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Assessment of the Neighborhood, Housing, Family, and Personal Characteristics that Affect Whether Students Drop Out of High School

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April 15, 2010

Capstone in Public Administration

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Table of Contents

Executive Summary.....	3
Introduction.....	4
• Measuring the Dropout Rate	
• Research Question	
Literature Review.....	6
Data and Methods.....	11
• Model	
Empirical Analysis.....	15
Discussion.....	19
• Limitations	
Recommendations	21
Works Cited.....	23
Appendices.....	24

EXECUTIVE SUMMARY

This paper seeks to present research that will allow education officials to identify and target individuals who are likely to drop out of high school. By simultaneously using neighborhood, housing, family, and personal factors to identify at-risk students, education officials can link students to the social programs they need to meet their individual needs.

Parent's educational level had statistically significant effect on whether students dropped out of high school. The lower the education level the more likely a student will drop out of school. Parents who are high school dropouts are more likely to earn less and their children are more likely to drop out of school. Age is a significant factor as well. The older a student is the more likely they are to drop out of high school. Children who repeat grades are at a higher risk of dropping out. School failure at an early age is a strong predictor of future academic achievement. If a child performs poorly in elementary and high school, they are at a higher risk of dropping out¹. Potential solutions need to address parental educational attainment and early childhood education. By increasing early childhood education participation among low-income families and increasing the parents' educational attainment simultaneously, two-generation programs like Head Start have the potential to be an effective strategy in decreasing the high school dropout rate

¹ <http://www.ncrel.org/policy/pubs/html/second/forms.htm>

INTRODUCTION

Failure to graduate from high school poses an economic problem for both the individual and the nation. Transitioning from school to work and obtaining economic independence is much harder for individuals who drop out of high school than for those who do not. In 2005, individuals who did not finish high school experienced an unemployment rate of 18.5% (Alters, 2008). Comparatively, individuals who completed high school but did not go to college experienced an unemployment rate of 12.2% and the unemployment rate decreased to 7% for those who attended college but did not finish (Alters, 2008). As the level of education increases, the level of unemployment decreases. Monetarily speaking, people who do not have high school diplomas or General Education Development (GED) certificates earn less than those who do graduate from high school. In 2005, the average annual income for a high school dropout was \$17,299 compared to \$26,933 for a high school graduate (Amos, 2008).

The cost of all high school dropouts to the nation is substantial. The loss in tax revenue, the strain on the welfare system, the increase in incarceration rates, and the increase in an uneducated workforce is steadily affecting the nation economically and fiscally. As of 2005, the cost to the nation for one high school dropout over his or her lifetime would be around \$260,000 in lost earnings, taxes, and productivity (Amos, 2008). From a different perspective, if all high school dropouts from the Class of 2008 had graduated, the nation's economy would have benefited from an additional \$319 billion over the course of their lifetimes (Amos, 2008).

As I mentioned before, high school dropouts contribute to the increase in the incarceration rate. According to the Pew Center on the States, in their Prison Count 2010 report,

as of January there were 1,403,091 inmates in state prisons and 208,118 inmates in federal prison (Pew Center, 2010). Of those federal and state inmates, 75% of American state prison inmates dropped out of high school and 59% of American federal prisons inmates are high school dropouts (National Dropout Prevention Center).

Negative impacts of the high school dropout rate have become a concern for states across the nation. In 2007, nationally, almost 6.2 million high school students between the ages of 16 and 24 dropped out of school. The current state of the dropout rate was been labeled as “a persistent high school dropout crisis” (CNN, 2009). As this is the case, states have taken action to address the dropout issue. The High School Dropout Age Bill, if passed by both the KY Senate and House, would raise Kentucky’s high school dropout age from 16 to 17 in 2013 and to 18 in 2014. The hope is that the longer a student spends in school before the law allows them to dropout, the more education exposure they will receive, which will increase their chances of high school completion and possibly pursuing higher education.

This paper seeks to present research that will allow education officials to identify and target individuals who are likely to drop out of high school. By simultaneously using neighborhood, housing, family, and personal factors to identify at-risk students, education officials can link students to the social programs they need to meet their individual needs.

Measuring the Dropout Rate

There are three widely known ways to measure the dropout rate. The first measure is the Event rate. The Event rate is also known as the annual rate or the incidence rate. The event rate measures the percentage of students who dropped out of 10th, 11th, and 12th grades in the past year. The second measure is status rate or prevalence rate. Status rates measure the percentage of students who have not completed high school or a high school equivalent and are not enrolled

during the year (Cataldi, 2009). Cohort rates or the longitudinal rates are the last measure of dropout rates. Cohort rates are measures of what happens to a single group of students over a period of time (Lehr, 2004). For the purpose of my study, I used the status rates as a measure of high school dropouts. The sample consists of 300 students between the ages of 16 and 18 who are not currently enrolled in any school, public or private, and who did not receive a high school diploma.

Research Question

Of all of the possible neighborhood, housing, family, and personal factors, which factors substantially affect the decision of a 16 to 18 year old high school student to drop out of school?

LITERATURE REVIEW

Why do students decide to drop out of high school? Research has focused on many different factors that shape student achievement and the decision to drop out of high school. Much of the research falls into three categories: family characteristics and home environment, personal characteristics, and housing. A fourth research category that has emerged but still needs expansion assesses the effects of neighborhood characteristics on educational attainment. The aim of my research is to find which of the above factors--neighborhood, housing, family, or personal characteristics-- has a greater effect on the decision for a student to drop out of high school.

Family Characteristics

Family characteristics and home environment are important because the home is where students learn and develop educational habits. Family income and the type of family a student has (single parent or multiple siblings) can affect access to educational opportunities while the

values passed from the parent to the child will shape the students' views towards education. The National Center for Educational Statistics (NCES) found an association between family income and dropping out of school. High school students from families within the lowest 20% income were 6 times as likely to dropout out of high school as those families located in the top 20% of the income range (Blue & Cook, 2004). Early family socialization impacts are varied. The most prominent predictor of a child's academic success is the parent or parents' education levels. Battin-Pearson and Newcomb hypothesized that the low parent expectations and low parent education would have a greater direct effect on high school dropouts than the student's low academic achievement. For their data, Battin- Pearson and Newcomb used the Seattle Social Development Project, a longitudinal study consisting of 808 students from a population of 1,053 fifth grade students who attended 18 elementary schools that served high crime areas in Seattle. Battin-Pearson and Newcomb found that low parent expectations and low parent education did not have a significant impact on the dropout rate but negatively affected the child's academic achievement which had a significant effect on dropping out (Battin-Pearson & Newcomb, 2000). This means that how a child performs in school academically directly affects whether that child will continue to go to school regardless of low parental expectations or education. However, low parental education and expectations could have an indirect effect on a child's academic performance. Parents who do not set education as a high priority in the home or cannot help their children with their homework may cause the children not to take their assignments seriously.

Personal Characteristics

Personal characteristics such as motivation, aspirations, attitudes towards deviance, and aptitude affect a student's social development and can determine whether a student will want to

stay in school or dropout. I chose not to focus on these particular personal characteristics because they were beyond the scope of my research. However, race, sex, and age are important personal characteristics that have been shown to have an impact on high school dropout rates as well.

In 2000, the high school dropouts by race were as follows: White, 6.9%; Asian, 3.8%; African American, 13.1%; and Hispanics, 27.8% (Blue & Cook, 2004). Russell Rumberger (1983) used the National Longitudinal Survey (NLS) of Youth Labor Market Experience, which consists of a series of interviews with 12,700 young men and women between the ages of 14 and 21 to estimate the effects of family background and other factors on the decision to drop out of school. Rumberger limited his sample to respondents who were 18 to 21 years old at the first interview and not enrolled in high school; blacks, Hispanics, and poor whites were overrepresented in the survey. Rumberger found that the actual probabilities of dropping out differed among the six groups tested, especially between White and Black youths, but in most of the cases, the predicted probability of dropping out was similar. His simulations showed that minorities with the same background traits as Whites were just as prone to dropping out or even less likely to drop out of high school than Whites. Across the six groups tested, the most uniform predictor was the cultural index. One such cultural index showed that more reading material in the household reduces the probability of dropping out. White children from large families showed a higher predicted dropout rate but family size had no significant effects on minorities. After controlling for differences in family backgrounds, Blacks and Hispanics living in the South had lower probabilities of dropping out than those in central cities. In addition, increased employment opportunities increased the probability of dropping out, especially among black males (Rumberger, 1983). What Rumberger's study shows is that after controlling for most family characteristics, race has a lessened effect on dropout rates.

Age is one area of personal characteristics that researchers tend to overlook. According to Willet and Singer (1991), researchers should focus on the “when” of the dropout instead of the “whether” (Neild, 2008). Using the Philadelphia Education Longitudinal Study (PELS), a survey of students, as well as school district level data, Ruth Neild and associates wanted to examine the impact of freshman year academic outcomes on the likelihood of dropping out in six years of entering high school. Neild wanted to control pre-high school academic background along with demographic, family, peer, and attitudinal factors. Her sample consisted of 10% of eighth graders from 45 schools randomly collected from a group of 93. Neild randomly selected students and parents to participate in a telephone interview during the summer of their 9th grade year. Of the 2993 children and parents in the sample, 1470 were interviewed. Asian families are underrepresented and the respondents were somewhat more advantaged than non-respondents were. She used the dropout rate and student status as dependent variables and demographics, academic and family characteristics, attitudes and behaviors in 8th grade, and academic and social involvement as independent variables. Student’s age was found to be significantly associated with dropping out when controlling for previous grade repetition. The older a student is at the start of high school the greater the odds of that student dropping out of school (Neild, 2008). This is an important finding especially with the possible passage of HB301. Raising the dropout age may not necessarily reduce dropout rate. Increasing the dropout age may keep teenagers in school longer but it may not mean that they will graduate.

Housing Characteristics

The type of housing can have an effect on whether a student is more prone to criminal behavior and increased chance of pregnancy. In addition, whether the home is owned or rented has had positive effects on high school graduation rates. Children of homeowners have a 91%

probability of being in school while renters only had a probability of 82% (Green & White, 1997). In addition, research consistently shows that homeownership has positive effects on childhood outcomes, in the areas of stability, stronger communities that support education, and healthier environments (Brennan, 2007).

In 1990, the Chicago Housing Authority (CHA) closed more than 7400 units in 12 housing developments across Chicago. CHA gave the residents who were affected Section 8 housing vouchers to move anywhere in the metro area. Brian Jacob (2004) compared the students living in the CHA units who moved due to closure to the students who still remained in the public housing complex. He found that the demolitions did lead to a small increase in the dropout rate for children ages fourteen and older but that there was no impact on the educational achievement of younger children. Jacob also found that those children who did move did end up in better neighborhoods but not in significantly better schools. His results find that high-rise public housing does not have an independent effect on student achievement.

Neighborhood Characteristics

Neighborhood effects differ from housing effects. Neighborhood consists of the area the housing is located and the physical as well as social makeup of the area. Where children grow up and live plays a role in determining life chances. In high-poverty neighborhoods, children are at risk due to high levels of racial and economic segregation and insufficient public services like schools, grocery stores, and police protection. Children in high-poverty neighborhoods are at risk for poor physical health, risky sexual behavior, and delinquency (Popkin, 2009).

Apart from the influence of families, some empirical evidence shows that differences in neighborhood characteristics can explain the differences in dropout rates among communities (Swanson, 2004). According to Crane (1991), there are thresholds and tipping points that results in particularly high dropout rates in the lowest quality neighborhoods. Neighborhoods can affect

dropout rates by providing employment opportunities during and after school evidenced by Ramburger's study.

What current research shows is that varieties of factors influence the decision for a high school student to drop out of school. Previous studies have shown how family background factors can sometimes overshadow racial characteristics for dropping out and that housing in terms of homeownership can be a positive factor in decreasing the dropout rate but neighborhood factors can diminish those positive effects. My research seeks to combine all four characteristics in a single model to find what factor has the strongest effect on dropout rates.

DATA & METHODS

The Public Use Micro Data Sample (PUMS) for Kentucky from the 2006-2008 American Community Surveys was used in this study. The American Community Surveys (ACS) collects data on the characteristics of households and the individuals living in the household. Examples of the information found in the ACS are age, race, income, home value, number of housing units, commute time to work, and other detailed demographic and housing data². The ACS, is conducted annually, beginning in the year 2000, and can be obtained from the U.S. Census Bureau website. The years 2006-2008 were chosen to provide a larger sample and because it was the most recent dataset available that combined the results of multiple years as opposed to just one year. The PUMS is a representative sample of Kentucky's population. Public Use Microdata Areas (PUMAs) samples from approximately 30 regions in Kentucky of 100,000 people each.

The dataset analyzed consists of 5,312 of Kentucky's 16 to 18 year olds. The dataset contains neighborhood, housing, family, and personal data for each kid. Because high school dropout rates are not available on the individual level, to create the independent variable *dropout*,

² http://factfinder.census.gov/home/saff/aff_acs2006_quickguide.pdf

the variable for educational attainment was recoded to distinguish between kids 16 to 18 years old who were enrolled in school and those who were not. In the dataset, approximately 300 of the 5,312 students in the sample had neither received a high school diploma nor attended school in the past three months.

Model

To find the linear relationship between high school dropouts and the different neighborhood, housing, family, and personal characteristics, a multiple regression model was used. A multiple regression model is used when there are three or more measurement variables. The dependent variable is the condition under investigation. In this study, the dependent variable is *dropout*. The remaining variables are independent variables that are used to explain why the condition occurs. The purpose of the model is to find an equation that best predicts the dependent variable y as a function of x , the dependent variables.

$$Y' = A + B_1X_1 + B_2X_2 + B_3X_3$$

The model will test all characteristics simultaneously in order to account for any interaction effect. The above multiple regression model will produce a t-ratio that will indicate the statistical significance and a coefficient that will indicate the nature of the linear relationship. A linear relationship simply means that an increase or decrease in an independent variable is associated with an increase or decrease in the dependent variable. The table below lists the variables used and their description for this study.

Table 1. Dependent and Independent Variable Descriptions

Dependent Variable	Independent Variable	Description
<i>dropout</i>		
sch		School Enrollment <ul style="list-style-type: none"> • Not enrolled in the past 3 months
schl		Educational Attainment <ul style="list-style-type: none"> • No School Completed - Grade 12 no diploma
	<i>Neighborhood Characteristics</i>	
	puma	Public Use Micro Data Area
	pmobhom	% PUMA population in mobile-homes
	psfhome	% PUMA population single-family home
	papts	% PUMA population in apartments
	pfoodstmp	%PUMA population food stamps
	prented	%PUMA population renting
	psnglnowk	%PUMA population single not working
	pmv12	%PUMA population moved in the last 12 months
	avfaminc	PUMA average family income
	pbachelors	% PUMA population w/ Bachelors
	pfemale	%PUMA population female
	pblack	%PUMA population black
	<i>Housing Characteristics</i>	
	mobhom	Living in mobile home
	onefamatt	Living in a one family attached unit
	apt2	2 unit apartment
	apts3to4	3-4 unit apartment
	apts5to19	5-19 unit apartment
	apts20plus	20 or more unit apartment
	ownedfree	Owned free and clear
	rented	Renting
	occnorent	Occupied without payment of rent
	<i>Family Characteristics</i>	
	fsr	Food stamp recipient
	nr	Presence of non relatives in the home

Table 1. Dependent and Independent Variable continued

Dependent Variable <i>dropout</i>	Independent Variables	Descriptions
	<i>Family Characteristics</i>	
	mrrhwlf	Married-Couple, husband and wife in labor force
	mrrhlfwn	Married-Couple, husband in labor force, wife not
	mrrcwlfn	Married-Couple, wife in labor force, husband not
	marrchwnlf	Married-Couple, both husband and wife not in the labor force
	mhhdnlf	Male household head in labor force, no wife present
	mhhdnlf	Male household head not in labor force, no wife present
	fhhdnlf	Female household head in labor force, no husband present
	fhhdnlf	Female household head not in labor force, no husband present
	hschl	Household head educational attainment <ul style="list-style-type: none"> • No School Completed-Professional Degree
	spschl	Spouse educational attainment <ul style="list-style-type: none"> • No School Completed-Professional Degree
	<i>Personal Characteristics</i>	
	female	Female
	black	Black
	age	Age

In the model, the following values of the relevant variables were omitted, single-family detached housing unit, non food stamp recipients, housing owned with a mortgage or loan, males and non- blacks. The main reason these values were omitted is that they are from nominal variables containing more than one category. For example, race was categorized as a dummy

variable. All non-black respondents were assigned a zero and all black respondents were assigned a 1. This will show the effect of being black on the high school dropout rate.

In addition, the direction of the linear relationship is important as well. Any negative value indicates that individuals with those characteristics are less likely to drop out of high school and positive values indicate that individuals with those characteristics are more likely to drop out of high school compared to the omitted groups in each dummy variable formulation.

EMPIRICAL ANALYSIS

Table 2 shows that many of the independent variables are statistically significant. Children living in families that receive food stamps are more likely to drop out of high school than children whose families do not receive food stamps, all other factors constant. Food stamps are a measure of income because you have to earn below a particular income before you can qualify to receive food stamps. Therefore, individuals on food stamps earn less than those who do not receive food stamps indicating that the income level is an indicator of students at-risk of dropping out.

Married-couple families, with the husband and wife both working in the labor force, were not statistically significant. However, children of married-couple families with the husband in the labor force and the wife not in the labor force were more likely to drop out of high school. One parent working does not necessarily mean there is less income for the family. Doctors, lawyers, and CEO's may make enough money so that the spouse can stay at home and raise the children. Children in these homes are able to take advantage of educational opportunities because they have a parent who has more time to spend with them and support them. However, the issue is within families where one income is not enough to support the family or able to provide the financial resources to pursue the educational opportunities the child needs to succeed in school.

Single male household heads and single female household heads not in the labor force were not found to be statistically significant, while married-couples with neither husband nor wife in the labor force was statistically significant. Not working greatly reduces the family income unless they are receiving some type of supplementary income or living off savings. Single families are eligible for more governmental assistance than married-couple families because single-family homes usually make less than married-couple families. However, the circumstances under which they are unemployed are unknown. All families may be receiving some type of government aid whether it is disability insurance or temporary assistance to needy families (TANF). Nevertheless, as demonstrated in the model, children in families that are food stamp recipients are more likely to drop out of high school therefore single family households may not directly affect the dropout rate but they may do so indirectly.

The presence of non-relatives is statistically significant. The more people in the home, the more family resources like time and income are strained. Non-relatives may consume familial resources but may not contribute because they are not related and do not feel obligated. Therefore, the student may not receive the time and attention they need or the monetary resources to help them do better in school. As expected, parental educational attainment is statistically significant. The household head's educational attainment level was more significant than the spouse's was. The more education the head of the household has, the more likely their children will not dropout of high school.

Omitting single-family detached homes, renting and occupied housing without payment of rent are statistically significant. While the exact definition for occupied housing without payment of rent was not provided, it is assumed that individuals living in this type of housing are

not self sufficient whether they are living in income-based public housing and do not earn enough of an income to have to pay rent, or living with family.

The percentage of the PUMA population that had moved in the last 12 months or less was statistically significant. PUMAs with high percentage of populations that move will have more dropouts. Reasoning for this finding is that instability in home environments can be detrimental to student engagement in schools. If the move results in multiple switches in schools then kids are more likely to become disengaged in school activities and learning because they are not in school long enough to make a connection with other students or teachers. Another reason individuals move around a lot could be job instability, crime, or because of the military. Regardless of the reason, areas with high percentages of families that move are more likely to have more dropouts than PUMS areas that have lower percentages.

Age, race, and gender were all statistically significant. In the model, the effect of being black had a negative effect on dropouts and black respondents are less likely to dropout than non-black respondents. The research shows that black students were more likely to drop out of high school than white students, but were less likely to drop out of high school than Hispanic students (Blue & Cook, 2004). In this model, Hispanic was not a distinct category from white, therefore, it is possible that the effect of being black on the dropout rate is positive compared to whites, but that it is negative compared to Hispanics. Age was statistically significant at the 95% confidence level and the strength of the relationship was one of the stronger relationships in the model. Grade retention is major factor here. The older a student is the more likely they are to drop out of high school. Grade retention can play an important role. If a student is held back multiple times then they are more likely to complete fewer grades and are more likely to drop out because they have not advanced.

Table 2. Estimated Model of Neighborhood, Housing, Family, and Personal Characteristics on High School Dropouts Using Multiple Regression Model³

Characteristic	Independent Variable	Estimated Coefficient	t - ratio	P- value
Neighborhood	Percentage of PUMA Population Moved in the Last 12 months or less	0.189796	2.53*	0.011
	Percentage of PUMA Population Living in Single Family Homes	.3435748	0.58	0.561
	PUMA Adjusted Average Family Income	-.0029129	-1.63	0.104
	Percentage of PUMA Population with a Bachelor's Degree	.0094895	1.92	0.055
Housing	Living in a Mobile Home	.0236941	1.71	0.087
	Living in a 3 to 4 Unit Apartment	0.176568	2.77*	0.006
	Living in a 5 to 19 Unit Apartment	.0413347	1.38	0.166
	Living in a 20 plus unit Apartment	.1232085	2.07*	0.039
	Living in a Home that is Owned without Mortgage or Loan Payment	.0048541	0.80	0.423
	Rented	.0146591	3.46*	0.001
	Occupied Housing without Payment of Rent	.012904	2.00*	0.046
Family	Annual Food Stamp Recipient	.0808742	6.39*	0.000
	Presence of Non Relatives in the Home	.0614104	3.88*	0.000
	Married-Couple, husband and wife in labor force	.0646023	1.66	0.098
	Married-Couple, husband and wife not in labor force	.0251027	2.45*	0.014
	Married-Couple, husband in labor force, wife not	.0384097	1.98*	0.048
	Male household head not in labor force, no wife present	-.0062531	-0.85	0.397
	Female household head not in labor force, no husband present	-.0015963	-.037	0.711
	Household head educational attainment	-.0203499	-11.12*	0.000
Spouse's educational attainment	-.0101025	-4.67*	0.000	
Personal	Black	-.0363343	-2.08*	0.037
	Female	-.0175639	-2.16*	0.031
	Age	.0536661	10.47*	0.000
constant		-34.58278	-.059	0.557
R-squared		.1409		
F		23.37		
N (observations)		5312		

*Indicates significance at the 0.05 level

DISCUSSION

While many variables were statistically significant, very few had a positive effect on the dropout rate aside from the effect of being female and being black. Age, food stamp recipients,

³ A complete list of the results are located in Appendix B

household head educational attainment, presence of non relatives in the home were all statistically significant and had a negative impact on the dropout rate. The underlying factor in all these variables, aside from age, is income level. If income is indeed an underlying factor, then this study shows the factors that account for the families' low-income level and potential solutions can address these factors. For example, high school graduates earn more than high school dropouts. The parent's educational level was shown to be statistically significant; therefore, parents who are high school dropouts are more likely to earn less and their children are more likely to drop out of school.

Age is a significant factor as well. Children who repeat grades are at a higher risk of dropping out. School failure at an early age is a strong predictor of future academic achievement. If a child performs poorly in elementary and high school, they are at a higher risk of dropping out⁴. Therefore, potential solutions need to address parental educational attainment and early childhood education.

Limitations

There are a few limitations to the study. One limitation is that the r-squared shows that the model only explains 14.09% of the variance in the model. The PUMS data contain many more variables than time allowed to test. In addition, some variables had to be dropped from the study because of missing observations. More time and combining different variables could increase the r-squared and f ratio, which would create a better fitting model. In addition, the more variables to explain the dropout rate would provide a better explanation of why students decide to dropout and can help target and provide preventative solutions for those students most at-risk.

⁴ <http://www.ncrel.org/policy/pubs/html/second/forms.htm>

As mentioned before, physical neighborhood variables were not available. Housing value, year house was built, and social demographics were the best representation of neighborhood variables in this particular sample. If more physical data were available in the sample, as well as crime rates and pregnancy rates, then those variables may have been statistically significant and created a stronger effect on the high school dropout rate than the neighborhood characteristics in this study.

Another limitation is the inability to distinguish Hispanic from white within the race variable to get an accurate account of how being black affects the dropout rate. The census does list Hispanic as its own category. While it is possible to create an Hispanic variable from other racial categories given, I decided not to include it in my analysis.

Finally, academic achievement as well as personal attitudes and beliefs towards education, as well as aptitude, which were found to have significant effects in previous studies, were not accounted for in this study. In addition, number of absences, grades, teacher quality, and health data would be a great contribution to the study. Because the sample is random, it would be difficult to match PUMS responses to a personalized survey on attitudes and aspirations of high school students, especially those students at risk. If it was possible to merge a personalized survey with PUMS data, the results might allow greater more insight about what factors affect dropout rates and whether those factors are statistically significant.

RECOMMENDATIONS

As mentioned before, addressing parental educational achievement and early childhood education are two potential ways to decrease the number of high school dropouts. Two-generation programs are programs geared towards helping children get the best start in life

possible and helping parents become economically sufficient (St. Pierre, 1996). All two-generation programs contain three features:

- A developmentally appropriate early childhood program;
- A parenting education component; and
- An adult education literacy or job skills program

One well-known two-generation program is Head Start. Established in the 1990s, Head Start is a national program that promotes childhood school readiness, social, and cognitive development by providing educational, health, nutritional, and social services to children and their families.⁵ According to the U.S. Department of Health and Human Services (DHHS), one-third more at-risk children who participated in quality early education programs graduated from high school than at-risk children who did not participate in these type programs. At-risk children enrolled in quality early childhood education programs are 25% less likely to be retained a grade and low-income children in Head Start scored higher on school readiness measures than children in other preschools or not attending preschool.⁶

While Head Start is demonstrated success in early childhood education, what about the parental educational programs and literacy? In 2007, DHHS in collaboration with PNC Financial Services Group, launched the math initiative, “Add It Up for Families, a pilot program to support a multi-generational math curriculum for children in Head Start and their families to help families become financially self-sufficient. In Lexington, JP Morgan Chase and Fifth-Third Foundations have collaborated with Community Action Council to sponsor a 12-session financial education program to help low-income individuals achieve economic stability. In addition, Head Start Family Service Centers serving Fayette, Harrison and Nicholas Counties,

⁵ U.S. Department of Health and Human Services Administration for Children and Families
<http://eclkc.ohs.acf.hhs.gov/hslc/About%20Head%20Start>

⁶ http://eclkc.ohs.acf.hhs.gov/hslc/Family%20and%20Community%20Partnerships/Self-Sufficiency/Asset%20Building_Financial%20Literacy/ProvidingaHEAD.htm

offer parents of Head Start enrollees opportunities to increase their education and employment⁷. However, the impact of these programs is unknown. Further research needs to be done to test whether parental education programs similar to the ones listed above have had an impact on child outcomes and family economic stability.

Another area of research that needs to be addressed is what type of educational programs are needed. Many Head Start parental educational programs focus on training parents to be better parents to their children to help increase their children's educational attainment but not their own. The type of educational programs needed also needs to be researched. Each parent has a different level of skill and academic level. Head Start programs would need to know the needs the parents as well as the job opportunities available and the training needed to obtain those jobs.

The high school dropout rate is an issue that communities cannot ignore. In this study, the characteristics associated with the high school dropout rate are based on age and income. By increasing early childhood education participation among low-income families and increasing the parents' educational attainment simultaneously, two-generation programs have the potential to be an effective strategy in decreasing the high school dropout rate.

⁷ <http://www.commaaction.org/html/familyprograms.php>

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APPENDIX A

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. reg dropout puma pmobhom psfhome papt psfoodstmp prented psnglknowk pmv12 av
> faminc pbachelors pfemale punemployed pblack mobhom onefamatt apt2 apts3to4 a
> pts5to19 apts20plus fsr ownedfree rented occnotrent nr agep hschl spschl blac
> k marrhl fwn marrcwl fhn marrchwnl f mhhdnl f mhhdnl f fhhdnl f fhhdnl f marrhwl f
> female

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Source	SS	df	MS	Number of obs =	5312
Model	74.9819101	37	2.02653811	F(37, 5274) =	23.37
Residual	457.247006	5274	.086698332	Prob > F =	0.0000
				R-squared =	0.1409
				Adj R-squared =	0.1349
Total	532.228916	5311	.100212562	Root MSE =	.29445

dropout	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
puma	.0060605	.0103817	0.58	0.559	-.014292 .026413
pmobhom	.3412959	.5900232	0.58	0.563	-.8153939 1.497986
psfhome	.3435748	.5908124	0.58	0.561	-.8146621 1.501812
papt	.3432185	.5916007	0.58	0.562	-.8165638 1.503001
psfoodstmp	.0039281	.0035665	1.10	0.271	-.0030637 .0109199
prented	-.0070213	.0045143	-1.56	0.120	-.0158712 .0018286
psnglknowk	.0028118	.0058705	0.48	0.632	-.0086968 .0143205
pmv12	.0189796	.007491	2.53	0.011	.0042942 .0336651
avfaminc	-.0029129	.0017908	-1.63	0.104	-.0064236 .0005978
pbachelors	.0094895	.0049347	1.92	0.055	-.0001845 .0191636
pfemale	-.0066752	.0084371	-0.79	0.429	-.0232155 .0098651
punemployed	-.0075776	.0127656	-0.59	0.553	-.0326034 .0174482
pblack	.0003793	.000991	0.38	0.702	-.0015635 .0023222
mobhom	.0236941	.0138216	1.71	0.087	-.0034019 .0507901
onefamatt	-.0041004	.0109596	-0.37	0.708	-.0255857 .0173849
apt2	.000533	.0072048	0.07	0.941	-.0135913 .0146573
apts3to4	.0176568	.006381	2.77	0.006	.0051474 .0301662
apts5to19	.0413347	.0298697	1.38	0.166	-.0172223 .0998917
apts20plus	.1232085	.0595749	2.07	0.039	.006417 .2399999
fsr	.0808742	.012648	6.39	0.000	.0560788 .1056696
ownedfree	.0048451	.0060486	0.80	0.423	-.0070128 .0167029
rented	.0146591	.0042307	3.46	0.001	.0063652 .022953
occnotrent	.012904	.0064628	2.00	0.046	.0002343 .0255737
nr	.0614104	.0158278	3.88	0.000	.0303814 .0924393
agep	.0536661	.0051243	10.47	0.000	.0436203 .063712
hschl	-.0203499	.0018298	-11.12	0.000	-.0239371 -.0167627
spschl	-.0101025	.0021633	-4.67	0.000	-.0143435 -.0058614
black	-.0363343	.0174605	-2.08	0.037	-.0705641 -.0021045
marrhl fwn	.0384097	.0194381	1.98	0.048	.0003029 .0765164
marrcwl fhn	.0106142	.0137882	0.77	0.441	-.0164163 .0376447
marrchwnl f	.0251027	.0102537	2.45	0.014	.0050012 .0452043
mhhdnl f	-.001035	.0068053	-0.15	0.879	-.0143762 .0123062
mhhdnl f	-.0062531	.0073816	-0.85	0.397	-.0207241 .0082178
fhhdnl f	-.0070297	.0046067	-1.53	0.127	-.0160606 .0020013
fhhdnl f	-.0015963	.0043155	-0.37	0.711	-.0100566 .0068639
marrhwl f	.0646023	.0390018	1.66	0.098	-.0118573 .1410618
female	-.0175639	.008125	-2.16	0.031	-.0334923 -.0016354
_cons	-34.58278	58.88499	-0.59	0.557	-150.0217 80.85618