0.0042814)	−0.0553792 (0.0050842)	0.0152663 (0.0058075)
`college`	0.0097412* (0.006092)	0.0558951 (0.0068787)	−0.0067406* (0.0076679)
constant	0.1107139* (0.0693018)	1.4748 (0.0825846)	−0.03241614 (0.1607297)

Table 3: Victimization Models Estimating the Reduced Form Effects of Being Over 17 and the Structural Effects of Being at Home on Criminal Victimization (1996 Data)[3]

To gain further insight into the relationship between living at home and victimization rates, I perform the same regressions using 1996 data. The first equation reveals a similar effect of the dummy variable, `over17`, on the overall victimization rate. An estimated coefficient of 0.0535 indicates that on average, we expect an individual that is over 17 to have a victimization rate that is 5.35% higher than the rate seen across the 15–17 age group. Compared to 2016, which saw an estimated coefficient of 0.0238, it can be argued that being at or above the 18 year-old cutoff in 1996 had a greater determinant in whether an individual was victimized. However, it is also worth stating that no other variables in the first equation have a statistically significant estimated coefficient based on 1996 data. It becomes unclear whether the trends between age and victimization rates as seen in graph 1 can be applied to 1996 NCVS data.

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[3]All robust standard errors for estimated coefficients are given in parentheses. Estimated coefficients with an asterisk are **not** statistically significant at the 5% level.

Like the 2016 data, equation 2 (i.e., the first stage regression from the two-stage least squares regression) using 1996 responses yields strong, statistically significant evidence showing a large decline in the percentage of individuals living at home in the age group 18 and up. The 1996 data shows a similar ~20% increase in the not-at-home probability, while an equally high estimated coefficient on `age1` further highlights a trend where older individuals are less likely overall to remain living at home with their parents.

It is also possible to see the combined effects of leaving home and being away at college through the sum of the estimated coefficients on `college` and `notathome` from equation 3. A sum of 0.288 (0.2948708 − 0.0067406) suggests a similarly protective effect of leaving home for the purpose of attending college. In both 2016 and 1996 it appears that simply being away from home has a significant effect on increasing victimization rates; however, leaving home to attend college in particular reveals how a school environment may mitigate some of the risk factors that leaving home may have on increasing an individual's estimated victimization rate.

4   Conclusion

The purpose of this paper is not to determine any relationship between victimization rates of students on a college campus and whether college campuses in the United States are more "dangerous" than any other public setting. What becomes apparent through an analysis of National Crime Victimization Survey results is that there appears to be a statistically significant effect of leaving home on the selected 15–29 age group with respect to victimization rates.

It becomes apparent through the reduced form regression of this model that age has a statistically significant effect on the victimization rate of 15–29 year-old individuals. The subsequent use of a two-stage least squares regression helps to further establish a predicted coefficient for the "not at home" factor by strictly isolating the effect of living at home, or lack thereof, on victimization rates. This ultimately provides insight into the fact that on average, individuals over 17 years of age see a 13% increase in victimization rates as a result of leaving home once they turn 18.

While analysis of NCVS data shows the possibility of an increase in victimization rates once leaving home, there are other considerations when evaluating victimization rates in the 15–29 year-old age group. Life events after turning 18 and graduating high school – including going to college, finding employment, or even joining the armed forces – can all have significant effects on overall victimization rates. However, given that living away at home and attending college only adds a marginal 1.5% increase to overall victimization rates, it is also possible that individuals naturally move out at 18 to go to school for reasons that have little relationship with changes in victimization rates.

What this paper explores is the issue of independence and how eventually, young individuals eventually move out of their homes as they transition to adulthood. The physical act of moving out shows clear effects of elevating one's risk of being victimized at a time where significant discourse is focused on the safety of college campuses in particular for 18–22 year-old college students. Perhaps it is time to also consider the protective effect of parental supervision and ultimately the loss of such protective factors when individuals decide to leave home for major life events.

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