1-1-2016

Measuring Millennials: Teenage Idleness in the Digital Age

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Abstract

This research aims to model the relationship between factors contributing to situational privilege and teenage idleness. We will study the impact of race, income, household type, unemployment, and education on teenage idleness across 348 Metropolitan Statistical Areas within the United States. It is important to identify influential factors on teen idleness in order for government and community leaders to implement successful policies to get teenagers off the streets and into the workforce. Factors that were found to have a significant impact on teen idleness included the MSAs makeup of household types, race, median income, unemployment, and attainment of a bachelor's degree or higher.

Keywords: teenage idleness, millennials, situational privilege, education, workforce

JEL Codes: I24, J71, J41, I31

I. Introduction

Millennials are plagued with unflattering stereotypes of laziness and entitlement. Growing up with answers only a Google search away and entertainment always in their pocket, people of Generation X and Baby Boomers tend to perceive that many Millennials have never had to work. However, in this study, we argue that Millennials' propensity to work is not determined by dependence on technology or a lack of motivation. Instead, it is guided by situational factors that create privilege for some Millennials over others, and are thus out of their control. Therefore, we hypothesize that teens with higher incomes are more likely to be enrolled in school and participate in the workforce.

This study seeks to determine the factors that contribute to teenage idleness. Teenage idleness is the percentage of teens in a metropolitan statistical area (MSA) between the ages of 16 and 19 that are not enrolled in school or in the labor force. Our model aims to explain how situational factors contributing to privilege affect a teenager's opportunity and ability to participate in the workforce or education. Privilege is defined as a benefit given to only some based upon factors outside of the individual's control. For example, an individual belonging to a disenfranchised lower income area will have less opportunity to be employed or in school than a teenager from an upper-middle class neighborhood due to factors such as financing education and family expectations, giving a teenager who does not have to face these obstacles more opportunity due to situational privilege.

We define situational privilege as factors that cannot be changed by the individual, such as family structure, family income, race, and average educational attainment of the surrounding community. Situational privilege differs from attributed privilege, which are forms of privilege that derive from an individual's personality characteristics, such as intelligence, internal

motivation, extroversion and introversion, sense of humor, etc. Attributed privilege is exceedingly difficult to measure and separate from situational privilege. For the purpose of this study, we will only be looking at situational privilege.

It is important to understand situational privilege's influence on MSA teen idleness in order to create equality of opportunity between American communities. If statistically and economically significant factors that determine teen idleness are identified, it may influence the decision of policy makers and community leaders to create social and fiscal programs that mitigate situational privilege's influence on teen idleness.

Teenage idleness decreases future opportunities for the individual. By not participating in the labor market or education, they miss valuable years of experience that would enable them to get better or higher paying jobs in the future. Merton's strain theory of deviance suggests that deviance occurs when 'institutionalized means' (getting a good education and job) of achieving cultural goals (wealth and status) are blocked. This suggests that a higher teen idleness will result in more deviant activity, like crime and teen births (Waldner-Haugrud).

The regression results display a strong negative relationship between idleness and median household income, percent caucasian, unemployment rates, bachelor's degree obtention, and non-family households. The percent of male-led households is the only statistically significant figure that leads to an increase in teen idleness.

We will next describe our chosen variables and unique statistical individuals in the sample. The data section will also address particular choices made when collecting the sample, and outside factors that may influence the data. In methodology, we will discuss the theoretical relationship between the variables chosen for the regression and teenage idleness. We will detail

the steps to finding the best regression to explain idleness. Finally, our results will explain the relationship between the identified independent variables and teen idleness.

II. Data

The dependent variable, teenage idleness, was gathered from the U.S. Census by calculating the proportion of residents registered between the 16 and 19 years of age who are not in school or participating in the workforce. Teenage idleness will be measured against independent variables: race, median household income, average education attainment, and household type. Race is divided into three categories, Caucasian, Hispanic, and Black or African American, represented by the percentage of the teen population in each MSA is of that race. We chose to measure the racial makeup of the teen population instead of the overall population because we are looking at the impact of teens' race on their situational privilege. Measuring teens' race instead of the total population gives the models a more accurate representation of how privilege affects teen idleness.

Median household income is measured in 2014 inflation-adjusted dollars. Educational attainment is measured in two parts, the percentage of the MSA that has a bachelor's degree or higher, and the percentage of the population that holds a high school diploma or higher. Household types are separated into four types measuring percentage of each type. The types are male-led single parent households, female-led single parent households, married households, and non-family households (the individual is living alone or with non-relatives). All the data for the 348 metropolitan statistical areas is sourced from the 2010-2014 American Community Survey 5 Year Estimates. See Table 1 in the appendix for summary statistics of all variables.

The average teen idleness is 4.9 percent with a margin of error of +/- 0.1 percent. The minimum is 0.8 percent in Ames, Iowa, and the maximum is 13.8 percent in Monroe, Louisiana.

Ames is home to Iowa State University of Science and Technology, contributing to the percentage of teens who are enrolled in the university and therefore are not idle. Ames holds the third highest rate of non-family households, after College Station, Texas and State College, Pennsylvania. This indicates that most teens reporting to be in non-family households live in college towns, presumptively to attend university and therefore are not idle. This is supported by Ames's percentage of bachelor degree holders, which lands at sixth in the nation at 48.5 percent. Ames also has the highest high school graduation rate in the United States at 95.8 percent. Monroe, Louisiana has the fifth highest rate of female-led single parent households at 41.8 percent, and the seventh lowest median household income at $38,406. This research hopes systematically explain the quantitative factors that position Ames and Monroe as the cities with the lowest and highest idleness rates.

Brownsville, Texas has the lowest median household income of $33,390. This is a drastic difference from San Jose, California, the city with the highest at $92,960. San Jose's success is easily attributed to the abundance of high-skilled STEM job opportunities. Cisco Systems alone employed 13,600 people in May of 2016 (City Data). Brownsville's largest employer, on the other hand, is the Brownsville School District with 7,708 employees (Brownsville Chamber of Commerce).

Bismarck, North Dakota has the lowest unemployment rate of 3.3 percent. This is potentially due to the city's small size of about 67,000 while being the seat of the North Dakota state government. El Centro, California finds itself with the highest unemployment rate of 18.1 percent. It has the fourth highest hispanic population proportion, and is situated near the U.S./Mexico border. This may indicate that the population has a disproportionately large amount of recent immigrants who have not yet been able to register for school or enter the workforce.

The city with the largest percentage of the population with a bachelor's degree goes to Boulder, Colorado, home to University of Colorado Boulder. Boulder also hosts 5.2 times the national average of aerospace companies, attracting individuals with advanced degrees (Boulder Economic Council). Lake Havasu, Arizona has the smallest percentage of population with a bachelor's degree, at 12.2 percent. We were unable to discover a qualitative reason for Lake Havasu's deficiency of bachelor's degrees.

It is important to note that all of these variables are taken across the time period of 2010 to 2014. Thus, some figures (particularly median household income and unemployment) may appear disproportionately unfavorable if cities were still recovering from the Great Recession in 2010 and 2011.

While deciding which independent variables to include in this study, it was discovered that six MSAs did not provide data on a regressor of interest, the percentage of females with a birth in the last twelve months. Several of these cities were large enough in size and notability to have impacted the significance of other variables if omitted. These cities are Atlanta, GA, Austin, TX, Columbus, OH, Dallas, TX, Durham and Chapel Hill, NC, and Rocky Mount, NC. Therefore, it was decided to exclude measuring the percentage of females with a birth in the last twelve months despite its potential significance.

III. Methodology

The percentage of teens from two-parent households is excluded in order to avoid perfect multicollinearity. If this variable were included, it would be impossible to calculate the effects from the proportion of households with only female providers, male providers, and non-family households. We theorize that a higher portion of single parent households, male or female, will

contribute to a higher teenage idleness rate. Families with one parent may rely on their teenagers to look after younger siblings while parents work. This could remove teenagers from school and inhibit them from participating in the workforce. Non-family households, however, are anticipated to strongly decrease the teen idleness rates in two potential justifications. Teens who are not in a family may be less likely to have someone providing for them, and therefore must engage in the workforce.The second and more likely justification is that teens entering college may declare themselves as independent from their families in order to receive more government financial aid.

Metropolitan statistical areas with large minority (African American and Hispanic) population proportions are expected to have slightly higher teenage idleness rates due to racial profiling in the labor market. "Despite laws against discrimination, affirmative action, a degree of employer enlightenment, and the desire by some businesses to enhance profits by hiring those most qualified regardless of race, African-Americans are twice as likely as whites to be unemployed and they earn nearly 25 percent less when they are employed" (Francis).

Median household incomes are expected to be negatively correlated with teenage idleness, as teens from a wealthy area are more likely to be able to afford higher education. The higher the family income, the more likely the family will be able to afford to send their child to college. However, we anticipate that household income will have decreasing marginal returns. For example, cities with average household incomes of $80,000 and $60,000 respectively will have a smaller marginal change in teen idleness than cities of $60,000 and $40,000 when seeing an increase in income. The change in income, while being the equal, will result in a larger change in idleness for those with lower incomes. Similar to household income, we expect high unemployment rates to be positively correlated with teen idleness, a weak job market is likely to

hire someone older, who will may even be overqualified, to staff a position that would typically be filled by a teenager.

Perhaps the most intuitive variable, a population with a higher proportion of educational attainment, whether bachelor's degree or high school diploma, is expected to be negatively correlated with teenage idleness. Teens from areas with high proportion of bachelor's degrees may have a cultural expectation to attend university as well.

IV. Results

After running many regressions we conclude that the model presented in Table 2 is the most suitable regression to predict teenage idleness in Metropolitan Statistical Areas. Although other models in which the constant was excluded have higher R-square measurements (around 90 percent of the data was accounted for), they struggle with the intuition behind the coefficients. This model accounts for 53 percent of all observations in the sample, and has an F-statistic 48.15. We were surprised at its' success, considering it is a simple linear regression with only one excluded variable (married households). Adding a polynomial to median household income resulted in unfixable multicollinearity between household income and race, which had not existed prior. Since the polynomial regression had an insignificantly small effect on R-squared, we decided that the linear model was the best model.

Non-family households, the percentage of white people in the area, median household income, percent unemployed, and percent with a bachelor's degree are all significant at the 99 percent level. The percentage of male-led households is also significant at the 95 percent level. This leaves the percentage of female-led households, black people, hispanics, and people with a high school diploma as statistically insignificant. High school is intuitively insignificant as it is correlated with the percentage of bachelor's degrees, MSAs with high college diploma obtention

also have large high school graduation rates. The percentage of teens in married households was excluded due to multicollinearity.

Upon closer examination, we discovered that excluding the constant created a 0.40 increase in R-squared, however it also skewed coefficients to have nonsensical interpretations. For example, high school degrees became statistically significant at the 99 percent level, yet the coefficient changed from -.022 with the constant to 0.076 without the constant. If this were true, it would suggest that for a one percent increase of people with a high school diploma would cause an *increase* in teenage idleness by 0.076 percent. While this regression (Model 3 in Table 3) accounts for more data in its' R-squared, it would be misleading to use it to calculate the marginal change in teenage idleness based on individual regressors. Thus, we returned to the original linear model.

Of the statistically significant variables (non-family households, median household income, percent white, unemployed, with a bachelor's degree, male-led households), non-family households, male-led households, and unemployment had the strongest economic significance.

The percentage of male-led households is the only statistically significant variable that has a positive impact on teen idleness. For every one percent increase in father-only households, teenage idleness is predicted to increase by 0.11 percent, this results in a 1.13 percent difference in idleness between the MSAs with the highest and lowest percentage of Male-Led households. When comparing to the mean of 4.9 percent, this shows to be an economically significant variable. There is little quantitative or intuitive justifications for this relationship, other than correlation to other variables. Yuma, Arizona, the city with the highest percentage of male-led households, has the thirteenth lowest high school graduation rate and eleventh lowest bachelor's attainment.

The percentage of teens in non-family households, on the other hand, predict a strong negative relationship on teen idleness. For a 1 percent increase in non-family households, teen idleness will decrease by 0.12 percent. This displays the relationship of teens who are registered as independent from their parents when they enroll in university, which would result in this being a self selected sample against being idle. This creates a difference of 3.22 percent for teen idleness between the MSA with the minimum and maximum non-family household rate.

MSA unemployment rate has strong negative impact on teen idleness. This does not have clear intuition behind it, as according to the model, a higher unemployment rate will have a strongly decrease teenage idleness. With all else equal, a 1 percent increase in unemployment results in a decrease of teen idleness of 0.11 percent. However, when running a regression of only unemployment and median household income, unemployment has a strong, statistically significant, positive effect on idleness. Unemployment may suffer from omitted variable bias in our regression. The regression in Table 4 in the appendix displays the model if unemployment rate were excluded.

The median household income has an expected negative impact on teen idleness. For each $10,000 that the median increases, teenage idleness decreases -0.53 percent for the MSA. This is likely due to reasons that we previously discussed; an increase in income is correlated with an increase in opportunity to get an education or a job. Specifically, it can intuitively be seen that when one has the money to afford education they will be more likely to pursue education.

An increase in the percentage of the population with a bachelor's degree decreases teenage idleness by 0.05 percent. This is likely due to factors such as a cultural expectation of getting higher education increases the chances teenagers will go on to get more education,

preventing idleness. With all else equal, this results in a difference of idleness of 2.3 percent between the MSA with the highest obtention of bachelor's degree and the lowest.

V. Conclusion

Our regressions display that the dependent variables and teen idleness exhibit a linear relationship. Household type, educational attainment, and median household income are among the biggest influencing factors of teen idleness. The regression indicates that unemployment and teen idleness have a negative relationship, but we find that this relationship exists only when factoring other variables into the model.

While this research aims to determine the factors of situational privilege on teenage idleness, it also found a potential relationship between teen idleness and the presence of a university in the MSA. University towns draw teenagers to the area who are enrolled in school, and therefore are not idle. This may skew data, so that college-bound teens report from their university town, instead of their hometown. However, the presence of a university may also motivate high school students to attend college who would not have otherwise planned to pursue higher education.

In this study, we argued that Millennials' propensity to work is not determined by dependence on technology or a lack of motivation. We found that factors of situational privilege, like household types, income, and average educational attainment have statistically and economically significant influence teenage idleness. Therefore, our research supports the hypothesis that more privileged teens are less likely to be idle.

Appendix

Table 1: Descriptive statistics for the regressand and regressors

	Mean	Standard Error	Median	Mode	Minimum	Maximum
Idleness Rate	4.90%	0.11%	4.70%	4.60%	0.80%	13.80%
Black	13.22%	0.67%	9.15%	13.09%	0.10%	62.01%
White	62.99%	1.03%	67.17%	61.42%	2.38%	92.11%
Hispanic	16.41%	0.99%	8.55%	20.10%	0.80%	96.86%
Unemployment Rate	9.07%	0.13%	8.90%	9.40%	3.30%	18.10%
High School Diploma or Above	86.89%	0.29%	87.90%	89.00%	62.20%	95.80%
College Diploma or Above	26.90%	0.43%	25.90%	21.40%	12.20%	58.20%
Married Household	60.25%	0.30%	60.60%	63.10%	41.90%	75.10%
Non-Family Household	4.94%	0.25%	3.30%	3.00%	0.40%	27.20%
Female-Led Household	26.75%	0.29%	26.40%	25.40%	12.20%	44.50%
Male-Led Household	8.06%	0.09%	7.90%	7.70%	3.30%	13.50%
Median Household Income	$51,002	$496	$49,388	$50,776	$33,390	$92,960

Table 2: Chosen regression results [noted as (2) in Table 3].

OLS estimates
Dependent variable: Idleness

	(1)
const	0.136**
	(0.0281)
NonFamilyHH	-0.120**
	(0.0227)
FemLedHH	0.0245
	(0.0287)
MaleLedHH	0.111**
	(0.0505)
White	-0.0424**
	(0.0126)
Black	0.00799
	(0.0163)
Hispanic	-0.00762
	(0.0144)
MedHHInc	-5.32e-07**
	(1.41e-07)
Unemployment	-0.114**
	(0.0409)
Hsgrad	-0.0221
	(0.0261)
BachGrad	-0.0492**
	(0.0162)
n	348
R-squared	0.547
lnL	1.01e+03

Standard errors in parentheses
* indicates significance at the 10 percent level
** indicates significance at the 5 percent level

Table 3: Results from all regressions run.

OLS estimates
Dependent variable: Idleness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
const	2.526**	0.1361**								
	(1.154)	(0.02813)								
NonFamilyHH	-2.514**	-0.1197**	-0.08045**	-0.07893**	-0.07996**	-0.07755**	-0.1158**			
	(1.157)	(0.02270)	(0.02172)	(0.02197)	(0.02129)	(0.02157)	(0.01467)			
FemLedHH	-2.369**	0.02447	0.06275**	0.06525**	0.06312**	0.06627**	0.1459**			
	(1.157)	(0.02865)	(0.03044)	(0.03150)	(0.03038)	(0.03144)	(0.01300)			
MaleLedHH	-2.278**	0.1112**	0.1389**	0.1382**	0.1355**	0.1352**	0.1933**			
	(1.153)	(0.05047)	(0.05124)	(0.05081)	(0.05116)	(0.05065)	(0.04487)			
MarriedHH	-2.394**									
	(1.157)									
White	-0.04015**	-0.04238**	-0.01194		-0.01314			0.03455**		
	(0.01221)	(0.01255)	(0.01215)		(0.01222)			(0.001869)		
Black	0.009218	0.007995	0.03658**	0.04448**	0.03489**	0.04361**		0.09927**		
	(0.01583)	(0.01629)	(0.01610)	(0.01246)	(0.01596)	(0.01232)		(0.007316)		
Hispanic	-0.006183	-0.007619	0.03944**	0.04752**	0.03681**	0.04587**		0.08448**		
	(0.01412)	(0.01443)	(0.01082)	(0.006254)	(0.01061)	(0.005779)		(0.003701)		
MedHHInc	-4.989e-07**	-5.319e-07**	-2.844e-07**	-2.476e-07*					1.755e-07**	
	(1.407e-07)	(1.410e-07)	(1.333e-07)	(1.356e-07)					(5.159e-08)	
Unemployment	-0.1085**	-0.1140**	-0.08258**	-0.08014**	-0.08129**	-0.07875*			0.4320**	
	(0.04170)	(0.04090)	(0.04035)	(0.04006)	(0.04035)	(0.04006)			(0.02850)	
Hsgrad	-0.02247	-0.02209	0.07628**	0.06053**	0.06833**	0.05215**				0.1016**
	(0.02613)	(0.02608)	(0.01873)	(0.01220)	(0.01715)	(0.009718)				(0.004368)
BachGrad	-0.04942**	-0.04922**	-0.08633**	-0.08252**	-0.08513**	-0.08172**				-0.1483**
	(0.01624)	(0.01618)	(0.01560)	(0.01464)	(0.01563)	(0.01490)				(0.01258)
sq_MedHHInc					-2.412e-12**	-2.010e-12**				
					(4.137e-13)	(2.800e-13)				
n	348	348	348	348	348	348	348	348	348	348
Adj. R**2	0.5372	0.5336	0.9310	0.9310	0.9311	0.9310	0.9101	0.8968	0.8696	0.8752
lnL	1014	1012	1000	999.4	1000	999.4	950.3	926.3	885.2	892.7

Standard errors in parentheses
* indicates significance at the 10 percent level

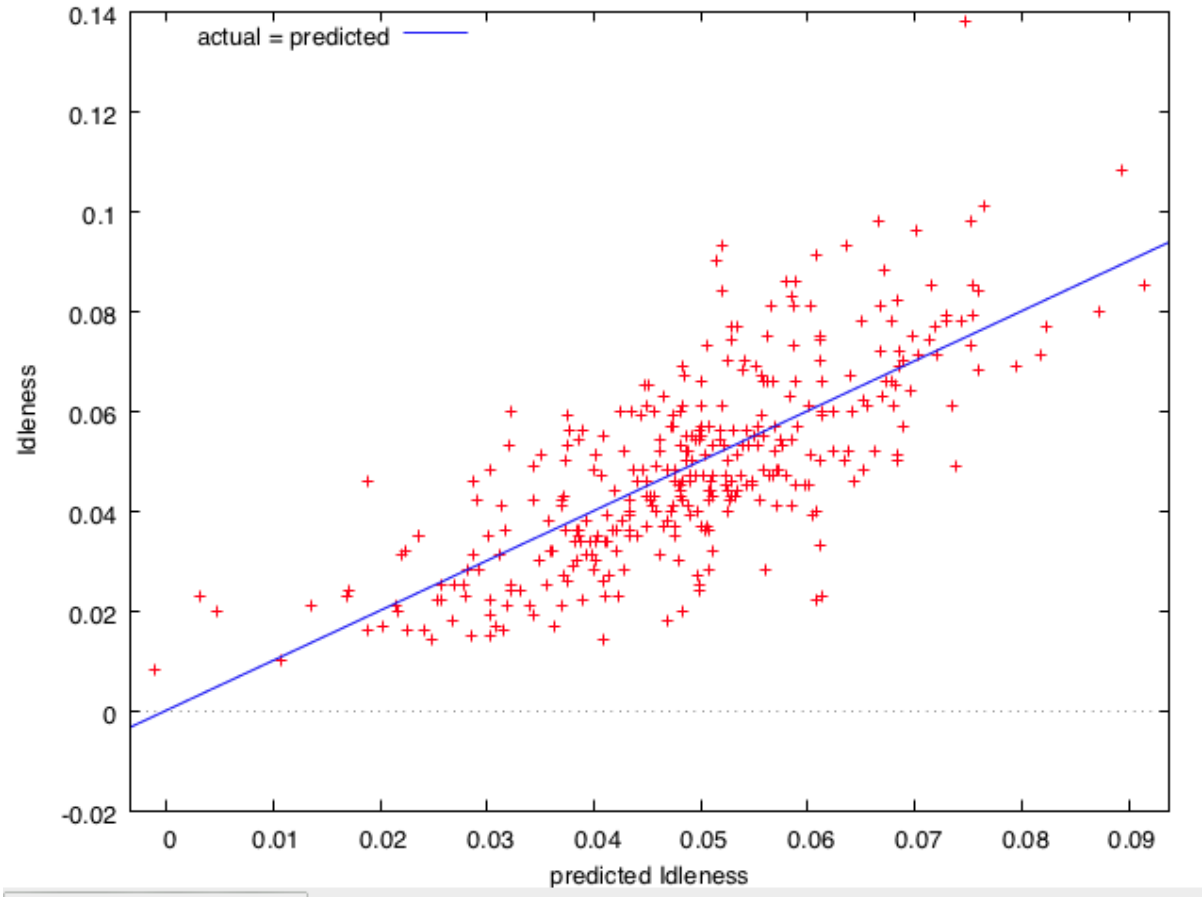
Table 4: Model in Table 2, unemployment excluded

OLS estimates
Dependent variable: Idleness

	(1)
const	0.122**
	(0.0287)
NonFamilyHH	-0.116**
	(0.0232)
FemLedHH	0.0137
	(0.0288)
MaleLedHH	0.102**
	(0.0506)
White	-0.0375**
	(0.0127)
Black	0.00795
	(0.0169)
Hispanic	-0.00695
	(0.0149)
MedHHInc	-4.80e-07**
	(1.46e-07)
Hsgrad	-0.0222
	(0.0271)
BachGrad	-0.0427**
	(0.0162)
n	348
R-squared	0.535
lnL	1.01e+03

Standard errors in parentheses
* indicates significance at the 10 percent level
** indicates significance at the 5 percent level

Graph 1: Predicted idleness versus actual idleness for the regression in Table 2



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