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*America's College  
Drop-Out Epidemic:  
Understanding the  
College Drop-Out  
Population*

ERIN DUNLOP VELEZ

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*American Institutes for Research*

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## Acknowledgements

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# **America's College Drop-Out Epidemic: Understanding the College Drop-Out Population**

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## **Abstract**

Over 40% of full time four-year college students fail to earn a bachelor's degree within six years, and many never complete their education. This paper describes this sizeable fraction of the U.S. higher education market and estimates counterfactual predicted probabilities of degree completion, had students made different initial postsecondary enrollment choices. Using data from the NLSY97, a rich nationally representative data set, we make several observations. First, policies aimed at increasing postsecondary degree attainment by encouraging college enrollment are likely to be unproductive, given that students who are currently not enrolling in postsecondary education have very low predicted probabilities of completion, due to their low academic preparedness. This holds true for enrollment in both two-year and four-year colleges. Second, we find that students who drop-out of four-year colleges generally also have very low predicted probabilities of completion, although this varies across student groups. Finally, we conclude that had four-year college drop-outs begun their postsecondary careers at a two-year college, their predicted probabilities of postsecondary degree completion would be significantly higher. While most of this increase in degree completion comes through increased associate's degree attainment, about a third of four-year college drop-outs would have a higher chance of bachelor's degree completion, had they begun college at a two-year institution. While our results are only a descriptive analysis, and should not be interpreted as causal findings, until more is understood about the types of students who drop-out of college and potential reasons why, there will likely be little progress in reducing the college failure rate in the U.S.

# 1. Introduction

In order to accomplish President Obama's American Graduation Initiative, which has a goal that "by 2020, this nation will once again have the highest proportion of college graduates in the world," the United States must focus on both entry into and completion of postsecondary education. The U.S. has made moderate progress towards increasing college entry over the past four decades; the number of students enrolled in postsecondary institutions has more than doubled to 21 million students. However, the U.S. lags behind other nations in terms of college completions. The percentage of full-time students at four-year institutions who complete a bachelor's degree in four years is only 37.9%, and the completion rate after six years is only 58.3%.

There are several reasons why some level of college non-completion is expected. For example, students make their decision to enter college based on limited information, and some students on the margin of college entry may need to experience one year of college to obtain more information. Alternatively, students may experience unforeseen shocks during college that cause them to exit early. However, failing to complete a degree may negatively affect student outcomes. Students lose years of workforce experience and may graduate with student loan debt, yet have not earned a wage-increasing credential to justify these sacrifices. The current high college drop-out rate is likely harmful to both students and the economy.

Using a nationally representative data set, this paper describes U.S. college drop-outs and estimates counterfactual predicted probabilities of degree completion, had students made different initial postsecondary enrollment choices. It needs to be stressed that this paper is only able to control for observable differences between students. To the extent that unobservable factors uncorrelated to our observed student characteristics affect postsecondary enrollment and completion decisions, the following results are likely to be biased. The results here are not meant to be causal claims about the

effects of postsecondary enrollment choices on students' completion probabilities. Instead, this descriptive analysis provides suggestive evidence that some students may benefit from making different postsecondary enrollment decisions.

We find several patterns in our analysis. First, while four-year college drop-outs have considerably lower high school achievement than four-year college completers, they have similar achievement to two-year college completers. Second, students who are not currently entering postsecondary education have very low probabilities of completing a degree, had they enrolled. This holds true for enrollment in both two-year and four-year colleges. Third, for students who drop-out of four-year colleges, many of them also have low predicted probabilities of bachelor's degree completion, although this varies over subgroups. Fourth, had four-year college drop-outs begun their postsecondary careers at a two-year college, their predicted probabilities of postsecondary degree completion would be significantly higher. Fifth, while most of this increase in degree completion comes through increased associate's degree attainment, about a third of four-year college drop-outs would have a higher chance of bachelor's degree completion, had they begun college at a two-year institution.

## **2. Data**

The data for this study come from the National Longitudinal Study of Youths 1997 (NLSY97), which is a large, nationally representative data set of 8,984 students, collected by the Bureau of Labor Statistics. The surveyed students were between 12 and 16 years old in the beginning of 1997, so the majority of the college going sample entered college between 1999 and 2003. After the students' first interview in 1997, the students were interviewed each subsequent year, through 2011. The students were interviewed extensively about their family background, high school and college educational experiences, and labor market outcomes. In addition to interviewing the students, the students'

parents and other household members were also interviewed, and the survey also collected information from the student's high school.

Of the nearly 9,000 students in the survey, about a quarter were part of a supplemental oversample of Hispanic and black students. The cross-sectional sample, which was used in this analysis, consists of 6,748 observations. The response rate for the survey is quite high. 83% of the round 1 sample were sampled again in round 15, the most recent year of the survey.

Table 1 includes descriptive statistics for five different populations of students: students who never enter postsecondary education, students who enter a two-year college and never earn an associate's or bachelor's degree, students who enter a four-year college and never earn a bachelor's degree, students who complete an associate's degree, and students who complete a bachelor's degree. The student characteristics in the table cover a wide range of variables, from student demographics and geographic information about the location of the student's home, to characteristics of the student's family and measures of high school achievement.

Several predictable patterns emerge. First, there are large observable differences between students who complete a four-year degree and those that drop-out of a four-year school, in terms of demographics, family background, and high school achievement. Second, there are also large observable differences between students who drop-out and complete a degree at a two-year school. Third, there are observable differences between students who are successful at a two-year college and those students who are successful at a four-year college.

More surprising though, is the fact that students who drop-out of four-year colleges are observationally similar to students who complete a two-year degree, in terms of demographics, geographics, family background, and high school achievement. This observation motivates the later

investigation of whether four-year college drop-outs' outcomes would improve if they began their postsecondary education at a two-year college.

**Table 1 – Descriptive Statistics by Postsecondary Outcomes<sup>1</sup>**

Student Characteristics	Never Attend	Drop-Out 2yr	Drop-Out 4yr	2yr Degree	4yr Degree
<b>Demographics:</b>					
Female	0.42	0.51	0.49	0.54	0.56
White	0.68	0.67	0.71	0.73	0.80
Black	0.19	0.20	0.19	0.16	0.10
Asian	0.01	0.02	0.02	0.02	0.04
Hispanic	0.17	0.16	0.13	0.12	0.07
<b>Geographics:</b>					
North East	0.18	0.18	0.18	0.18	0.18
North Central	0.25	0.22	0.31	0.25	0.29
South	0.37	0.37	0.32	0.31	0.30
West	0.20	0.24	0.19	0.22	0.21
Urban	0.71	0.75	0.72	0.66	0.72
<b>Family:</b>					
Parents Own Home	0.58	0.67	0.73	0.77	0.86
Mother Gave Birth when <20 Years Old	0.35	0.25	0.20	0.19	0.11
HH Income < \$30,000	0.46	0.35	0.27	0.27	0.14
Two Biological Parents at Home	0.43	0.49	0.56	0.54	0.72
Father Attended College	0.25	0.40	0.48	0.43	0.67
Mother Attended College	0.26	0.44	0.51	0.44	0.68
<b>Achievement:</b>					
Attend Private HS	0.02	0.03	0.08	0.06	0.11
HS Grades Mostly As & Bs	0.29	0.46	0.63	0.60	0.85
PIAT Math Score	90.27	99.67	105.04	102.01	110.62
Special Education	0.15	0.07	0.04	0.03	0.02
Gifted Classes	0.05	0.12	0.22	0.18	0.35
ASVAP Score Percentile	31.84	47.46	58.16	54.10	69.43
# Math Credits	2.32	2.98	3.34	3.13	3.67
HS GPA Overall	2.49	2.73	2.92	2.90	3.28
HS GPA English Classes	2.37	2.58	2.81	2.75	3.23
HS GPA Math Classes	2.35	2.49	2.65	2.62	3.00
Repeated Grade	0.36	0.17	0.10	0.12	0.04
Skipped Grades	0.03	0.02	0.02	0.02	0.02
SAT Math Score	432	445	475	455	515
SAT Verbal Score	446	446	479	466	506
ACT	8.20	13.01	17.67	14.83	19.59
<b>N</b>	<b>2703</b>	<b>1216</b>	<b>1062</b>	<b>468</b>	<b>1433</b>

<sup>1</sup> Note that these are not unique categories. If a student attends both two- and four-year colleges and never earns any degree, he/she is considered both a two-year and four-year drop out. Similarly if a student earns both associate's and bachelor's degrees, he/she is counted in both categories as well. The total sample size is 6,721 observations. (The cross sectional NLSY97 sample consists of 6,748 observations and degree attainment information is missing for 27 students.)

### 3. Estimation Method

The estimation method in this paper is fairly straightforward. We estimate a series of logit models, where the outcome variable is postsecondary degree attainment (either bachelor's and/or associate's degrees) and the controls are a very rich set of student characteristics, including demographics, geographic information, family background variables, and high school achievement measures.<sup>2</sup>

To create each series of graphs, we estimate the degree attainment logit model on the sample of students who chose the counterfactual postsecondary outcome, and then use the coefficient values from the model to predict the degree attainment for other students. For example, for Figure 1 and Table 2, we estimate a logit model predicting bachelor's degree attainment for the population of students who enter a four-year college. We then use the estimated coefficients from that model to predict bachelor's degree attainment for the population of students who never enter college. The same method was used to produce Figure 2 and Tables 4 and 5. We estimate postsecondary degree attainment for students who enter a two-year college, and then use the coefficients from the logit model to predict degree attainment for students who never enter college or for students who drop-out of a four-year college.

Because the data set does have some missing information and we did not want to estimate any models on a biased sample, we create dummy variables for each covariate having missing information.

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<sup>2</sup> The student demographics I control for include: gender, race, and age in 1997. The geographic variables I control for include: region of the country, whether the student lives in a rural area, and whether the student lives in a MSA. The family background information I control for includes: whether the student's parents own their home, the age of the student's mother when she had her first child, household income and net worth, the number of parents the student lives with and their relationship to the student, household size, and parental education. The high school achievement measures I include are: high school grades, standardized test scores on the PIAT and ASVAB, the type of program the student is enrolled in (gifted, bilingual, special education), whether the student ever repeated or skipped a grade, class rank, the number of math credits the student took, characteristics of the student's high school (whether it was a private school; whether it offered calculus, AP classes, and IB classes), and college entrance exam scores (SAT or ACT).

For example, instead of excluding students whose family income is missing, we include a variable for missing family income information, and are therefore able to use all students in the estimation.<sup>3</sup>

If student decisions about which level of postsecondary education to enter were randomly assigned, it would be easy to make causal claims about the effects of postsecondary enrollment choices on degree completion probabilities. Since this is not the case, and because students make postsecondary enrollment choices based on information that is both observed by researchers (for example high school GPA and family income) and unobserved by researchers (for example the student's level of motivation and their private information about their future earnings prospects), it is difficult to make causal statements about postsecondary enrollment choices. This paper is only able to control for a rich set of observable characteristics when estimating the effects of postsecondary enrollment for various students. Unobserved factors that affect both postsecondary enrollment and degree completion may bias the results found in this paper. Even though this paper is unable to make precise causal claims about the effects of enrollment decisions, these descriptive findings can serve as a basis for future research and illustrate that some students would benefit from more information when making their postsecondary enrollment decisions.

## 4. Findings

The following figures show the predicted probability of postsecondary degree attainment for various student groups, had the students made different postsecondary enrollment choices. For those readers who like tables more than figures, for each figure, there

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<sup>3</sup> There are two small groups of students not included in the analysis. First, students with missing degree attainment information needed to be dropped. Since this information was only missing for 27 of the 6,748 students interviewed (0.4% of the sample), it represents a small potential source of bias. Second, there were 49 students who report earning a bachelor's degree and never attending a four-year college. Since this combination of variables was most likely the product of incorrect information, these students were dropped as well. They comprised 0.7% of the original sample.

is a corresponding table that shows the fraction of students whose predicted probabilities fall into each quartile of the distribution.

Figure 1 and Tables 2 and 3 show the density of predicted probabilities of bachelor's degree attainment for two groups of students: students who never enter postsecondary education and students who drop-out of a four-year college. The density plots are shown for all students in these groups, and then separately for various high interest subgroups: males, minority students (black or Hispanic students), low income students (household income under \$30,000 a year), rural students, and first-generation college students.

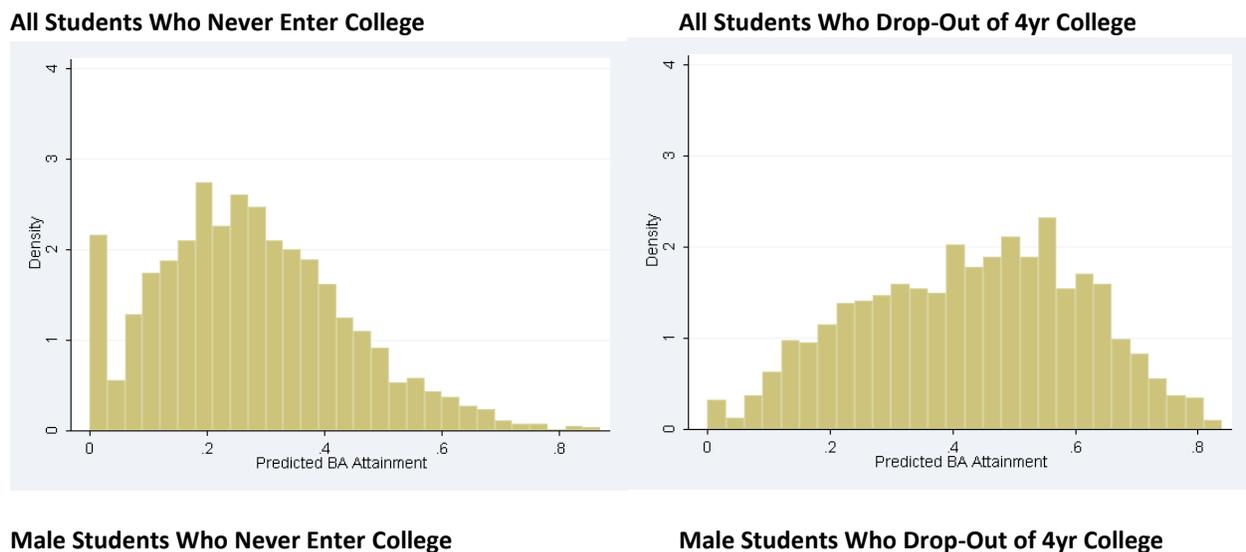
These graphs and tables show several patterns. First, it is clear that for students who never enter college, given their current level of academic preparation, their predicted probabilities of bachelor's degree attainment would have been quite low, had they entered a four-year college. There is also minimal variation across the various subgroups. For all the high interest subgroups, the students not currently entering college would have relatively uniformly low probabilities of completing a degree, had they entered. This finding is consistent with Lovenheim and Reynolds (2011) who find that between the 1980s and 2000s, there were large increases in postsecondary enrollment for high ability students, so that today, there are few high ability high school students not enrolling in college.

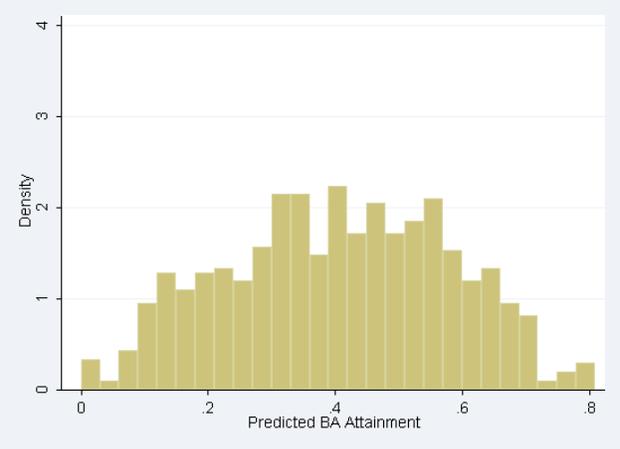
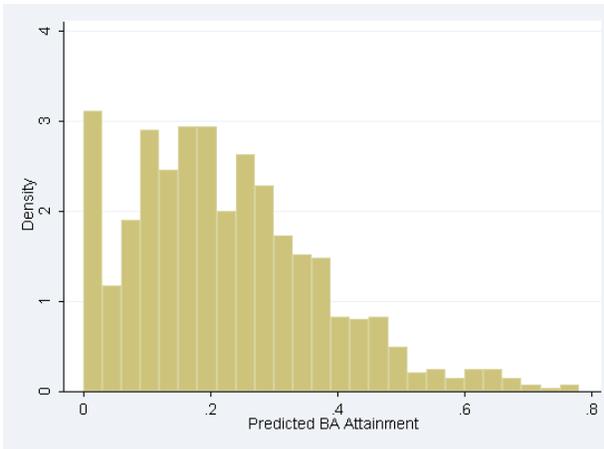
The details of this finding can be seen in Table 2. Only half a percent of students who never enter postsecondary education had greater than a 75% predicted probability of bachelor's degree completion, had they entered a four-year school, and less than 10% of these students had greater than a 50% predicted probability of bachelor's degree completion. Minority and low income students who never entered college have particularly low predicted

probabilities of baccalaureate success. 61% of minority students who never entered college and 65% of low income students had less than a 25% predicted probability of bachelor’s degree attainment had they entered a four-year school.

The predicted probabilities of bachelor’s degree attainment for students who drop-out of four-year colleges are also low, although not nearly as low as for the students who never enter college. Minority, low income, and first generation college students who drop-out of four-year colleges had relatively low predicted probabilities of success, while rural drop-out students had relatively high probabilities of success. From Table 3 we see that less than 20% of minority, low income, and first-generation college drop-out students had more than a 50% predicted probability of bachelor’s degree completion, and almost 40% of minority and low income drop-outs had less than a 25% likelihood of degree completion. For rural drop-out students on the other hand, over 35% percent had over a 75% predicted probability of degree completion, and less than 15% had less than a 25% predicted probability.

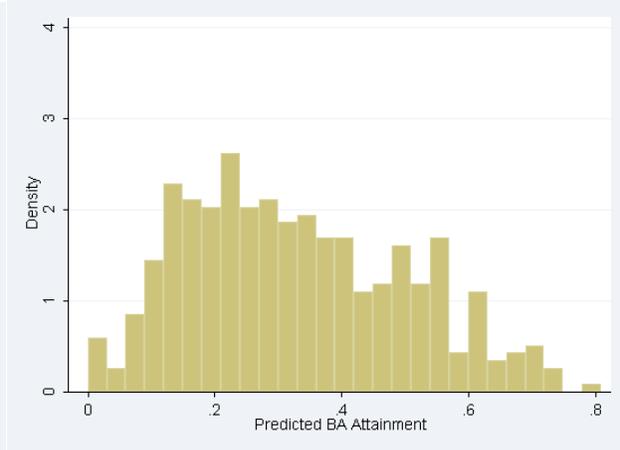
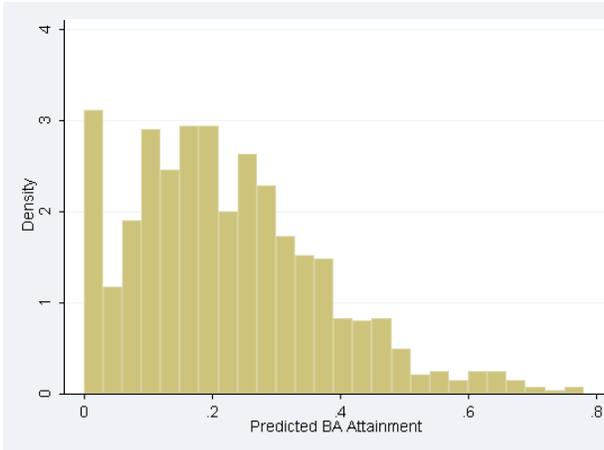
**Figure 1 - Predicted Probability of Bachelor’s Degree Attainment**





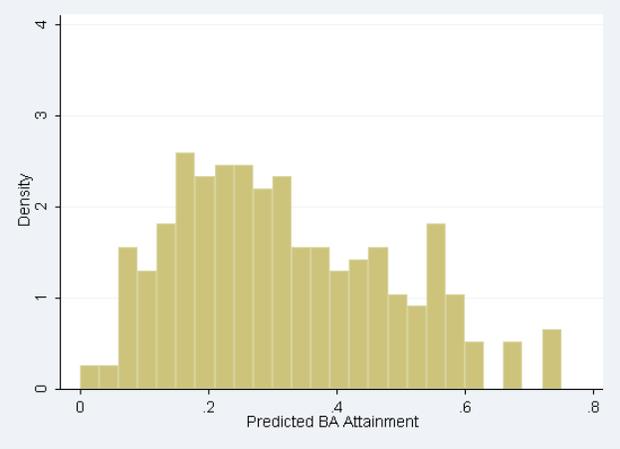
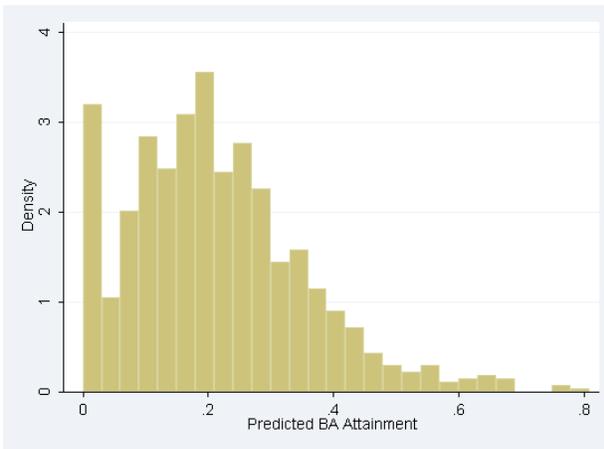
**Minority Students Who Never Enter College**

**Minority Students Who Drop-Out of 4yr College**



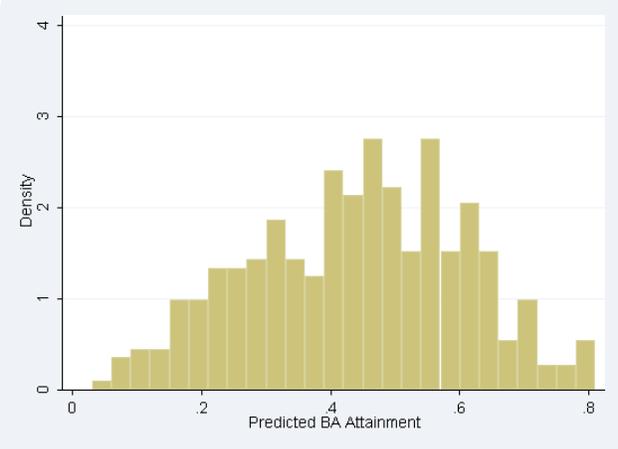
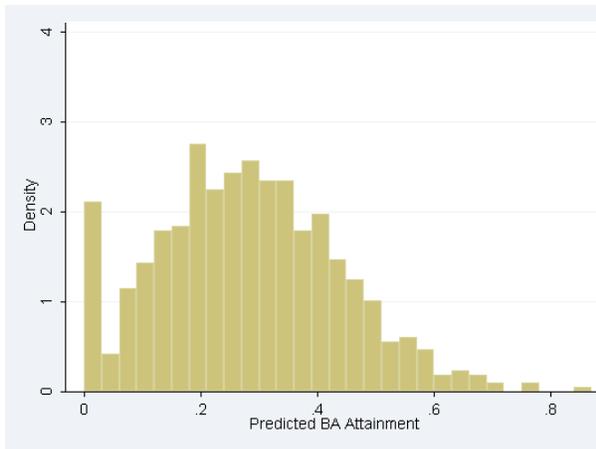
**Low Income Students Who Never Enter College**

**Low Income Students Who Drop-Out of 4yr College**



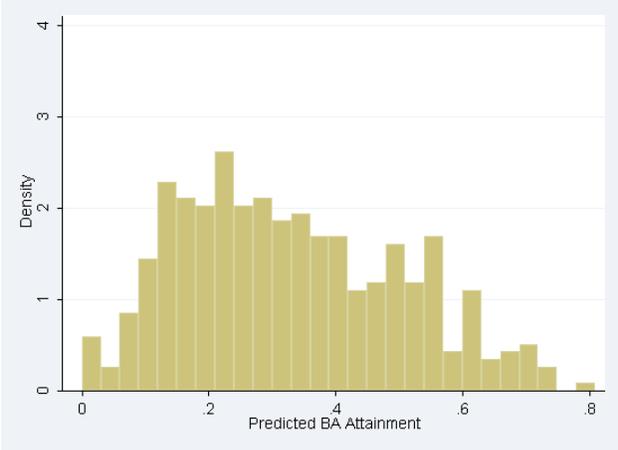
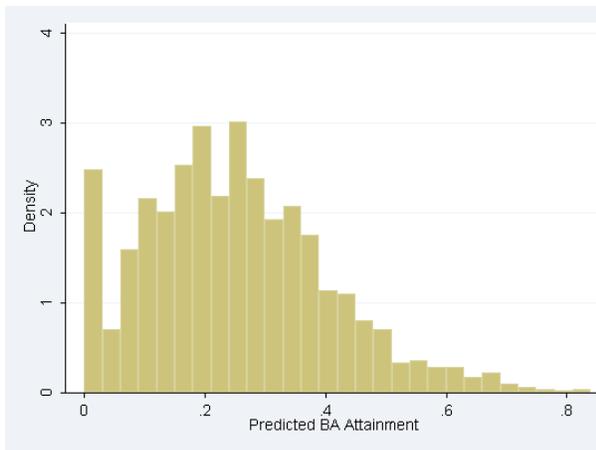
**Rural Students Who Never Enter College**

**Rural Students Who Drop-Out of 4yr College**



**1<sup>st</sup> Gen. College Students Who Never Enter College**

**1<sup>st</sup> Gen. College Students Who Drop-Out of 4yr College**



**Table 2 – Students Who Never Enrolled in College by Quartile of Predicted Probability of Bachelor’s Degree Attainment, Had They Entered a Four-year College**

<b>Predicted Probability</b>	<b>All</b>	<b>Males</b>	<b>Minority</b>	<b>Low Income</b>	<b>Rural</b>	<b>Low Parent Education</b>
75% - 100%	0.5	0.3	0.2	0.3	0.4	0.3
50% - 75%	8.5	5.6	4.5	3.4	7.7	5.8
25% - 50%	44.3	42.1	34.9	31.3	47.7	40.8
0% - 25%	46.7	52.0	60.5	64.9	44.2	53.2

**Table 3 – Students Who Dropped-Out of a Four-Year College by Quartile of Predicted Probability of Bachelor’s Degree Attainment**

<b>Predicted Probability</b>	<b>All</b>	<b>Males</b>	<b>Minority</b>	<b>Low Income</b>	<b>Rural</b>	<b>Low Parent Education</b>
75% - 100%	2.4	1.4	0.3	0.0	2.4	1.0
50% - 75%	36.3	30.7	19.0	18.2	34.4	18.3
25% - 50%	42.5	46.2	42.8	41.9	48.3	49.0
0% - 25%	18.8	21.7	38.0	39.9	14.9	31.7

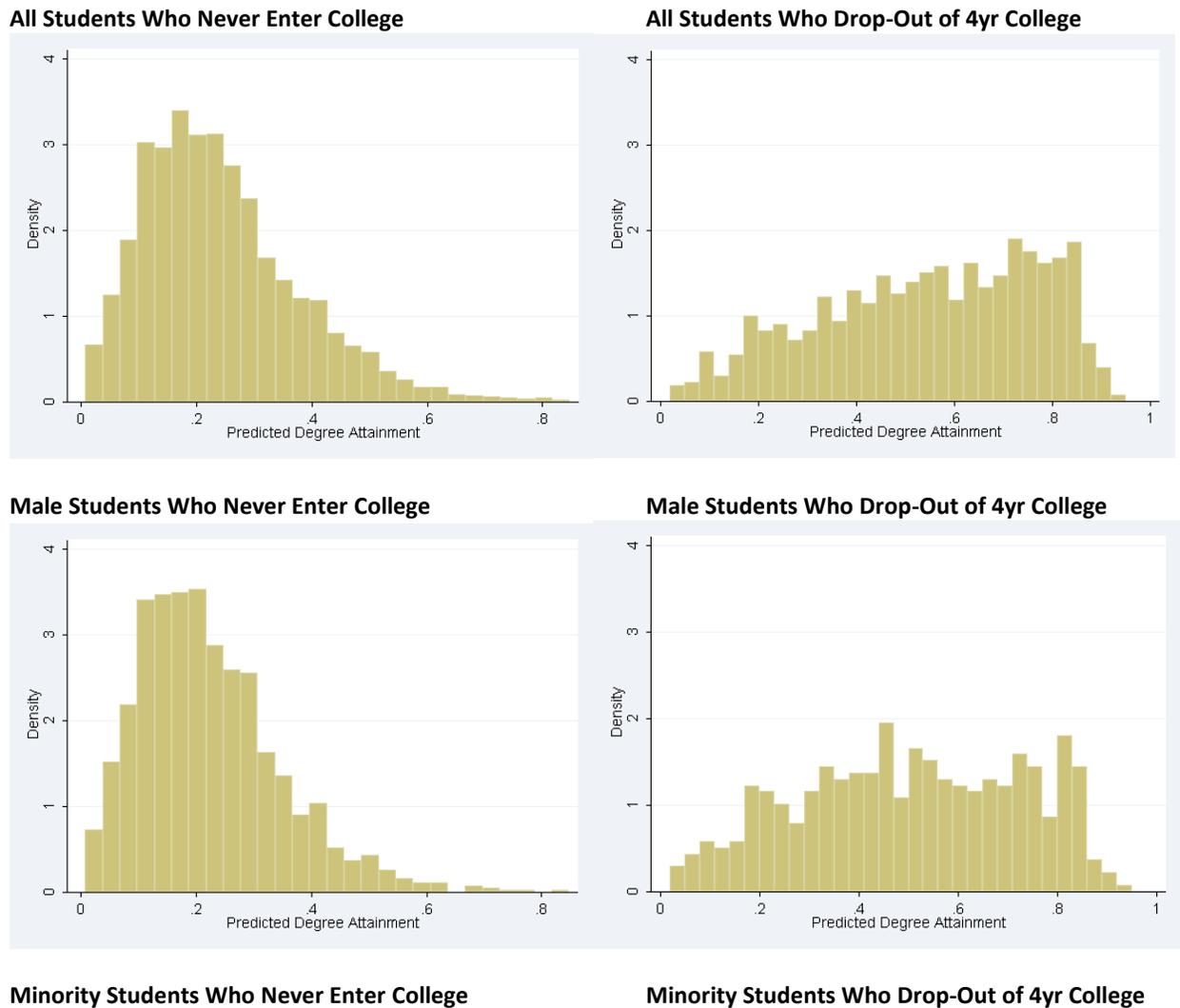
Figure 2 and Tables 4 and 5 show the predicted probability of degree attainment (either associate's or bachelor's degrees) had students begun their postsecondary education at a two-year school. For the population of students who never enter college, their counterfactual probabilities of degree attainment are equally low no matter the measure of postsecondary success (AA or BA) or the counterfactual level of college entered. In both Figures 1 and 2, and across the various student subgroups, the finding is the same. For students who never enter college, their probability of postsecondary success, had they entered any level of college, is very low. This finding may suggest that improved high school preparation is needed for students who are not currently entering postsecondary education, before these students are encouraged to attend either a two- or four-year college.

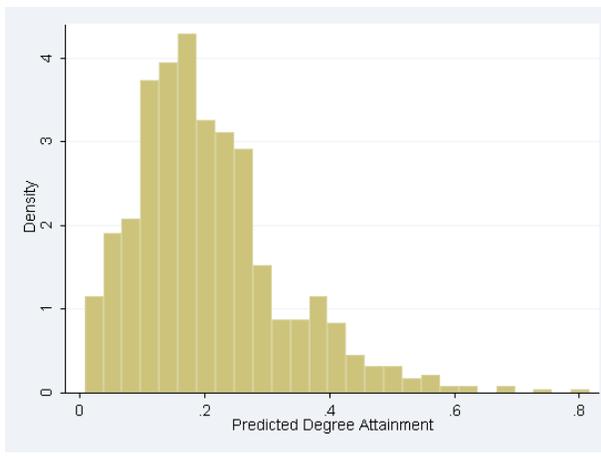
For students who drop-out of a four-year college, Figure 2 and Table 5 show that they would have had a much higher probability of postsecondary success, had they entered a two-year college instead. At a four-year college, only 2% of four-year college drop-outs had greater than a 75% probability of degree completion. Starting at a two-year college, 23% of these students had that high of a rate. Granted, many of those students' terminal degree would be an associate's and not a bachelor's degree.

Minority four-year college drop-outs appear to benefit the most from beginning at a two-year versus a four-year school; the fraction of minority students with more than a 75% predicted probability of degree completion increases from virtually 0% to over 10% and the fraction of students with less than a 25% predicted chance of degree completion drops from 38% to 25% when they switch from four- to two-year schools. These findings suggest that for some students who are encouraged to enter a four-year college, they may actually be more

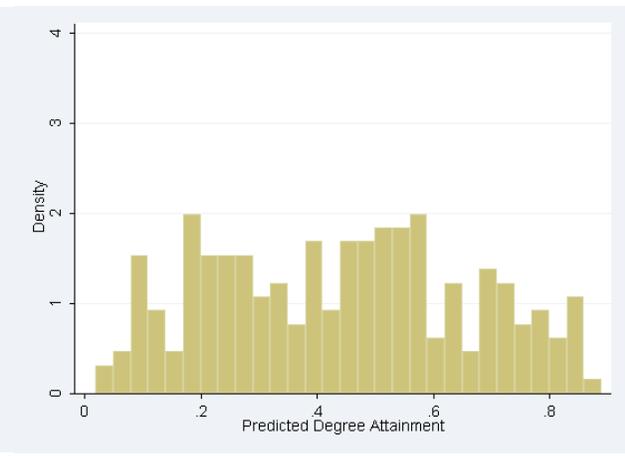
likely to complete a degree attending a two-year college instead. This fact is especially important given that previous research has shown that students holding an associate's degree earn more over their lifetimes than students who attended several years of a four-year college. The labor market returns of an associate's degrees versus some college are discussed in more detail in the Discussion and Conclusion section.

**Figure 2** - Predicted Probability of Postsecondary Degree Attainment, Had Students Entered a Two-Year College

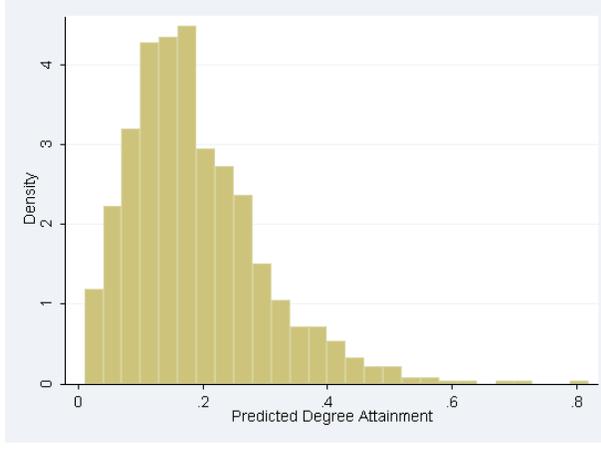




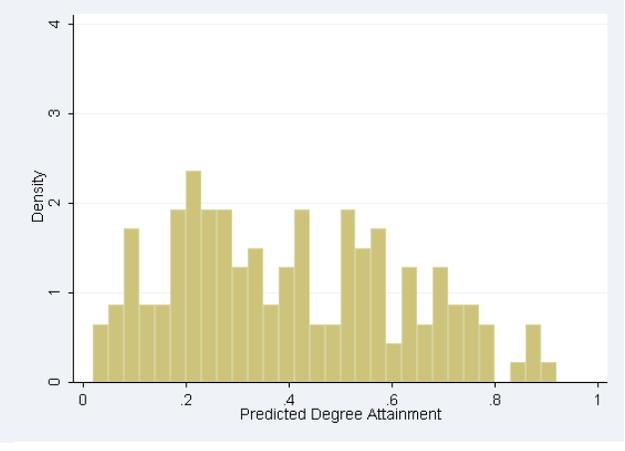
**Low Income Students Who Never Enter College**



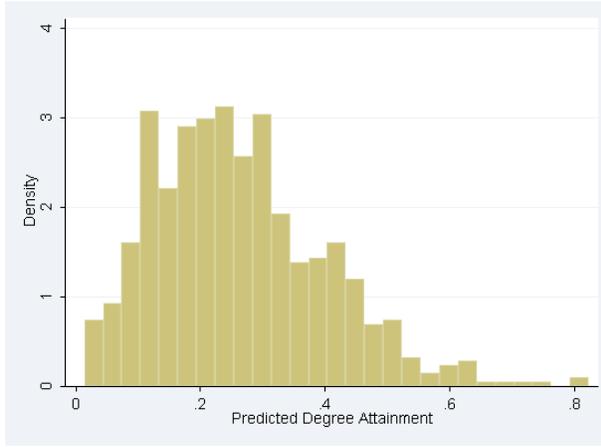
**Low Income Students Who Drop-Out of 4yr College**



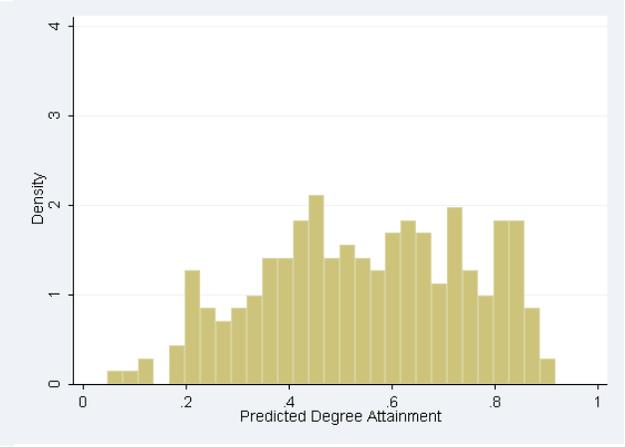
**Rural Students Who Never Enter College**



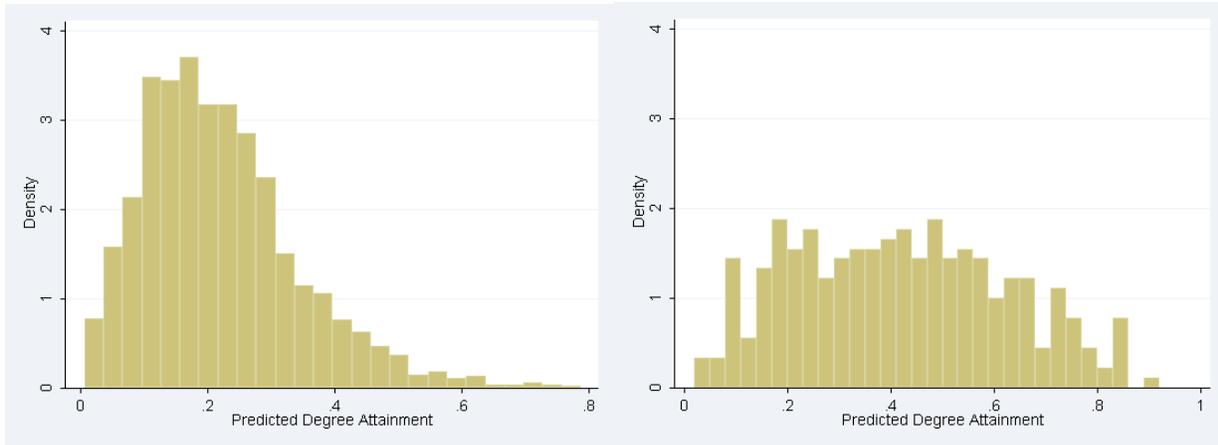
**Rural Students Who Drop-Out of 4yr College**



**1<sup>st</sup> Gen. College Students Who Never Enter College**



**1<sup>st</sup> Gen. College Students Who Drop-Out of 4yr College**



**Table 4 – Students Who Never Enroll in College by Quartile of Predicted Probability of Postsecondary Degree Attainment, Had They Entered a Two-Year College**

<b>Predicted Probability</b>	<b>All</b>	<b>Males</b>	<b>Minority</b>	<b>Low Income</b>	<b>Rural</b>	<b>Low Parent Education</b>
75% - 100%	0.4	0.2	0.1	0.1	0.4	0.1
50% - 75%	4.3	3.0	2.3	1.2	5.1	2.7
25% - 50%	36.5	32.6	26.7	22.8	43.4	32.4
0% - 25%	58.7	64.2	70.9	75.9	51.1	64.8

**Table 5 – Students Who Drop-Out of a Four-Year College by Quartile of Predicted Probability of Postsecondary Degree Attainment, Had They Entered a Two-Year College**

<b>Predicted Probability</b>	<b>All</b>	<b>Males</b>	<b>Minority</b>	<b>Low Income</b>	<b>Rural</b>	<b>Low Parent Education</b>
75% - 100%	22.7	17.5	10.1	7.1	19.4	6.6
50% - 75%	37.2	33.9	32.1	29.5	39.2	28.5
25% - 50%	27.5	32.4	33.0	32.7	32.9	39.1
0% - 25%	12.6	16.2	24.8	30.8	8.4	25.8

Part of the increase in student outcomes seen in Figure 2 and Table 5 is due to the fact that the definition of postsecondary success was expanded to include associate’s degrees. A reasonable next question is, how much of the increase in student degree attainment we measure when four-year college drop-outs switch to starting at two-year colleges is due to increased associate’s versus bachelor’s degree attainment?

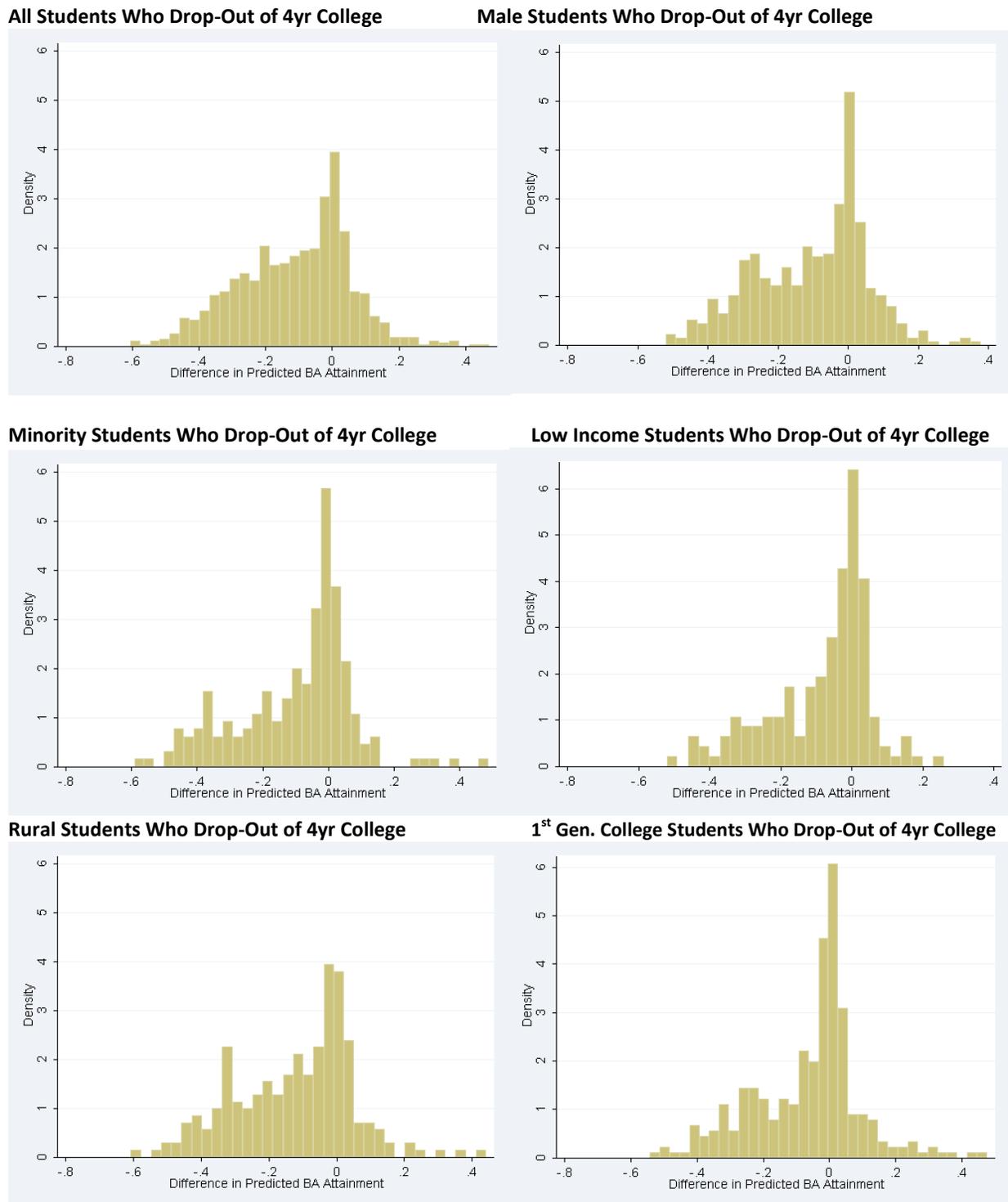
Table 6 shows that on average, students who drop-out of four-year colleges would have even lower predicted bachelor’s degree attainment had they begun at a two-year school. This finding is consistent with the previous literature (for example Long and Kurlaender 2009), that has found that all else equal, starting one’s postsecondary career at a two-year college lowers the probability of bachelor’s degree attainment.

**Table 6 – Students Who Drop-Out of a Four-Year College by Quartile of Predicted Probability of Bachelor’s Degree Attainment, Had They Entered a Two-Year College**

<b>Predicted Probability</b>	<b>All</b>	<b>Males</b>	<b>Minority</b>	<b>Low Income</b>	<b>Rural</b>	<b>Low Parent Education</b>
75% - 100%	1.0	0.6	0.9	0.0	1.3	1.3
50% - 75%	15.3	10.8	6.0	3.2	12.2	4.6
25% - 50%	31.4	29.8	19.7	14.1	29.1	12.9
0% - 25%	52.3	58.7	73.4	82.7	57.4	81.1

That said, it is also true that while many students’ bachelor’s degree attainment probabilities are harmed by beginning at a two-year college, some are helped. Figure 3 and Table 7 show the difference in the probability of bachelor’s degree attainment for four-year college drop-outs had they begun at a two-year versus a four-year college. About 70% of four-year college drop-outs have a higher predicted probability of success beginning at a four-year college. But for the other 30% of the sample, their predicted probability of bachelor’s degree attainment would have been higher had they started at a two-year college. This is particularly true for first-generation college students, about 40% of which would have been more likely to earn a bachelor’s degree had they begun at a two-year college.

**Figure 3 – Difference in Predicted Probability of *Bachelor’s Degree* Attainment, Conditional on Entrance into a *Two-Year* Versus *Four-Year* College**



**Table 7 – Students Who Drop-Out of a Four-Year College by the Difference in Predicted Probability of *Bachelor’s Degree* Attainment, Had They Entered a *Two-Year* Versus a *Four-Year* College**

Predicted Probability Difference	All	Males	Minority	Low Income	Rural	Low Parent Education
> 0.2	2.4	1.9	2.3	0.6	2.5	4.3
0 to 0.2	25.4	27.9	29.8	31.4	21.9	34.4
-0.2 to 0	42.1	40.8	43.1	47.4	43.5	39.7
-0.4 to -0.2	25.1	25.5	18.8	16.7	24.9	17.9
< -0.4	5.0	3.9	6.0	3.8	7.2	3.6

## 5. Discussion and Conclusions

This paper conducts a descriptive analysis of students' counterfactual degree completion probabilities, had they made different postsecondary enrollment decisions. Several findings emerge. First, we find that four-year college drop-out students have considerably lower high school achievement than four-year college completers, suggesting that poor academic preparation may be a leading cause in college drop-outs. We also find that four-year college drop-out students have similar high school achievement to two-year college completers. This is suggestive evidence that some four-year college drop-outs may have greater postsecondary success at two-year colleges.

Second, we find that students who are not currently entering postsecondary education have a very low predicted probability of completing a degree, had they enrolled. This holds true for both enrollment in two-year and four-year colleges. This finding suggests that in order to increase national degree attainment, encouraging more students to enroll in two- or four-year colleges may not be the solution, since given their academic preparation, these students are unlikely to be successful in college. For students not currently enrolling in college to earn a postsecondary degree, it is likely that college preparation needs to be increased in secondary schools.

Third, we find that for students who drop-out of four-year colleges, many of them also have low predicted probabilities of bachelor's degree completion, although this varies over subgroups. Minority and low income four-year college drop-outs have considerably lower probabilities of success, even when

compared to first-generation college students. This finding may suggest that many students currently enrolling in four-year colleges do not have the academic preparation to successfully complete a degree at that school.

The one small exception is rural students. Rural drop-out students (and rural non college entrants) have relatively high, albeit still low, predicted probabilities' of degree completion. This finding is consistent with the conclusion in Hoxby and Avery (2012) that high achieving students from small school districts are likely to under-predict their postsecondary success, and apply to less competitive schools, because there is not a critical mass of high achievers at their high school.

Fourth, we find that had four-year college drop-outs begun their post-secondary careers at a two-year college, their predicted probabilities of postsecondary degree completion would be significantly higher. Many students who enter a four-year college and exit before earning a bachelor's degree would have been able to complete an associate's degree, had they entered a two-year college instead.

This finding is even more important given the fact that most of the previous research has found that students earnings associate's degrees earn more over their lifetimes than students who attend several years at a four-year college. While much of the research on the returns to postsecondary degrees is dated, Kane and Rouse (1999) review the literature and find that most papers conclude that associate's degree holders earn about 15 – 24% more over their lifetimes when compared to high school graduates, whereas students who complete some four-year college earn about 5-12% more. Using more recent data, Holzer and Dunlop (2013) find that in 2010, the mean wage for associate's degree holders was about two dollars higher per hour than the wage for individuals who had dropped-out of college.

The advantage of completing an associate's degree compared to several years at a four-year colleges is even larger when considering the difference in tuition. The average annual tuition and fees

for a full-time, in-state student attending a two-year college is about one-third the cost of attending a public four-year institution.<sup>4</sup>

It is also important to remember that, just because on average associate's degree holders make more than four-year college drop-outs, this does not hold true for all students. Some students who complete several years at a four-year college may have higher earnings than they would have with an associate's degree. There has also been recent research that demonstrates the large variation in labor market returns across majors (for example Carnevale, Cheah, and Strohl 2012). It may be the case that for some majors, there are larger labor market returns to several years of a four-year college than for an associate's degree.

Fifth, we find that some students' bachelor's degree attainment is benefited by attending a community college. About a third of four-year college drop-outs would have a higher chance of bachelor's degree completion, had they begun college at a two-year school. This is particularly true for first-generation college students. While many students with bachelor's degree aspirations are harmed by beginning their postsecondary education at a community college, because many students are not able to successfully weather the college transfer process, it is also the case that community colleges may ease the transition into a four-year college for some academically unprepared students.

This paper draws several conclusions about students' postsecondary enrollment decisions. Administrators and policy makers should use caution when assuming the best way to increase postsecondary degree attainment is to increase college enrollment. Given current levels of academic preparation in secondary schools, many students are not prepared for success at four-year, and even two-year, colleges. Most students not currently entering postsecondary education would be likely to exit college without a degree, no matter if they entered a two- or four-year college. Many students dropping-out of four-year colleges have low predicted probabilities of success, but would be more likely

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<sup>4</sup> Institute of Education Sciences. Closer Look 2008. Retrieved December 10, 2012, from <http://nces.ed.gov/programs/coe/analysis/2008-sa02e.asp>

to complete a postsecondary degree had they entered a two-year college. It is also important to remember that the cost of all these non-completions is real. Exiting college without a degree may be harmful to students and the economy since students lose years of workforce experience and earnings while accumulating student loan debt, yet earn no wage increasing credential to justify these sacrifices.

While the findings from this work illustrate that some students' degree attainment could be improved by making different postsecondary enrollment decisions, it is important to consider that this is not a causal analysis. Unobserved factors and private information that affect student's enrollment decisions are likely biasing these results. In addition, there is likely some randomness and unforeseen shocks that affect students' abilities to complete college. Even if all students were making the best ex-ante decisions about the level of postsecondary education in which to enroll, we would still observe some students with higher ex-post completion probabilities at the alternative postsecondary option. If the logit models in this analysis are run as linear probability models instead, the R-squared values from the various regressions are between 0.12 and 0.36. The R-squared value represents the amount of variation in the outcome variable, in this case degree attainment, that is explained by the covariates. While a sizable portion of the variation in attainment is explained by observable factors, unobserved factors (which are known by the student but not the researcher), and randomness/shocks (which are unknown to both the student and the researcher), explain the majority of the variation in degree attainment. This fact should be considered when interpreting these results.

The blanket policy recommendation from this work is not that more students should enter a two-year, rather than a four-year, college. Only certain students would benefit from this switch and identifying these students is difficult, which makes this a rich area for further research. A second concern is the very real capacity constraints at two-year colleges. If large numbers of students switch from entering a four-year to two-year college, this may overwhelm two-year colleges and the ability of

students to select their major of choice, enroll in classes, and succeed at community college may be diminished.

While this paper may not lend itself to any direct policy recommendations, the main message should be that until the level of postsecondary preparation improves in the K-12 system, high school students, parents, counselors and administrators should give extra thought to the level of postsecondary education chosen for each student. While this is not true for all students, many students accumulating student loan debt and exiting a four-year college early have lower labor market returns than had they successfully completed a two-year degree. The more information students have available to them when making their postsecondary enrollment decisions, the better decisions students can make.

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