High School Drop Out Rates: What Role Does Teenage Drug Use Play?

Research Methods

Final Paper (Note: received permission to be up to 8 pages excluding appendix)

Introduction

High school dropout is a serious social problem. American youth who do not graduate from high school start their adult life with a documented disadvantage. On average, high school dropouts make \$10,000 less a year than their counterparts with a high school degree (National Dropout Prevention Center). A study of Illinois natives noted that not earning a high school degree resulted in \$500,000 less lifetime earnings than those who graduated (Sum et al. "Illinois"3). This population is also disproportionally unemployed; the unemployment rate for dropouts is 3.2 higher than those who have graduated high school, and 5.9 higher than college graduates (U.S. Bureau of Labor Statistics). These disparities continue to exist even within similar socioeconomic statuses and also extend past economic measures (Campbell). Dropouts are more likely to be incarcerated and females are more likely to become pregnant (Sum et al. "Consequences" 7, 9).

In addition to personal hardships, dropouts also adversely affect society as a whole. Individuals who drop out of high school are more likely to be recipients of government social services, including welfare, food stamps and unemployment insurance. High school dropouts are the only group by education attainment that represent a drain on government resources and revenue; they cost the government an average of \$70,000 a year (Sum et al. "Illinois" 8).

High school dropout rates have been on the decline since the early 90's in all ethnicities, but 7% of Americans still do not complete high school (Fry). In order to ensure graduation rates are as close to perfect as possible, the elements that predict dropout must be identified and addressed. The factors that are thought to influence graduation include: socioeconomic status, parental influence, academic performance, peer influences and substance abuse. From these relationships, policies can be implemented inside and outside of school to target these at risk individuals and guide them towards their high school diploma. This paper focuses on the relationship between high school dropout and substance abuse. Substance abuse is linked to both failing and dropping out of high school, especially for frequent users (DuPont et al. 3). Drug use is an optimal target to address, as it is one of the easiest factors to both identify and treat (DuPont et al. 2).

Methods

This paper will use data from Monitoring the Future: A Continuing Study of American Youth (12th-Grade Survey), 2013. The survey is a questionnaire concerning drug use from a national sample of 13,180 12th grade students. Additional factors to be compared include: gender, race, religion, grades, school absenteeism and parents. For purposes of separating habitual drug users, a dummy binary variable has been coded to include students who have used a single drug over twenty times. A similar dummy variable has been coded for students who have experimented at least once with a particular drug and late/non graduation.

Results

Demographics. 56% of respondents are white, 11% are black, 15% are non-white Hispanic and 18% did not indicate any race. 46% are male, 47% are female and 7% did not respond.

Prevalence of Drug Use.

Table 1. Number and percent of students who have each drug on at least one occasion.

| Drug | rug Alcohol Marijuana Cigarettes | | Cigarettes | Amphetamines | Narcotics | Hallucinogens (incl. LSD) |
|------|----------------------------------|----------|------------|--------------|-----------|------------------------------|
| N | 4,664 | 5,766 | 4,727 | 1,535 | 1,345 | 939 |
| (%) | (64.61%) | (43.75%) | (36.99%) | (11.65%) | (10.20%) | (7.12%) |

| Drug | Tranquillizers | Sedatives | Inhalants | Cocaine | Synthetic Marijuana | MDMA | Other* |
|------|----------------|-----------|-----------|---------|------------------------|---------|---------|
| N | 924 | 897 | 432 | 336 | 300 | 294 | 310 |
| (%) | (7.01%) | (6.81%) | (3.28%) | (2.55%) | (2.28%) | (2.23%) | (2.35%) |

Notes: All responses represent use without a doctor's permission. Tranquilizers include benzodiazepines and muscle relaxants. Sedatives include sleeping pills and barbiturates. *Other: Heroin, Crack, Methamphetamine, and Ketamine.

Habitual drug use is observed in 34.36% percent of all students (defined as using drugs on 20+ occasions). Frequent drug use is mostly found with alcohol, marijuana and cigarettes – removing these, habitual use is only observed in 4.68% of respondents.

Predictors of Drug Abuse.

Table 2. Habitual Drug use by Demographics

| Habitual Drug Use (%) | | | | | |
|-----------------------|--------|--|--|--|--|
| Female | 39.83% | | | | |
| Male | 53.99% | | | | |
| White | 61.35% | | | | |
| Black | 7.99% | | | | |
| Hispanic | 15.63% | | | | |

Notes: For sex and race, 6.18% and 15.63% did not respond, respectively.

Race is largely reflective of the survey's original demographics – no conclusions can be drawn. There is a significant difference in gender. Males are more likely to be frequent drug users than females.

Figure 1. Habitual Drug Use by Grades



Surprisingly, habitual drug use has little to no relationship with grades.

Figure 2. Habitual Drug Use by Religiousness



Less religious students report more drug use. Religious students likely have moral objections to drug use and spend more time engaging in religious activities.

Table 3. Habitual Drug Use by Parental Presence.

| | Absent Mother | Absent Father |
|----------------------------|---------------|---------------|
| All (%) | 10.61% | 26.68% |
| Habitual Drug Users (%) | 14.11% | 30.01% |

Habitual drug users are more likely to have one of their parents absent in the household.





The percent of education levels below college increase slightly with habitual drug use. (See the appendix for a similar graph of mother's education attainment).

Figure 4. Absenteeism: Truancy



Frequent drug users are significantly more likely to skip school. (See the appendix for similar figures on absenteeism).

Graduation and Drug Use.

| Table 4. | Presence | of Habitual | Drug | Use and | Graduation. |
|----------|----------|-------------|------|---------|-------------|
| | | | | | |

| | All Habitual Drug Use | | Habitual Drug Use* | Habitual Drug Use** | |
|----------------------------|-----------------------|----------------|--------------------|---------------------|--|
| Will Graduate N (%) | 12,335 (93.59%) | 4,249 (93.82%) | 2,598 (93.08%) | 552 (89.47%) | |
| Late Graduation N (%) | 115 (0.87%) | 55 (1.21%) | 44 (1.58%) | 16 (2.59%) | |
| Will Not Graduate N (%) | 64 (0.49%) | 32 (0.71%) | 25 (0.90%) | 10 (1.62%) | |

Notes: 666 (5.05%) of respondents did not indicate date of graduation. *Excludes Alcohol and cigarettes **Excludes alcohol, cigarettes and marijuana.

Table 5. Prevalence of Habitual Drug Use among Late/Non Graduates.

| Non/Rare Drug Use | Habitual Drug Use |
|-------------------|-------------------|
| 51.40% | 48.60% |

Nearly half of high school students who will not graduate on time are habitual drug users. Among dropouts, marijuana is the most often used drug – representing 15 of the 32 drug users.



Alcohol, cigarettes and marijuana were the most commonly tried drugs among students graduating late.

Regression: Bivariate.

| Graduation | Coef. | Std. Err. | t | P> t | [95% Conf. | Interval] |
|----------------------|---------------------|------------------|---------------|---------------|--------------------|-----------|
| Habitual Drug Use | .012282 | .0032123 | 3.82 | 0.000 | .0059854 | .0185787 |
| Graduation: 1=Grad | uate on Time 2=Late | Graduate 3=Do No | t Expect to C | Graduate / Ha | abitual Drug Use=1 | |

The presence of a habitual drug habit increases the chance of not graduating on time by a coefficient of 0.01228.

| Graduation | Coef. | Std. Err. | t | P> t | [95% Conf. | Interval] |
|------------|----------|-----------|------|-------|------------|-----------|
| Truancy | .0119697 | .0012435 | 9.63 | 0.000 | .0095323 | .0144071 |

Graduation: 1=Graduate on Time 2=Late Graduate 3=Do Not Expect to Graduate

Truancy: 1=No absences 2=1 missed day 3=2 days 4=3 days 5=4-5 days 6=6-10 days 7=11+ days

| Graduation | Coef. | Std. Err. | t | P> t | [95% Conf. Interv | al] |
|------------|---------|-----------|-------|-------|-------------------|-----|
| Mother | 037497 | .0047322 | -7.92 | 0.000 | 0467729028 | 221 |
| Graduation | Coef. | Std. Err. | t | P> t | [95% Conf. Interv | al] |
| Father | 0207513 | .0033049 | -6.28 | 0.000 | 02722930142 | 732 |

An increase in truancy predicts a slightly higher chance of not graduating by a coefficient of 0.01197.

Graduation: 1=Graduate on Time 2=Late Graduate 3=Do Not Expect to Graduate / Mother & Father: 1=Present 0=Absent

The presence of a student's mother and father in the household decreases the chance of not graduating on time by coefficients of 0.04 and 0.02, respectively.

| Truancy | Coef. | Std. Err. | t | P> t | [95% Conf. | Interval] | | |
|---|----------|-----------|-------|-------|------------|-----------|--|--|
| Habitual Drug Use | .6158496 | .0227107 | 27.12 | 0.000 | .571333 | .6603661 | | |
| Truancy: 1=No absences 2=1 missed day 3=2 days 4=3 days 5=4-5 days 6=6-10 days 7=11+ days / Habitual Drug Use=1 | | | | | | | | |

The presence of a habitual drug habit predicts a moderate increase in the amount of schools days missed with a coefficient of 0.62. Values for father and mother's education attainment and truancy were insignificant.

Regression: Multivariate.

Truancy: 1=No absences 2=1 missed day 3=2 days 4=3 days 5=4-5 days 6=6-10 days 7=11+ days Mother & Father: 1=Present 0=Absent / Habitual=1 / White=1 / Male=1 Graduation: 1=Graduate on Time 2=Late Graduate 3=Do Not Expect to Graduate

| Graduation | Coef. | Std. Err. | t | P> t | [95% Conf. | Interval] |
|------------|----------|-----------|-------|-------|------------|-----------|
| Habitual | .0089906 | .0031104 | 2.89 | 0.004 | .0028937 | .0150875 |
| Father | 0161346 | .003357 | -4.81 | 0.000 | 0227149 | 0095543 |
| Mother | 0321259 | .0048211 | -6.66 | 0.000 | 041576 | 0226757 |
| Graduation | Coef. | Std. Err. | t | P> t | [95% Conf. | Interval] |
| Habitual | .0082471 | .0032349 | 2.55 | 0.011 | .0019061 | .014588 |
| White | 0230617 | .0033229 | -6.94 | 0.000 | 0295752 | 0165481 |
| Male | .0160235 | .0030836 | 5.20 | 0.000 | .009979 | .0220681 |
| Truancy | Coef. | Std. Err. | t | P> t | [95% Conf. | Interval] |
| Habitual | .5966436 | .0244602 | 24.39 | 0.000 | .5486966 | .6445906 |
| White | 1447989 | .0256824 | -5.64 | 0.000 | 1951417 | 094456 |
| Male | 0066543 | .0232637 | -0.29 | 0.775 | 052256 | .0389474 |
| Father | 1098971 | .0270948 | -4.06 | 0.000 | 1630084 | 0567857 |
| Mother | 152609 | .0384422 | -3.97 | 0.000 | 2279636 | 0772545 |
| | | | | | | |

Multivariate regression shows that the influence of a drug habit on graduation is mildly mediated when controlling for sex, race and presence of parents in the household. Habitual drug use continues to be the biggest statistical influence on absenteeism – even when adding a control for grades, the coefficient drops only to 0.52. The presence of a drug habit predicts an increase in the amount of days missed by a coefficient of 0.59 - 0.52. Results were insignificant when running a model controlling for absenteeism.

Discussion

The univariate relationship of parents' education levels and religion, and the bivariate models of absence of a parent, sex and race, show that there are other elements that are at play in evaluating non-graduation than just substance abuse or absenteeism. The evidence suggests that while truancy and drug use are mildly to moderately statistically significant, the interplay of all these factors matter. Furthermore, frequent drug use predicts a higher rate of truancy than any controls. The relationship between graduation, drug use and absenteeism is complex: does drug use influence graduation directly, or by proxy of absenteeism? Nonetheless, skipping school and the presence of a habitual drug habit are the biggest statistical predictors of non/late graduation among a variety of factors. While only 34% of the general student population reported being a frequent drug user, it was reported in 49% of students not do not graduation on time. A similar trend with absences: students not graduating on time who admitted to frequent drug use were much more likely to skip class or school on more than six occasions.

Surprisingly, grades did not show a strong relationship with non/late graduation. Only 53% of students not graduating on time reported a GPA of C+ or lower. It was not discernable why this discrepancy existed. It is possible that students exaggerated their grades, or students who were not graduating on time did not truly know their grades.

There are some limitation with this data; it is relying on the honesty of high school students to report their illegal habits accurately. Secondly, there are no indicators for socioeconomic status. Future research should further explore the relationship between drug use and absenteeism, the consequences academically, and the resulting effects on dropout rates.

Conclusion

Teenage drug use does play a statistically significant role in high school dropout; either by its own mechanism or through increases in absenteeism. Graduation, drug use, and absences are all closely related. Interventions related to drugs should be targeted towards students who miss an abnormal amount of classes or school days without an illness, as they are more likely to both drop out and to abuse drugs. Teachers must keep accurate levels of class attendance, as drug users are also more likely to cut individual classes during the school day.

Appendix







Figure 8. Education Attainment of Mother by Habitual Drug Use.

Table 6. Grades of Students by Graduation.

| Grade | On Time N | Late/Not Expected N |
|-------------|-----------|---------------------|
| D | 99 | 20 |
| C- | 246 | 23 |
| С | 533 | 21 |
| C+ | 997 | 31 |
| B- | 1,370 | 14 |
| В | 2,196 | 16 |
| B+ | 2,285 | 18 |
| A- | 2,358 | 4 |
| А | 2,123 | 29 |
| No Response | 794 | 3 |

| | None | 1 day | 2 | 3 | 4-5 | 6-10 | 11+ | No Response |
|------------------------|------|-------|----|---|-----|------|-----|-------------|
| Non/Rare Drug Use N | 58 | 6 | 10 | 6 | 2 | 1 | 4 | 5 |
| Habitual Drug Use N | 35 | 8 | 8 | 6 | 8 | 7 | 9 | 6 |

Table 7. School absences in the past four weeks by drug habit in students not graduating on time.

Table 8. Missed/cut individual classes in the past four weeks by drug habit in students not graduating on time.

| | None | 1-2 classes | 3-5 | 6-10 | 11-20 | 21+ | No Response |
|------------------------|------|-------------|-----|------|-------|-----|-------------|
| Non/Rare Drug Use N | 66 | 10 | 8 | 3 | 0 | 1 | 4 |
| Habitual Drug Use N | 30 | 17 | 14 | 8 | 4 | 12 | 2 |

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