Tuition Plateaus and Student Behavior:
The University of Oregon and Completion Rate Efficiency

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Abstract

Tuition Plateaus implemented in college tuition are an intriguing concept with regards to on-time graduation and completion rates. Institutions like the University of Oregon are concerned with the student body graduation rates, and are looking to retain students through their entire baccalaureate programs, and encourage quicker graduation rates. Quantifying variables such as a student's intelligence or motivation to graduate can be found through a number of factors including High School GPA and the number of credit hours they attempt each term. This study aims to bring the effect of a tuition plateau into the forefront along with these stated factors to discover the effect they have on student on-time completion and graduation rates. Results from this study show that tuition plateaus have a significant effect on student behavior, and could be used by the University of Oregon to improve graduation rates within their student body

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1. Introduction

Universities across the U.S. have two options when it comes to creating tuition structures: marginal credit structures which charge students per credit, or tuition plateaus which charge a fixed rate for a range of credits considered "full time". Determining which structure to use can be tricky for academic institutions that seek to graduate as many students as possible in four years or less. However, they also want to provide a payment format that incentivizes students to value and pursue an increased course load throughout their collegiate career. The University of Oregon is considering follow suit with many prominent universities in the country, to either reestablish a tuition plateau or find other metrics in order to increase the current four-year graduation rate.

Many universities have used tuition plateaus or tuition bands to incentivize students to take more classes in order to graduate in four years. Tuition plateaus create a fixed cost tuition structure between a set range of credits, usually between twelve and fifteen for schools on semesters or twelve and sixteen credits for schools on trimesters. This credit structure allows students to take any amount of credits within this band and pay the same flat rate for tuition. As a result, the price of twelve credits will increase. Within the twelve-credit range, a University will not be earning additional revenue per credit until a student crosses the threshold of the upper bound of the plateau. The goal of a tuition plateau is to get students to take more than twelve credits. The hope is that the fixed cost of the range of full time credits will incentivize students to take an increased number of credits, so as to get more bang for their buck. The idea is that taking more credits per term will make students more likely to graduate on time (in four years), or at least faster than they would have in a marginal credit setting because they
are able to take advantage of the consumer surplus of the plateau.

Historically, the University of Oregon used the tuition plateau system until the 2002-2003 school year. The official proposal to switch to a marginal credit system cited providing "lower cost tuition alternatives" in order to increase secondary education accessibility to students whose "primary barrier (of attendance) is cost". Other goals included in the proposal were to offset class overcrowding, provide a wider variety of types, times, and number of classes offered, and finally to improve the overall quality of the student experience. Thirteen years later, the university is looking to potentially abandon this policy, and has expressed a keen interest in reestablishing the tuition plateau.

This paper will focus on the University of Oregon, and its separate implementation of both marginal credit tuition, and a twelve to sixteen credit tuition plateau. We are interested to see how it affects student behavior based on many different variables including gender, demographic information, graduation rates, retention rates, major concentration. The goal of this paper is to answer the following question: Does a tuition plateau fee schedule change student behavior, and if so does it incentivize them to graduate at a faster rate?

2. Relevant Literature

There is very little research on the topic of tuition plateaus and per-credit tuition structures, and there are no studies that we have found comparing the two in order to predict student behavior and retention. Throughout much of the state-provided data that we have found, tuition structure is not noted as a major variable on a per-university basis. Thus, we have had to look elsewhere in order to find research in similar areas, which has also provided us a space to search for creative solutions to our own research.

A paper that we found to be particularly insightful was "*How Many Credits Should an Undergraduate Take?"* by Paul Attewell. He studies what he calls "Academic Momentum", a term he describes as the propensity for a student to graduate based on the number of credits he or she takes early on in their academic career, so as to promote the feeling of academic progression. This is to say that students who take more credits as college freshmen are more likely to graduate than those who take a lighter course load, simply because graduating faster serves as an incentive to stay in school. In order to determine this ideal number of credits, Attewell uses propensity score matching, which entails observing students' credit choice and the effect that it had on the time it took them to graduate, and whether they graduated at all.

The data used in "*How Many Credits*..." was taken from BPS, a nationally representative sample of college freshmen for 2003-2004. We felt that this was particularly valuable to our research because it helped to distinguish important variables in our own data such as pre-college academic performance, curricular intensity, income level, and whether or not a student is a first-generation college attendee. It is known that these factors have a significant impact on students' academic success, and we'd like to see their effect in the provided UO data.

Another paper that was useful was "*Using Federal Data to Measure and Improve the performance of U.S. Institutions of Higher Education*" provided by College Scorecard. This details the methodology used to compile the College Scorecard mega data set. This paper cites IPEDS and NSLDS as its major sources of data, and also reconciles strengths and weaknesses of using such data. This is great data because it tracks students who receive federal aid, thus they were required to file a FAFSA form in order to receive such aid. As a result, there is substantial demographic information on these students. It tells us all sorts of information with regards to their income level, pre-college academic record, college major, credits taken, parental academic

record—the data is great. However, the main drawback of using this data is that it is not fully representative of the overall college population because not all students qualify for Pell grants. Thus, this data can only speak for a slice of the student population with regards to academic behavior and success.

Another useful paper was: "*The Toolbox Revisited: Paths to Degree Completion From High School Through College"* by Clifford Adelman through the U.S. Department of Education. This paper dives into the academic resources and momentum that students build through high school and into college, and even into their careers. He looked at the relationships between the factors that construct this drive and degree completion rates to see if this has an effect on students graduating on time. Using high school and college academic performance and courses from available transcript records this study followed students from eighth grade to around age 26 to find the effects behind academic momentum. Not surprisingly he found that students that take more intensive course loads in high school are better prepared for college. This paper references some of the variables we will be using in our regression which will be explained later in our paper.

The last paper that proved to be relevant to our study was "*First Degree Earns: The Impact of College Quality on College Completion Rates"* by Sarah Cohodes and Joshua Goodman. They study enrollment decisions and rates of degree completion where college quality is defined by many different variables including on-time graduation rates. This study found that students are willing to forego college quality for relatively small price differences. Secondly, they found that students accepted to high quality colleges that choose to attend a lower quality college drastically decreased their likelihood of graduating on time. It was also found that the marginal student enrolling in an in-state public college lowered the probability of graduating on

time by 40%. This number is astounding and gave us a good framework for our regressions of on-time graduation here at the University of Oregon.

3. Data and Methodology

For our research we will have two primary datasets, one attained by a national dataset known as IPEDS, and the other attained by the University of Oregon Registrar containing University of Oregon transcript data for individual students. The following section will describe the data stated above in more detail, as well as elaborate on the methodology used to create our control variables and how we manipulated the data.

3.1 Primary Data Sets

A pivotal first step to our research is uncovering some preliminary findings of the effects that tuition plateaus have on graduation rates at similar institutions to the University of Oregon. We then acquired data via Integrated Postsecondary Education Data System or IPEDS using the *Carnegie Classification 2010*: *Research universities involved in very high research activity.* There are 108 Universities on this list, which we had to cut down to 106 due to lack of data on graduation rates from 2. We called and researched each individual university for their tuition structure and determined whether they had tuition plateaus or pay-per-credit tuition schedules.

The Methodology for this National IPEDS data was very straightforward. Once we downloaded the data from IPEDS we created a dummy variable for universities with a tuition plateau fee schedule in place. More in depth information on how we compiled and organized this dataset can be found in the appendix. We then imported this data into STATA and created a simple heteroskedastic robust linear regression in which we regressed the effects that plateaus have on the percentage of university students that graduate within four years of being admitted,

as well as controlling for several other variables. Our findings from this linear regression can be located in the following section entitled 4.1, “IPEDS National Data”.

Our most important data set is transcript data provided by the University of Oregon. The student data beings in the Fall of 1996 and ends in the Spring of 2014. This range includes both academic years that implemented the tuition plateau, in addition to the subsequent decade when per-credit tuition was phased in. This data includes the following information: a unique identifier per student, gender, race and ethnicity, year of birth, High School GPA, SAT/ACT, residency for purposes of tuition, majors and minors, attempted hours by term, earned hours by term, GPA by term, academic standing by term, degree awarded, and the date the degree was earned.

Having access to 19 years of University of Oregon data allows us to observe student behavior before the tuition plateau, then compare the change in student behavior in response to a per-credit structure. This change in tuition regime occurred in the 2002-2003 academic year. By analyzing this data, we will be able to make assumptions on how students will react to an implementation of a tuition plateau.

We will now discuss methodology behind our manipulation of the transcript data that we received from the University of Oregon registrar office, and how we obtained the results provided later in this paper. We received data in three distinct datasets: a summary Dataset, a degree dataset, and a term dataset. We converted all of the dates found in these three original datasets to be a separate year and term variable for admittance term and year, graduation term and year, and finally a year and term variable for each quarter a student took a class at the university of Oregon. This made it easier to identify and code certain dates in STATA. Once we created all of these date variables we then created a SAT composite variable and ACT composite variable in excel by adding each individual's ACT and SAT score. We then looked up the latest

conversion chart through the College Board website to compare SAT composite scores to ACT composite scores. This allowed us to have just one composite score for each student that took either the SAT or the ACT. This allows us to compare test score results within the regression without sacrificing a number of observations. Next, we compared composite scores by year in order to observe each student's percentile based on other UO students' standardized test scores for that year. For example, if a student was in the 70th percentile it would mean that they did better than 70% of students that also took the SAT or ACT that same year.

In order to observe the average amount of time students take to graduate, we created a date variable that noted students' admittance at the University of Oregon, and their subsequent graduation date (students lacking a graduation variable were assumed to have dropped out, thus not earning a degree). To measure the amount of time each students take on average to graduate, we created the "gradtime1" variable. Taking this a step further, "ontime" was created which is a dummy variable indicating whether or not a student graduates in 3.75 years or less at the UO. For example, if a student was admitted to the University of Oregon in Fall of 2010 and they graduated in Spring of 2014, their "ontime" dummy variable would be equal to one. We based 3.75 years for on time graduation using the number of quarters in the academic year at the University Oregon, each quarter being equal to .25 years. This assumes graduates do not attend summer school following their senior year.

Once we created these vital dummy variables, we proceeded to create dummy variables for students' ethnicity, whether they received a GED or High School Diploma, and a transfer student indicator. Also, we created dummy variables for each type of undergraduate degree offered at the University of Oregon such as a Bachelor of Science and a Bachelor of Arts. Finally

we created a male dummy variable to control for gender biases. For a detailed description of each variable, please refer to the attached variables chart located in the appendix.

After creating these control variables, we then created two distinct linear regressions. The first linear regression tests the effects that plateaus and the student characteristics listed above have on the average graduation time. The second nearly perfectly mimics the graduation time regression, however observes student characteristics and their effect on students' likelihood of graduating on-time (In 3.75 years or less). The findings from these regressions can be found in section 4.2 "Primary Regression". After running these basic regressions, we began controlling for several other variables to observe change in the statistical impact that plateaus have on student behavior. We controlled for High School GPA, declared major at the UO, created interaction terms, and SAT/ACT percentile.

Once we were done running heteroskedastic robust linear regressions, we then joined the term data to our STATA file, which includes the credit hours attempted and earned, and the term date for each student admitted to the University of Oregon, from 1996 to 2014. After removing all duplicate observations, we then set our term data as panel data, with the student ID as the panel variable and the term date as the time variable. We then created "plateauspanel", which is a dummy variable equal to one if the term date occurred during the period that the University of Oregon used a tuition plateau, and zero when the term date was after the tuition plateaus schedule was abolished. Finally, we calculated class standing by assuming that for every three terms a student attended the UO, a student's class standing would go up (For example, from Freshman to Sophomore). The results from these panel regressions can be found in section 4.8 "Panel Regressions", the code for all these data manipulations can be found in the code section located in the appendix.

Lastly, we want to discover how tuition plateaus affect each year's graduation rates by including a variable measuring the general trend over time of graduation rates. We used the Carnegie index to compare the 106 "very high activity research" institutions around the country. Using IPEDS we were able to collect annual four-year and six-year graduation rates and average them out from 2002 through 2014. Using the University of Oregon's four-year and six-year graduation rates by year, we compared the trends to the IPEDS data. We determined that this secular trend would not be possible given the steady increase in graduation rates from 2002 – 2014. This steady upward trend (seen in the table below) details the increase in the proportion of students that graduate in four or six years. This provides a setback for us when trying to control for the ever-increasing trend of increased college graduation times. If we were to try to include this trend in our regressions, it would put an unrealistic weight on tuition plateaus that would accentuate them to be more powerful than they actually are. To avoid of this problem, we decided to not include this secular trend in our regression, but it is still an important piece of information to note. The full table of four-year and six-year graduation rates of these very high research activity institutions is below, as well as the University of Oregon's four-year and six-year graduation rates for comparison.

Table 1: National Graduation Rates Within 4 and 6 years

Average four-year and six-year Graduation Rates at Very High Activity Research Universities Compared to the University of Oregon (in percentages)

Year	Avg 4 Year Grad Rate	UO 4 year Grad Rate	Avg 6 Year Grad Rate	UO 6 Year Grad Rate
2002	N/A	N/A	69.23	58.0
2003	N/A	N/A	70.23	59.8
2004	47.22	36	70.96	62.2
2005	49.31	38	71.88	63.0
2006	50.43	39	72.40	63.4
2007	51.40	41	73.12	65.3
2008	52.09	41	73.77	65.9
2009	53.24	46	74.44	70.0
2010	54.27	44	74.95	67.8
2011	54.62	41	75.40	65.8
2012	56.13	44	76.21	67.4
2013	57.20	44	76.87	66.5
2014	58.08	45	77.58	68.8

Table 1.1 below goes a step further in compiling the graduation rates from 2014, but also distinguishing between institutions that have a tuition plateaus and institutions that do not. It is worth noting that the schools with tuition plateaus have higher graduation rates, more students in the top 25th percentile of ACT scores, as well as lower acceptance rates, and enrollment on average than schools with no plateaus. The University of Oregon stacks up to both of these categories somewhere in the middle with higher graduation rates than other non-tuition plateau schools, and with lower enrollment than the schools with tuition plateaus. In general, it is

apparent that schools with tuition plateaus on average have a 20% higher graduation rate which is quite astounding.

Table 1.1: 2014 Average Comparisons of Carnegie Index Very High Research Institutions

2014 Average Comparisons Between Plateau Schools, Non-Plateau Schools, and the University of Oregon

	Tuition Plateau Schools (82 Schools)	Non-Tuition Plateau Schools (24 Schools)	University of Oregon
Average Grad Rates	63.01%	41.25%	45%
Enrollment	25,669	28,968	23,771
Acceptance Rate	43.82%	65.08%	75%
Students w/ ACT Score in Top 25%	31.08%	28.18%	27%
In State Tuition	$24,450	$10,670	$9,703
Professor Salary	$108,532	$89,395	$84,510

4. Analysis and Results

The following section will explain our analysis and results for the two primary datasets that we used for our research. First, we examined national college completion rates in order to compare state universities that currently have a tuition plateau with those that have a per credit system implemented. By comparing these two different pools of state universities we can make a general assumption on how tuition plateaus affect college completion rates at a national level. Once we can make those assumptions using the variety of national databases found in IPEDS, and the Chronicles of Higher Education, we will then zoom into the University of Oregon, where we will focus the bulk of our research.

4.1 IPEDS National Data

We used the IPEDS data set in order to observe national secondary education retention trends in addition to the impact of tuition plateaus on graduation rates. We deleted two

universities that did not have respective data included in the IPEDS database. We then created a dummy variable called "Plateaus" in order to indicate if the university uses a marginal credit billing system or a tuition plateau. For instructions on how we obtained billing information from individual universities, please refer to the appendix. Below, is a table of summary statistics for the variables we used in the following regressions:

Table 2: Summary Statistics for IPEDS Data

Variable	Obs	Mean	Std. Dev.	Min	Max
GradRates	106	58.084	21.726	11	91
Plateaus	82	0.773	0.420	0	1
Enrollment	106	26415.94	12806.86	2196	61470
Acceptance Rate	106	48.632	25.602	5	91
ACT Above 75	101	30.445	2.823	24	35
profsalary	106	104.199	22.855	69.777	185.85
tuition	106	21.330	16.251	6.263	49.138

We have information on 106 of 108 "very high activity research" institutions; the variables in the far left column are all explained in the variable chart in the appendix. This table displays the each variable's observation total, the mean, the minimum and maximum values, as well as the standard deviation based on the 106 institutions. Some important values to note in this table are the number of universities that have tuition plateaus (82), and the range of four-year graduation rates of these institutions being anywhere from 11% to 91%, and finally that the average four-year graduation rate of these schools is just above 58%.

Once we were able to observe which colleges currently use a tuition plateau, we regressed the percentage of students from each university that graduated within four years (variable name Gradrates) on the tuition plateau dummy variable, university enrollment,

university acceptance rate, and on the percentage of students that received a composite ACT score in the 75th percentile or higher. In order to account for selection effects of students, effects associated with students who attend more prestigious universities are more likely to graduate on time regardless of the tuition plateaus controlled for the acceptance rate of a university, and for students with ACT composite scores in the 75th percentile was to control for any selectivity bias. We believed that there might be selectivity bias in our regression due to students who are admitted to more selective universities or who have higher standardized tests scores, are more likely to graduate within four years regardless of tuition plateau tuition structure. Also, we controlled for enrollment to see if smaller colleges, who as a result of their decreased size are able to give students more individualized attention than larger universities. This allows us to determine if universities have better or worse graduation rates depending on the size of their student body. Our regression revealed that a tuition plateau increased an institution's graduation rate by 5.14%. This number is significant at the 10% level, and has an R-squared of .7951 which is fantastic. After this primary regression, we decided to control for a several other variables to determine the robustness of the coefficient for the plateaus dummy variable. Other variables that were controlled for are average professor salary per institution, and overall tuition fees provided in the Carnegie Index for Higher Research Institutions. Both were recorded in terms of thousands of dollars. After running these regressions, we found that the coefficient on professor salary was equal to 0.0153. This means that for each thousand-dollar increase in average professor salaries, the percentage of student graduating within four years increases by 0.0153 percentage points. The coefficient for professor salary was not statistically significant at any level. As for the tuition variable, we found that for every thousand-dollar increase in tuition, the average four-year grad rate per student is .387 percent, which is statistically significant at the one percent level. Below is

a summary table of all regressions we used for this IPEDS National level data. Refer to the variable description chart in the appendix to access variable descriptions and clarifications.

Table 3: Regression Table for IPEDS Data

VARIABLES	Gradrate	Gradrate	Gradrate	Gradrate
Plateaus	7.607***	5.141*	5.100*	4.320*
Enrollment	6.29e-05	5.86e-05	5.92e-05	0.000221**
Acceptance Rate	-0.675***	-0.316***	-0.309***	-0.224***
ACT Above 75		4.029***	3.992***	3.301***
Profsalary			0.0153	
tuition				0.387***
Constant	83.38***	-54.98**	-55.77**	-49.18**
Observations	106	101	101	101
R-squared	0.721	0.795	0.795	0.818

*** p<0.01, ** p<0.05, * p<0.1

This regression was our first significant evidence to suggest that the existence of tuition plateaus positively impacts graduation rates. However, this is national data, thus it is impossible to control for trends between states and geographical locations, among others. The rest of this paper will narrow its focus on the University of Oregon. Using transcript data, we can observe students' behavior under a tuition plateau structure, and its subsequent readjustment when the plateau is replaced with a marginal credit tuition system.

Additionally, we created our own master data set that includes all of the classes fulfilling any of the General Education and Multicultural requirements at the University of Oregon, organized per term from 1996-2014. We omitted summer courses because they are all charged per credit. We planned to match this data with student CRN codes in order to observe whether or not the implementation of a tuition plateau encouraged students to take more classes outside of their major. However, we were unable to obtain individual student CRN information due to University of Oregon privacy and security protocol, thus were unable to use this data set for this

project. For instructions to replicate the data-mining involved to create this data set, please refer to the appendix.

4.2 University of Oregon Transcript Data

After running our initial regressions, it was clear that general trends in various student groups on campus were prevalent. We wanted to see if we could observe the same trends across the various student groups while simultaneously controlling for distinctly different variables. As a result, we can observe the graduation time and on-time graduation trends of selected student groups across campus, and how on average, the tuition plateaus effect graduation patterns. The three most conclusive groups observed in this study were transfer students, ethnic minority students, and undergraduate major concentrations.

Transfer students are defined as students who come to the University of Oregon from a previous institution, and typically enroll with varying amounts of earned credit. There are six transfer variables, which capture an earned credit count spanning from "Transfer_1to11" to "Transfer_135plus". These are separated accordingly, due to the positive impact that an increased credit standing has on graduation time. As a student's earned credit status increases, the more likely a student is to graduate on time (3.75 years), and is more likely to graduate at a faster rate than students with fewer credits, consistent with the previously stated theory of academic momentum. Note that the transfer variables do not capture students who enroll with college credit earned in high school, which include AP, IB, and various forms of dual-enrollment credits. These students are included in the "HS_0creds" variable.

Students included in the ethnic minority category include Hispanics, American Indians, Asians, Blacks, Pacific Islanders, Multi-Race, Unknown Race, and Non-residents. The "Non_Resident" variable is not a dummy variable signifying a student's in-state or out-of-state

status, rather is an indication of an international student who is not a citizen of the United States. These variables will allow us to observe how various demographic groups are impacted by the university's quest to increase the rate that students graduate, and thus raising the proportion of students graduating on-time.

The final significant student group included in this current regression is the major concentration indicator, which serves as an umbrella under which various majors fall. For example, "Bach_Arts" is a dummy variable indicating that a student is graduating with a Bachelor of Arts, but underneath that indicator, students with virtually all majors can align themselves. Each of these bachelor's programs have different graduation requirements. Many of the arts-related programs require students to take studio classes, which often require students to take a reduced credit load. As a result, programs like the Bachelor of Architecture programs are on a five-year graduation schedule. Note that "Bach_Sciences" has been removed in order to prevent collinearity within the "Bach_" dummy variables. The sciences concentration was the most commonly selected major concentration, which led to our decision to omit it.

We have provided a table of the summary statistics below this paragraph to show the number of observations of each variable in our following regressions. The observations will prove important to know how many students identify with each race, how many transfer students are in each tier, and how many students are in each baccalaureate program. Referring back to this table will be key when we look at our regressions to see how many people are in each of these groups when determining the effect these different variables have on tuition plateaus. Another extremely important thing to keep in mind is that although the mean graduation rate is below the on time rate of 3.75 years, this data also includes transfer students and the short amount of time that they may have been retained by the University of Oregon.

Table 4: Summary Statistics for University of Oregon Transcript Data

Variable	Obs	Mean	Std. Dev.	Min	Max
gradtime1	60,549	3.703	1.399	0.25	19.5
plateaus	106,080	0.103	0.304	0	1
male	49,684	0.468	0.499	0	1
hsgpa	79,197	3.452	0.403	1.06	5.98
Admittance Age	106,079	20.109	4.241	8	67
Credits Deducted	106,080	0.922	6.702	0	276
GED	284	0.002	0.051	0	1
HS_0creds	52,757	0.497	0.499	0	1
HS_Creds	14,452	0.136	0.343	0	1
Transfer1to11	720	0.006	0.082	0	1
Transfer1to35	3,414	0.032	0.176	0	1
Transfer36to44	3,666	0.034	0.182	0	1
Transfer45to89	16,051	0.151	0.358	0	1
Transfer90to134	12,872	0.121	0.326	0	1
Transfer135plus	1,857	0.017	0.131	0	1
White	74,541	0.702	0.457	0	1
Hispanic	5,431	0.051	0.220	0	1
Native Amer.	1,019	0.009	0.097	0	1
Asian	5,755	0.054	0.226	0	1
Black	1,799	0.016	0.129	0	1
Pacific_Islander	651	0.006	0.078	0	1
Multiple Race	2,647	0.024	0.155	0	1
Non_Resident	8,889	0.083	0.277	0	1
Unknown_Race	5,348	0.050	0.218	0	1
Bach_Sci	32,311	0.533	0.498	0	1
Bach_Arts	25,030	0.413	0.492	0	1
Bach_Arch	983	0.016	0.126	0	1
Bach_Educ	703	0.011	0.107	0	1
Bach_FineArtss	643	0.010	0.102	0	1
Bach_IntArch	176	0.002	0.053	0	1
Bach_LandArch	225	0.003	0.060	0	1
Bach_MusicEd	10	0.000	0.012	0	1
Bach_Music	468	0.007	0.087	0	1

4.3 Primary Regression

Gradtime

In our original regression, we observe graduation time of the various student groups provided by the office of the registrar at the University of Oregon. The "plateaus" variable was significant at -.353. This means that implementing a tuition plateau would cause students to graduate four months earlier than they would with a marginal-credit tuition system.

All transfer student variables were significant. Transfer students entering with 12 to 135 credits decreased their graduation time anywhere from three months to two years depending on how many credits they came to school with. We are happy with this result, simply because this what we would expect; it makes sense that students entering with more credits are more likely to graduate faster. A finding worth pointing out was that "GED", an indicator variable citing students who graduated with a GED, was equal to 1.048. This means that these students were likely to take more than an extra year longer to graduate than their high-school graduate counterparts.

The demographic group of our original data only found "American_Indian", "Black", "Mulitiple_Race", "Non_Resident", and "Unknown_Race" to be statistically significant. We predict that the other groups were not significant due to the fluctuation of population density at the UO over time. However, what we are able to establish is that the significant minority groups "American_Indian", "Black", and "Unknown_Race" have positive coefficients in this regression. This means that they are expected to take longer to graduate than their white counterparts. It is known that income, access to high-quality public education, access to grants/scholarships, and the need to work while in school are characteristics that affect graduation time. Students who have to work through college often take a reduced course load, which clearly increases the

amount of time it will take for these students to accumulate the number of credits needed to graduate. “Non-Resident” and “Multiple_Race” students graduated more quickly in this regression. “Non-Resident” students are more likely to come from more privileged backgrounds, partially represented by their willingness to pay the much more expensive fee for international tuition.

Finally, many of the bachelor programs we expected to observe an increased graduation time were significant in this model. All three architecture programs, fine arts, and music were significant in this model, and all presented positive coefficients. Each architecture program had a coefficient of over 1.0, which makes sense, because each program is on a 5-year graduation schedule.

Ontime

The second part of the original regression also observes student’s likelihood of graduating in 3.75 years, which is the period this study considers to be on time. The “plateaus” coefficient was .0801; meaning students in the plateau structure are 8.01% more likely to graduate on time.

With regards to transfer students, we witnessed the exact same trend as in the previous regression. All transfer students with 12 or more credits experienced an increased likelihood of graduating on time; they could expect to be anywhere from 8.9% to 33.5% more likely to graduate on time depending on their credit-count.

The demographic count was surprising in that many more ethnic groups were found to be statistically significant. The Pacific Islander variable was the only minority group found not to be significant. All of the significant ethnic groups were found to have a decreased likelihood of graduating on time spanning from -3.2% to -13.4%. Again, international students and multi-race

students experienced statistically significant, but opposite results from their ethnic-minority counterparts.

The bachelor programs also experienced similar results to the graduation time regression. All three architecture programs in addition to fine arts and music education were significant. The previous trend of graduating at slower rates is consistent with the same groups' ability to graduate on time. All of the stated groups produced negative coefficients, which meant they were 30.35% to 58.2% less likely to graduate on time than other programs.

4.4 Controlling for: High School GPA

HSGPA – Gratime1

This regression observes the effect of high school GPA on graduation time. The necessary information was obtained from the data set sourced from the University of Oregon Office of the Registrar. Note that the number of observations decreases by nearly 16,000 compared to the original regression, due to lack of complete information. The "plateaus" coefficient in this regression was -.267, meaning students within the plateau structure are likely to graduate three months earlier than their non-plateau counterparts.

The number of earned credits continues to increase student graduation time as HSGPA is implemented as an observed factor, although coefficients tend to have a slightly lower magnitude. Students with 12 to 135 credits tend to take four months to two years less to graduate than students with no transfer credits.

The demographic information remains spotty with only American Indians, Black, and Unknown Race as statistically significant groups. They continue to be more likely to graduate at slower rate than non-minority students by anywhere from 2-4 months. Note that this impact is

not as strong as the original regression. Non-citizens and multi-race students continue to behave opposite the majority of the demographic group, expecting to graduate 1 to 4 months faster than non-minority students.

The same bachelor programs continue to be statistically significant: all three architecture groups, Fine Arts, and Music. Their magnitude is somewhat of a mixed bag compared to the original regression, as some coefficients have risen, while others have slightly fallen. However, all continue to remain positive, meaning these programs on average are expected to increase the graduation times of the students enrolled in these groups.

HSGPA – Ontime

The "plateaus" coefficient in this model was .0934, which is very close to the original model's .08, continuing to support the argument that tuition plateaus make students more likely to graduate on time. The addition of HSGPA argues that students who perform better in high school perform better in college, and are more likely to enter college with credits earned in high school, thus are more likely to graduate faster and on time. We see this supported by the "HS_0creds" variable, which states that students enrolled with no AP/IB/dual-enrollment credits earned in high school are 5.35 percent less likely to graduate on time.

The transfer student group follows its established trend, with 12 to 135 credits maintaining positive and significant coefficients. The magnitude is increased from the original regression, meaning these students are more likely to graduate on time than previously cited, specifically students with 36 to 134 credits, who are 22.2% to 33.5% more likely to graduate on time.

The demographic groups also experience an increased magnitude in the level of their coefficients compared to the original regression. Hispanics and Asians are now also statistically

significant. All continue to maintain negative coefficients, upholding the trend that they are less likely to graduate on time by a larger proportion of 4.3% to 14.8%.

Bachelor programs experience a slight decrease in magnitude comparative to the original regression; however, remain the most unlikely group to graduate on time. The three architecture programs continue to be statistically significant, in addition to Fine Arts and Music Education. These results are consistent with the previously observed trend.

4.5 Controlling for: SAT & ACT Scores

Percentile – Gradtime1

The "percentile" variable was created using a conversion equation found through the College Board in order to convert ACT scores to their SAT composite equivalent. We then used the SAT/ACT information provided by the University of Oregon Registrar data in order to create an in-house SAT/ACT score percentile. The variable "percentile" is a 1% percentile score based on the merged SAT/ACT scores compared to other UO students for that academic year. In order to determine the effect a 75th-percentile score has on a student's graduation time, we simply multiply 75 by -.0017, which translates to this student graduating .1275 years, or a month and a half, faster than students with lower test scores. The "percentile" model as a whole is very similar to the original regression. The "plateaus" coefficient is slightly lower in this model at -.237.

Transfer students with credits from 12 to 135 all remain significant at very similar levels to the original regression. Those who enter college with more transfer credits tend to graduate faster, on average.

The same bachelor programs continue to remain statistically significant, with all three architecture programs constituting the slowest graduation groups. The values for the bachelor programs are very comparable to the original regression, but slightly smaller.

Percentile – Ontime

Similar to the Gradtime1 regression, this model also includes a "percentile" variable, which equals .00142. This means a 75th percentile student is 10.65% more likely to graduate on time than students with lower scores. The "plateaus" score is .0708 respectively, slightly lower than in the original regression.

Transfer student credit trends continue in their normal trend compared to previous regression. Students with 12 to 135 credits tend to have a significantly higher likelihood of graduating on time than transfer student's fewer credits.

The same demographic groups as the original regression are statistically significant, minus "Multiple_Race" and "Non_Resident". Both fail to match their standard trend of opposite behavior, noted in our other regressions. Each ethnic minority is less likely to graduate on time than their non-minority counterparts.

The arts continue to dominate the list of significant bachelor's programs. The values tend to be smaller than in the original list, meaning these students are more likely to graduate on time than previously predicted.

4.6 Controlling for: Major

i.major – Gradtime1

The "i.major" variable factors in all majors offered at the University of Oregon, and allows us to compare which majors on average cause students to graduate more quickly, or more slowly. Including student' majors undoubtedly removes a substantial amount of omitted variable

bias compared to our original regression, resulting in the statistical significance of the majority of coefficients in this model. This is by far the least noisy of our regressions. The plateaus coefficient in this model is -.435, larger than in the original model.

Transfer students follow the same trend as in the previous models; students with more than 12 transfer credits graduate anywhere from four months to 1.8 years faster on average based the number of credits they come to school with. The transfer credit coefficients for the "i.major" model are a mix of both increases and decreases from the original model, however, all remain statistically significant.

The demographic portion of this regression includes many more statistically significant variables than the original model. Only Pacific Islanders fail to meet statistical significance. Both "Non_Resident" and "Unknown_Race" return to its previous general trend, behaving opposite of the other variables in their grouping. The demographic variables tend to be slightly smaller than in the original regression, meaning they tend to graduate faster according to this model.

The bachelor programs follow their same general trend, however, more programs are statistically significant than in the original model. All three architecture programs continue boast the largest increases in graduation time. However, all of the bachelor coefficients are much smaller than in the original model. This signifies that students in these programs tend to graduate months earlier than previously reported, on average.

i.major – Ontime

Similar to the Gradtime1 regression, the Ontime regression for the "i.major" variable was hugely successful in solidifying the significance of the majority of the variables included. The "plateaus" variable in this model was .261, a larger term than in the original model indicating

students are 10.3% more likely to graduate on-time than students in marginal-credit tuition structures.

The same transfer student trends apply in this model as in all previous regressions. All students with more than 12 transfer credits are significantly more likely to graduate on time. The coefficients have increased compared to the original regression, meaning transfer students on average have a higher likelihood of graduating on time.

All of the demographic groups in the "i.major" regression are statistically significant. Both "Multiple_Race" and "Non_Resident" continue to show positive coefficients, while the rest of the demographic group sports negative coefficients. The larger coefficients determined by this model means minority students are on average more likely to graduate on time than in the previous models.

All bachelor programs except for "Bach_Arts" are significant in this model. The three architecture programs continue to contain the students least likely to graduate on time. However, the majority of bachelor program coefficients are smaller than in previous models. Although students in the statistically significant programs are less likely to graduate on time than students in other programs, they are more likely to graduate on time than in prior models. On the following pages, observe regression tables for all the regressions we have mentioned thus far, if there is any confusion related to variable names please refer to the variable index located in the appendix.

Table 5: Regressions for University of Oregon Transcript Data – Gradtime

VARIABLES	Gradtime	Gradtime-hsgpa	Gradtime - SAT Percentile
plateaus	-0.353***	-0.267***	-0.237***
male	0.225***	0.176***	0.253***
hsgpa		-0.427***	
Admittance Age	-0.000417	-0.0261***	-0.0153**
Credits Deducted	0.00551***	0.00793***	0.0147***
GED	1.048***	-0.135	0.872*
HS_0creds	0.186***	0.111***	0.162***
Transfer_1to11	0.279***	0.209**	0.293***
Transfer_12to35	-0.284***	-0.410***	-0.299***
Transfer_36to44	-0.616***	-0.786***	-0.609***
Transfer_45to89	-1.137***	-1.282***	-1.136***
Transfer_90to134	-1.520***	-1.730***	-1.632***
Transfer_135plus	-1.959***	-2.076***	-2.234***
Hispanic	0.0392	0.0264	0.0603**
American_Indian	0.228***	0.268***	0.232***
Asian	0.0148	0.0384*	0.0260
Black	0.270***	0.154***	0.248***
Pacific_Islander	0.0112	-0.0323	-0.00697
Multiple_Race	-0.114***	-0.115***	-0.0928**
Non_Resident	-0.336***	-0.293***	-0.105**
Unknown_Race	0.114***	0.101***	0.143***
Bach_Arts	-0.00745	-0.0189*	-0.00132
Bach_Arch	1.050***	0.994***	1.029***
Bach_Educ	-0.107**	-0.102**	-0.0844*
Bach_FineArts	0.802***	0.826***	0.866***
Bach_IntArch	1.179***	1.197***	1.164***
Bach_LandArch	1.099***	0.945***	0.941***
Bach_MusicEd	0.382*	0.317	0.336
Bach_Music	0.251***	0.218***	0.217***
percentile			-0.00171***
Constant	4.016***	6.058***	4.362***
Observations	60,545	44,111	44,128
R-squared	0.304	0.235	0.217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Regressions for University of Oregon Transcript Data – Ontime

VARIABLES	Ontime	Ontime-hsgpa	Ontime - SAT Percentile
plateaus	0.0801***	0.0934***	0.0708***
male	-0.107***	-0.102***	-0.141***
hsgpa		0.206***	
Admittance Age	-0.000643	0.00738***	0.00422**
Credits Deducted	-0.000229	-5.72e-05	-0.000753
GED	-0.225***	0.0315	-0.136
HS_0creds	-0.0877***	-0.0535***	-0.0732***
Transfer_1to11	-0.0831***	-0.0318	-0.0753**
Transfer_12to35	0.0888***	0.142***	0.0957***
Transfer_36to44	0.178***	0.260***	0.193***
Transfer_45to89	0.264***	0.331***	0.282***
Transfer_90to134	0.299***	0.359***	0.332***
Transfer_135plus	0.335***	0.344***	0.353***
Hispanic	-0.0325***	-0.0311***	-0.0325***
American_Indian	-0.115***	-0.131***	-0.135***
Asian	-0.0315***	-0.0447***	-0.0328***
Black	-0.134***	-0.114***	-0.133***
Pacific_Islander	-0.0369	-0.0217	-0.0281
Multiple_Race	0.0429***	0.0431***	0.0412**
Non_Resident	0.0366***	0.0415***	-0.0263
Unknown_Race	-0.0393***	-0.0387***	-0.0622***
Bach_Arts	0.00382	0.0124***	0.00394
Bach_Arch	-0.489***	-0.533***	-0.515***
Bach_Educ	0.0165	0.0406*	0.0453*
Bach_FineArts	-0.304***	-0.416***	-0.414***
Bach_IntArch	-0.582***	-0.627***	-0.592***
Bach_LandArch	-0.393***	-0.474***	-0.438***
Bach_MusicEd	-0.426***	-0.374***	-0.382***
Bach_Music	-0.0456**	-0.0524**	-0.0626**
percentile			0.00142***
Constant	0.675***	-0.226***	0.520***
Observations	60,545	44,111	44,128
R-squared	0.178	0.153	0.136

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Regressions for University of Oregon Transcript Data – Gradtime/Ontime – Major Controlled

VARIABLES	Gradtime Major	Ontime Major
plateaus	-0.435***	0.261***
male	0.257***	-0.0954***
Admittance Age	0.00283***	-0.00542***
Credits Deducted	0.00632***	0.000121
GED	1.153***	-0.228***
HS_0creds	0.189***	-0.0820***
Transfer_1to11	0.352***	-0.106***
Transfer_12to35	-0.190***	0.0547***
Transfer_36to44	-0.480***	0.102***
Transfer_45to89	-0.995***	0.203***
Transfer_90to134	-1.353***	0.237***
Transfer_135plus	-1.788***	0.259***
Hispanic	0.0498***	-0.0800***
American_Indian	0.268***	-0.120***
Asian	0.0411***	-0.0342***
Black	0.274***	-0.137***
Pacific_Islander	0.0251	-0.0312***
Multiple_Race	-0.104***	-0.0666***
Non_Resident	-0.283***	-0.0640***
Unknown_Race	0.131***	-0.0227***
Constant	3.944***	0.703***
R-squared	0.231	0.164
Major Control	YES	YES

*** p<0.01, ** p<0.05, * p<0.1

4.7 Interaction Regressions

For our final regressions using the OLS method, we decided that we wanted to create interaction terms that measure whether or not plateaus have any particular effect on certain groups of students. For the sake of brevity, we decided to do four regressions, creating interaction terms four our SAT percentile variable, High School GPA Variable, Age of admittance variable, and finally interaction terms for each ethnicity recorded in our data. The process of creating these interaction terms was quite simple, we generated a new variable for each interaction, which was the product of the plateaus variable and the variable we chose for it

to interact with. After running each of these regressions, we found that our coefficient on the interaction term for SAT/ACT percentile was 0.00149, which is statistically significant at the one percent level. The interpretation of this coefficient is that as the SAT percentile increases, the greater impact tuition plateaus have on a student's overall graduation time. As for the interaction term concerning HSGPA, we found that the coefficient on this variable was 0.323, and it is statistically significant at the one percent level. This also shows us that as HSGPA increases, the impact of tuition plateaus similarly increases students' overall graduation time. Concerning student age at the time of admittance, we found that the coefficient on this interaction term was -0.0174, which demonstrates that an increase in student's age decreases the effect that tuition plateaus have on overall graduation rate. This phenomenon may be attributed to the fact that older students are more career-oriented, and plan their schedules regardless of the tuition structure. Another likely explanation is that the demand for credits is relatively inelastic among older students, thus they have a higher willingness to pay per credit.

Finally, we created an interaction term for each ethnicity included in the data. After running this regression, we found that tuition plateaus more strongly affect multiple race students. However, these findings were not statistically significant at any level, and thus are inconclusive. Located on the following two pages, is a regression table of all the Interaction regression that we ran, if one is confused about certain variables please refer to our variable index found in the appendix.

Table 8: University of Oregon Transcript Data- Interaction Regressions

VARIABLES	Gradtime	Gradtime	Gradtime	Gradtime
plateaus	-0.313***	-1.368***	0.00664	-0.304**
male	0.253***	0.175***	0.225***	0.225***
Admittance Age	-0.0152**	-0.0260***	0.00365*	-0.000480
Credits Deducted	0.0146***	0.00782**	0.00553***	0.00551***
GED	0.872*	-0.122	1.039***	1.045***
HS_0creds	0.161***	0.110***	0.184***	0.186***
Transfer_1to11	0.292***	0.204**	0.276***	0.277***
Transfer_12to35	-0.299***	-0.413***	-0.288***	-0.283***
Transfer_36to44	-0.608***	-0.788***	-0.622***	-0.616***
Transfer_45to89	-1.136***	-1.288***	-1.142***	-1.135***
Transfer_90to134	-1.630***	-1.738***	-1.524***	-1.518***
Transfer_135plus	-2.234***	-2.086***	-1.963***	-1.958***
Hispanic	0.0591**	0.0250	0.0404	0.0409
American_Indian	0.231***	0.264***	0.228***	0.263***
Asian	0.0263	0.0381*	0.0158	0.0471*
Black	0.246***	0.150***	0.272***	0.310***
Pacific_Islander	-0.00865	-0.0363	0.0162	0.0155
Multiple_Race	-0.0930**	-0.114***	-0.112***	-0.121***
Non_Resident	-0.104**	-0.296***	-0.336***	-0.311***
Unknown_Race	0.143***	0.103***	0.115***	0.197***
Bach_Arts	-0.00166	-0.0193*	-0.00712	-0.00768
Bach_Arch	1.031***	0.998***	1.052***	1.048***
Bach_Educ	-0.0886*	-0.106**	-0.114***	-0.108**
Bach_FineArts	0.867***	0.825***	0.810***	0.802***
Bach_IntArch	1.164***	1.199***	1.180***	1.185***
Bach_LandArch	0.940***	0.946***	1.094***	1.098***
Bach_MusicEd	0.335	0.316	0.386*	0.390*
Bach_Music	0.217***	0.216***	0.252***	0.253***
Black Interaction				-0.283*
Hisp Interaction				0.000940
NA Interaction				-0.182
Asian Interaction				-0.152
White Interaction				-0.00150
MR Interaction				0.282
NR Interaction				-0.133
Un Interaction				-0.360***
percentile	-0.00194***			
SAT Interaction	0.00149***			
HSGPA		-0.474***		
HSGPA Interaction		0.323***		
Admittance Age Interaction			-0.0174***	
Constant	4.372***	6.224***	3.937***	4.009***
Observations	44,128	44,111	60,545	60,545
R-squared	0.217	0.236	0.304	0.305
SAT Interaction Indicator	X			
HSGPA Interaction Indicator		X		
Race Interaction Indicator				X
Age Interaction Indicator			X	

*** p<0.01, ** p<0.05, * p<0.1

4.8 Panel Regressions

Below is a summary table of the main variables that were used in the panel data regressions. As explained before, the observations have increased due to the per-term data provided by the University of Oregon starting in 1996. Students during this time period attempted 1.5 more hours than they earned on average. Also, the mean number of credits attempted is less than 15, which is the minimum number of credits required per term to graduate on time. We can also observe that students' average term GPA is above a 3.0.

Table 9: Summary Statistics for University of Oregon Panel Regressions

Variable	Obs	Mean	Std. Dev.	Min	Max
hrs_earned	965,807	12.767	4.243	0	38
hrs_attempted	965,807	14.159	3.477	1	43
gpa_uo	938,868	3.043	0.770	0	4.3

The panel data below observes what we will refer to as "inbetweeners". These students entered the University of Oregon while the tuition plateau was still in effect, but graduated under a marginal credit tuition structure. Columns labeled (1) and (2) observe student hours attempted and earned not controlling for class standing. Class standing refers to the academic progress of each student, ie, Freshman, Sophomore, etc. This model assumes that every three terms, a student's class standing increases to the next category. Columns labeled (3) and (4) control for class standing. Separating students by class standing allows us to negate the effect of students taking a reduced course load as a senior, otherwise referred to as senior cruising. The "plateaus" coefficient observes a student's propensity to take more classes under a tuition plateau compared to the marginal credit regime. In both cases, students took and earned significantly more credits

under the former structure of the tuition plateau. Clearly, students quickly reduced their course load following the de-implementation of the tuition plateau. This supports our argument that students graduate faster under a plateau structure because they are earning more credits, thus accomplishing their major requirements at a faster rate.

Table 10: University of Oregon Transcript Data – Panel Regressions

VARIABLES	Hours Earned	Hours Attempted	Hours Attempted	Hours Earned
plateauspanel	0.884***	0.992***	0.0898***	0.0471**
gpa_uo	1.503***	-0.213***	-0.151***	1.559***
Junior			-0.741***	-0.720***
Senior			-1.485***	-1.382***
Sophomore			-0.275***	-0.318***
Constant	8.235***	14.72***	15.30***	8.805***
R-squared	0.059	0.005	0.033	0.078
Number of id	104,858	104,858	104,858	104,858
Class standing			Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1

5. Discussion and Conclusion

We sought out to test whether or not tuition plateaus positively impact the amount of time college students take to graduate. In order to ensure that our findings were robust, we also controlled for a spectrum of influential academic variables, and conducted a variety of different economic tests. After controlling for High School GPA, SAT/ACT Percentile Scores, College Major, Interaction variables, and Panel Data, we were able to determine that tuition plateau trends were consistent across all regressions. When applied to graduation time, plateaus increased the rate students graduated by at least one academic term. They also consistently impacted the on time variable positively, meaning tuition plateaus made students more likely to graduate in 3.75 years. This supports our original hypothesis that by incentivizing students to attempt more credits, and as a result earn more credits, tuition plateaus increase the rate that

students graduate. This would suggest that students are in fact responsive to changes in the cost of 12 credits, or the level of credits that determines a full time course load, and that this sensitivity is reflected in the number of courses students ultimately decide to take.

In terms of making a recommendation to the University of Oregon regarding whether or not to bring back a tuition plateau, maintaining revenue neutrality is key. Although the cost of twelve credits would increase, the tuition level must be such that students are incentivized and not coerced to take an increased number of credits. The UO must also ensure that it is not pricing ethnic minority students out of the market. Students who take reduced credit loads will be disproportionately affected by the implementation of a plateau, and may be forced to drop out of school as a result.

After numerous types of tests, and hundreds of thousands of observations, we have extremely robust evidence to suggest that tuition plateaus drastically reduce the time it takes for college students to graduate. Results while controlling for different variables were consistent, and were also extremely relevant across OLS and panel data. This is an uncommon, and very exciting result. It is notable that nearly 80% of prestigious research universities currently implement the tuition plateau, our research suggests that it would be advantageous for the University of Oregon to follow suit. Although tuition plateaus do not ensure the success of University of Oregon students, it would be a fundamental step in order to improve the graduation time of students, and the percentage of students graduating in 3.75 years; such metrics would improve the University's standing within the larger academic community.

5.1 Future Research

Although we have found compelling evidence that plateaus do have a significant impact on student behavior, one should consider these as an upper bound for the true effects that tuition plateaus have on student behavior, mainly due to our inability to control for secular trends in the data. Due to time constraints we were unable to get the data we needed however, it would be simple to control for such trends by doing a simple difference in difference estimate, using the University of Oregon data that we have, as well as transcript data of a University with similar traits such as Oregon State University. Oregon State would be a perfect University to use in our difference and difference estimate because while the University of Oregon got rid of their tuition plateau system, Oregon State decided to keep it, and since both Universities have similar student bodies and geographical locations it can be assumed that they have common trends, absent of the treatment (In this case the treatment is the removal of a tuition plateau system) which is the key assumption for any difference in difference estimate. Knowing this, future undergraduate researchers can use the data we have already attained from the University of Oregon, and work with the Oregon State registrar's office to attain transcript data so that they might use both datasets to create a difference in difference estimate. Although this difference and difference estimate will show that plateaus will have a smaller effect than our own regressions, we believe that it will still show that plateaus will have a significant effect on the behavior of University students.

Additionally, one area of interest that we did not cover in this paper is the effect that tuition plateaus has on the specific types of classes that a student decides to take each term. This would be of great interest to University faculty because it will show if the absence of plateaus will incentivize student to take “double - dip” classes (classes that count towards a general

education requirement and multicultural requirement), or if plateaus incentivize students to take more general education classes that are outside their major concentration. For this to be accomplished, we would need to know the CRNs of each class a student took during their time at the University of Oregon, data that the office of registrar could attain. We compiled a dataset for future researchers that contains the class information for each general education and multicultural class offered at the University of Oregon from 1996 to 2014, which can be used to compare the student CRN data with the classes offered at the University of Oregon. Information on where to attain these datasets and how we compiled the class information can be found in the following appendix.

6. Appendix

6.1 Preliminary Research Data Collection

Do determine national trends for institutions with and without and tuition plateaus, we used the national database IPEDS (https://nces.ed.gov/ipeds/datacenter/Default.aspx). We used the Carnegie Index for high research activity institutions, and downloaded common variables such as enrollment, acceptance rate, and ACT composite scores. For the Tuition plateaus variable we contacted each institution on the index to inquire if they charged per credit no matter the full – time or part-time status of the student, or if they charged a flat rate for all full-time students no matter the amount of credits they're taking (i.e. a Tuition Plateau). For each institution we created a dummy variable labeled "Plateaus", where 1 represents an institution with a tuition plateau system implemented, and 0 if they use a marginal cost system for tuition. A snapshot of our dataset can be found below in order to make replicating our process easier. For the full

dataset please contact William Harbaugh (harbaugh@uoregon.edu), professor at the University of Oregon and advisor of this research project.

unitid	institution na	year	Grad Rates	Enrollment	Adult_Stude	Plateaus	Acceptance_	ACT_75
104151	Arizona State	2014	43	46791	5346	1	84	2
164988	Boston Unive	2014	80	31850		1	35	3
165015	Brandeis Uni	2014	85	6894	27	1	35	3
217156	Brown Unive	2014	85	8939	66	1	9	3
110404	California Ins	2014	85	2196	5	1	9	3
211440	Carnegie Me	2014	72	11702	81	1	25	3
201645	Case Wester	2014	64	9653	68	1	38	3
126818	Colorado Sta	2014	39	26307	2495	0	80	2
190150	Columbia Un	2014	88	26591	1405	1	7	3
190415	Cornell Unive	2014	87	22176	154	1	14	3
182670	Dartmouth C	2014	88	6534	30	1	12	3
198419	Duke Univers	2014	87	18114		1	11	3
139658	Emory Unive	2014	84	15365	242	1	27	3
134097	Florida State	2014	61	39141	2126	0	55	2
131469	George Wash	2014	72	21365	968	1	44	3
131496	Georgetown	2014	91	15354	326	1	17	3
139755	Georgia Insti	2014	37	22381	646	1	33	3
139940	Georgia State	2014	22	31494	5197	0	59	2
166027	Harvard Univ	2014	86	23513	2112	1	6	3
151351	Indiana Univ	2014	59	41358	983	1	76	3
153603	Iowa State U	2014	39	31177	1594	1	87	2

6.2 Registrar Data Collection

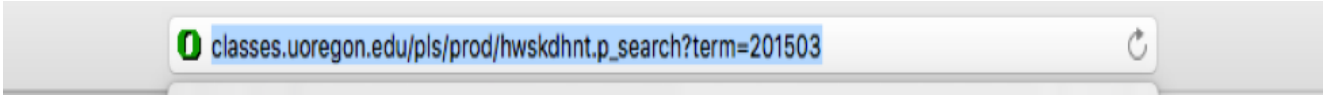
Our transcript data was provided to us from the University of Oregon Office of Registrar. For the confidentiality and privacy of University of Oregon students all student IDs were removed and replaced by a random number, the student ID that the random number pertains to was not available to any researcher (Student or Faculty) during the duration of this project. All FERPA rules and regulations were upheld, and the data given to us was housed in a secure location, only available to those immediately involved with the project.

6.3 General Education and Multi-Cultural Credit Data Collection

The bulk of man hours spent on data collection, was to collect information on all general education courses (AL SS SCI), and Multicultural credits (AC IC IP), and courses that “double dip” meaning courses that count towards both a general education requirement and multi-cultural

credit. Since our transcript data was from 1996 to 2014, those were the years that we collected GE and MC information from. So others may replicate, the process below is the general instructions on how we were able to collect the data:

First, we used the University of Oregon extensive Class Schedule database to collect all the raw information. This database is located at the following URL, http://classes.uoregon.edu. Once on the web page we clicked any term pertaining to undergraduate study (Spring 2016, Summer 2016, etc.) you'll then find yourself on the main menu of that terms course catalog. Once there, go to the URL for this page, near the end of the URL code string you will see six number identifying the year and the term of the course catalog. This can be seen in the picture below:



To change the course catalog to the year that you would like to collect information on, one simply changes that code (above as 201503) to the year and term they would like see. For example, if I wanted the Fall Term course catalog for the year 1996, I would replace the above code with the six-digit numerical phrase 199601. Once there you can then have access to the entire course catalog, or filter to any general education courses by using the drop down menus and selecting the "Summary" Button.

Once we collected all the raw data, from every GE and MC course offered at the University of Oregon from 1996 to 2014 we then organized the data by deleting on cancelled courses, as well as creating columns so that each course can be identified as either an Arts and Letters, Social Science, or Science general education requirement, and if it was considered as a Multi-Cultural class (or both). Below is a sample of our final data set (Columns, courses pertaining to a certain Gen Ed requirement are denoted as 1, and 0 otherwise. For the full dataset please contact

William Harbaugh (harbaugh@uoregon.edu), University of Oregon professor and our staff advisor for this research project.

Subj	Crse	Identifying Course	Title	Credits	CRN	Term	Year	GE	AL	SS	SCI	AC	IC	IP
COLT	101	COLT1011202011996	Lit/Lang/Culture	4	12020	1	1996	1	1	0	0	0	0	1
COLT	101	COLT1011202111996	+ Dis	0	12021	1	1996	1	1	0	0	0	0	1
COLT	101	COLT1011202211996	+ Dis	0	12022	1	1996	1	1	0	0	0	0	1
COLT	101	COLT1011202311996	+ Dis	0	12023	1	1996	1	1	0	0	0	0	1
COLT	101	COLT1011202411996	+ Dis	0	12024	1	1996	1	1	0	0	0	0	1
COLT	101	COLT1011202511996	+ Dis	0	12025	1	1996	1	1	0	0	0	0	1
GER	223	GER2231625711996	Ger: Multicul Society	3	16257	1	1996	1	1	0	0	0	0	1
SCAN	353	SCAN3531607911996	Scan Women Writers	4	16079	1	1996	1	1	0	0	0	0	1
HIST	308	HIST3081306511996	Hist of Women in US I	4	13065	1	1996	2	0	1	0	0	0	1
HIST	308	HIST3081611611996	+ Dis	0	16116	1	1996	2	0	1	0	0	0	1
HIST	308	HIST3081611811996	+ Dis	0	16118	1	1996	2	0	1	0	0	0	1
HIST	308	HIST3081611911996	+ Dis	0	16119	1	1996	2	0	1	0	0	0	1
HIST	308	HIST3081612011996	+ Dis	0	16120	1	1996	2	0	1	0	0	0	1
HIST	308	HIST3081612111996	+ Dis	0	16121	1	1996	2	0	1	0	0	0	1
HIST	308	HIST3081612211996	+ Dis	0	16122	1	1996	2	0	1	0	0	0	1
HIST	308	HIST3081612411996	+ Dis	0	16124	1	1996	2	0	1	0	0	0	1
SOC	207	SOC2071496511996	Social Inequality	4	14965	1	1996	2	0	1	0	0	0	1

6.4 Code

Ipeds - National Data Code:

```
clear
capture log close
import excel "/Users/treyhornberger/Documents/EC 418:419/deathstar.xls", sheet("IPEDS-
Tuition Plateaus w_ Trey") firstrow
set more off
log using Plateaus-IPEDS.log, replace
reg GradRates Plateaus Enrollment Acceptance_Rate
estimates store IPEDS_GradRates
outreg2 using ipeds.doc, replace ctitle(Gradrate)
reg GradRates Plateaus Enrollment Acceptance_Rate ACT_75
outreg2 using ipeds.doc, append ctitle(Gradrate)
gen profsalarythou = Prof_Salary/1000
reg GradRates Plateaus Enrollment Acceptance_Rate ACT_75 profsalarythou
outreg2 using ipeds.doc, append ctitle(Gradrate)
gen tuitionthou = Tuition/1000
```

```
reg GradRates Plateaus Enrollment Acceptance_Rate ACT_75 tuitionthou
outreg2 using ipeds.doc, append ctitle(Gradrate)
sum Plateaus if Plateaus==1
sum GradRates Plateaus Enrollment Acceptance_Rate ACT_75 Admissions_Yield
profsalarythou tuitionthou
estout IPEDS_GradRates
log close
```

University of Oregon Transcript Data Code:

```
clear
capture log close
use"/Users/treyhornberger/Desktop/Summary:Degreefinal2.0.dta"

set more off
log using projectfinal.log, replace
rename R degree_ter

gen admitted = yq(admit_year,admit_term)


gen graduated = yq(degree_year,degree_ter)


format %tq admitted

format %tq graduated

gen gradtime1 = ((graduate - admitted)+1)/4

gen plateaus = 0
replace plateaus = 1 if graduated<167
gen male = 0
replace male = 1 if gender=="M"

gen GED = 0

replace GED = 1 if stype=="0"


tabulate stype, gen(s)

drop s1
rename s2 HS_0creds
rename s3 HS_creds
rename s4 Transfer_1to11
rename s5 Transfer_12to35
```

```
rename s6 Transfer_36to44
rename s7 Transfer_45to89
rename s8 Transfer_90to134
rename s9 Transfer_135plus

drop s10
drop s11


replace deduct = 0 if missing(deduct)


tabulate ethn, gen(race)

rename race1 Hispanic
rename race2 American_Indian
rename race3 Asian
rename race4 Black
rename race5 Pacific_Islander
rename race6 White
rename race7 Multiple_Race
rename race8 Non_Resident
rename race9 Unknown_Race


tabulate degree_code, gen(deg)

rename deg1 Bach_Arts
rename deg2 Bach_Arch
rename deg3 Bach_Educ
rename deg4 Bach_FineArts
rename deg5 Bach_IntArch
rename deg6 Bach_LandArch
rename deg7 Bach_MusicEd
rename deg8 Bach_Music
rename deg9 Bach_Sci


gen ontime = 0
replace ontime = 1 if gradtime1<=3.75

gen age_admit = admit_year-birth_yr

replace ACTComp= round(ACTComp)

gen SAT_CON = SATComp
```

```
replace SAT_CON = 1600 if ACTComp==36
replace SAT_CON = 1580 if ACTComp==35
replace SAT_CON = 1520 if ACTComp==34
replace SAT_CON = 1480 if ACTComp==33
replace SAT_CON = 1430 if ACTComp==32
replace SAT_CON = 1380 if ACTComp==31
replace SAT_CON = 1340 if ACTComp==30
replace SAT_CON = 1300 if ACTComp==29
replace SAT_CON = 1260 if ACTComp==28
replace SAT_CON = 1220 if ACTComp==27
replace SAT_CON = 1180 if ACTComp==26
replace SAT_CON = 1140 if ACTComp==25
replace SAT_CON = 1110 if ACTComp==24
replace SAT_CON = 1070 if ACTComp==23
replace SAT_CON = 1030 if ACTComp==22
replace SAT_CON = 990 if ACTComp==21
replace SAT_CON = 950 if ACTComp==20
replace SAT_CON = 910 if ACTComp==19
replace SAT_CON = 830 if ACTComp==18
replace SAT_CON = 820 if ACTComp==17
replace SAT_CON = 770 if ACTComp==16
replace SAT_CON = 730 if ACTComp==15
replace SAT_CON = 670 if ACTComp==14
replace SAT_CON = 600 if ACTComp==13
replace SAT_CON = 540 if ACTComp==12
replace SAT_CON = 480 if ACTComp==11
replace SAT_CON = 430 if ACTComp==10

egen percentile = xtile(SAT_CON), by(admit_year) n(100)

** Generated a national average gradutation rate of students graduating within 4 years
** very hard to find using IPEDS data, filled in holes with the closest years average grad rate

gen national_gr = 33.6641181297421

replace national_gr = 36.0809096195501 if admit_year==2000
replace national_gr = 36.0809096195501 if admit_year==2001
replace national_gr = 36.734630238327 if admit_year== 2002
replace national_gr = 36.6911443746982 if admit_year== 2003
replace national_gr = 37.9419278758251 if admit_year== 2004
replace national_gr = 38.580650494484 if admit_year==2005
replace national_gr = 38.977581659941 if admit_year==2006
replace national_gr = 38.977581659941 if admit_year==2007
replace national_gr = 39.7577088639721 if admit_year==2008
replace national_gr = 39.7577088639721 if admit_year==2009
```

```
replace national_gr = 39.7577088639721 if admit_year==2010
replace national_gr = 39.7577088639721 if admit_year==2011
replace national_gr = 39.7577088639721 if admit_year==2012
replace national_gr = 39.7577088639721 if admit_year==2013

sum Asian if Asian==1
sum Hispanic if Hispanic==1
sum American_Indian if American_Indian==1
sum Black if Black==1
sum Pacific_Islander if Pacific_Islander==1
sum White if White==1
sum Multiple_Race if Multiple_Race==1
sum Non_Resident if Non_Resident==1
sum Transfer_1to11 if Transfer_1to11==1
sum Transfer_12to35 if Transfer_12to35==1
sum Transfer_36to44 if Transfer_36to44==1
sum Transfer_45to89 if Transfer_45to89==1
sum Transfer_90to134 if Transfer_90to134==1
sum Transfer_135plus if Transfer_135plus==1
sum Bach_Arts if Bach_Arts==1
sum Bach_Arch if Bach_Arch==1
sum Bach_Educ if Bach_Educ==1
sum Bach_FineArts if Bach_FineArts==1
sum Bach_IntArch if Bach_IntArch==1
sum Bach_LandArch if Bach_LandArch==1
sum Bach_MusicEd if Bach_MusicEd==1
sum Bach_Music if Bach_Music==1
sum Bach_Sci if Bach_Sci==1
sum male if male==1
sum GED if GED==1
sum HS_0creds if HS_0creds==1
sum HS_creds if HS_creds==1
sum Unknown_Race if Unknown_Race==1
sum White if White==1
sum Bach_Sci if Bach_Sci==1
summarize  gradtime1 plateaus male hsgpa age_admit deduct GED HS_0creds HS_creds
Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134
Transfer_135plus Hispanic American_Indian Asian White Black Pacific_Islander Multiple_Race
Non_Resident Unknown_Race Bach_Sci Bach_Arts Bach_Arch Bach_Educ Bach_FineArts
Bach_IntArch Bach_LandArch Bach_MusicEd Bach_Music

**Main Linear Regression***
reg gradtime1 plateaus male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35
Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic
American_Indian Asian Black Pacific_Islander  Multiple_Race Non_Resident Unknown_Race
```

```
Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch Bach_LandArch
Bach_MusicEd Bach_Music, robust
outreg2 using myreg2.doc, replace ctitle(Gradtime)
estimates store Gradtime, title(Gradtime)

reg ontime plateaus male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35
Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic
American_Indian Asian Black Pacific_Islander  Multiple_Race Non_Resident Unknown_Race
Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch Bach_LandArch
Bach_MusicEd Bach_Music, robust

outreg2 using myreg.doc, replace ctitle(Ontime)

estimates store Ontime, title(Ontime)

estout Gradtime Ontime, cells(b(star fmt(3)))

**Using National average graduation rates***

*reg gradtime1 plateaus male age_admit national_gr deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander  Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust

*reg ontime plateaus male age_admit national_gr deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander  Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust


**Using HSGPA***

reg gradtime1 plateaus male hsgpa age_admit deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
estimates store Gradtime_hsgpa
outreg2 using myreg2.doc, append ctitle(Gradtime-hsgpa)

reg ontime plateaus male hsgpa age_admit deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
```

```
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
estimates store Ontime_hsgpa
outreg2 using myreg.doc, append ctitle(Ontime-hsgpa)

estout Gradtime Ontime Gradtime_hsgpa Ontime_hsgpa, cells(b(star fmt(3)))

**Using converted SAT composite scores and percentiles by year**

reg gradtime1 plateaus male percentile age_admit deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
estimates store Gradtime_SAT
outreg2 using myreg2.doc, append ctitle (Gradtime - SAT Percentile)

reg ontime plateaus male percentile age_admit deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
estimates store Ontime_SAT
outreg2 using myreg.doc, append ctitle (Ontime - SAT Percentile)

estout Gradtime_SAT Ontime_SAT, cells(b(star fmt(3)))

sum gradtime1 plateaus male percentile age_admit deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music

*Seeing Effects of being inbetween the plateaus change***
gen inbetween = 0

replace inbetween=1 if admitted<167 & graduated>167

gen inside = 0
replace inside = 1 if admitted<167 & graduated<167

gen outside = 0
replace outside = 1 if admitted>167 & graduated>167

***Effects of Having been inside and outside the plateaus or inbetween***
```

```
*reg gradtime1 inbetween inside outside male age_admit deduct GED HS_0creds
Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134
Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race
Non_Resident Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
*reg ontime inbetween inside outside male age_admit deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust

*Interactive Regressions for OLS***
gen SATInt = plateaus*percentile

reg gradtime1 plateaus male percentile SATInt age_admit deduct GED HS_0creds
Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134
Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race
Non_Resident Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
outreg2 using Interactive.doc, replace ctitle(Gradtime) addtext(SAT Interaction, X)
gen hsgpaint = plateaus*hsgpa

reg gradtime1 plateaus male hsgpa hsgpaint age_admit deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
outreg2 using Interactive.doc, append ctitle(Gradtime) addtext(HSGPA Interaction, X)

gen ageint = plateaus*age_admit
reg gradtime1 plateaus male age_admit ageint deduct GED HS_0creds Transfer_1to11
Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus
Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident
Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch
Bach_LandArch Bach_MusicEd Bach_Music, robust
outreg2 using Interactive.doc, append ctitle(Gradtime) addtext(Age Interaction, X)

gen BlackInt = plateaus*Black
gen HispInt = plateaus*Hispanic
gen NAInt = plateaus*American_Indian
gen AsianInt = plateaus*Asian
gen PIInt = plateaus* Pacific_Islander
gen WhiteInt = plateaus*White
gen MRInt = plateaus*Multiple_Race
gen NRInt = plateaus*Non_Resident
gen UnInt = plateaus*Unknown_Race
```

```
reg gradtime1 plateaus male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch Bach_LandArch Bach_MusicEd Bach_Music BlackInt HispInt NAInt AsianInt WhiteInt MRInt NRInt UnInt, robust
outreg2 using Interactive.doc, append ctitle(Gradtime) addtext(Race Interaction, X)

joinby id using "/Users/treyhornberger/Desktop/term4.dta"
gen termdate = yq(term_year,term_quarter)
format %tq termdate
set more off
duplicates drop id termdate, force
xtset id termdate
gen plateauspanel = 0
replace plateauspanel = 1 if termdate<167

**effect of plateaus has on number of credits that were attempted/earned for inbetweeners**

xtreg hrs_earn plateauspanel gpa, fe
outreg2 using panel.doc, replace ctitle(Hours Earned)
estimates store hrs_earn

xtreg hrs_att plateauspanel gpa, fe
outreg2 using panel.doc, append ctitle(Hours Attempted)
estimates store hrs_att

estout hrs_earn hrs_att, cells(b(star fmt(3)))
by id: gen N_terms=_n

gen class = N_terms/3

gen class_standing = "Freshmen" if class<=1

replace class_standing = "Sophmore" if class>1 & class<=2
replace class_standing = "Junior" if class>2 & class<=3
replace class_standing = "Senior" if class>3
encode class_standing, gen(class_standing1)
estimates store hrs_earn_class
estout hrs_earn hrs_att hrs_earn_class hrs_att_class, label cells(b(star fmt(3)))
sum hrs_earn hrs_att gpa

**Random effects panel data***
```

*xtreg hrs_earn plateauspanel gpa i.class_standing1 male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch Bach_LandArch Bach_MusicEd Bach_Music, re

*xtreg hrs_att plateauspanel gpa i.class_standing1 male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch Bach_LandArch Bach_MusicEd Bach_Music, re

Using Majors/ Linear regression

encode major1, gen(major)

reg gradtime1 plateaus i.major male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident Unknown_Race, robust
outreg2 using major.doc, replace ctitle(Gradtime Major) keep(plateaus male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch Bach_LandArch Bach_MusicEd Bach_Music) addtext(Major Control, YES)

reg ontime plateaus male i.major age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident Unknown_Race, robust
outreg2 using major.doc, append ctitle(Ontime Major) keep(plateaus male age_admit deduct GED HS_0creds Transfer_1to11 Transfer_12to35 Transfer_36to44 Transfer_45to89 Transfer_90to134 Transfer_135plus Hispanic American_Indian Asian Black Pacific_Islander Multiple_Race Non_Resident Unknown_Race Bach_Arts Bach_Arch Bach_Educ Bach_FineArts Bach_IntArch Bach_LandArch Bach_MusicEd Bach_Music) addtext(Major Control, YES)

6.5 Variable Index

Preliminary Research Variables

Variable Name:	Variable Description:
GradRates	Percentage of Students at an included Institution that graduated within four years
Plateaus	Dummy Variable indicating if a college has a flat tuition rate for full-time students(1) or if they charge per credit no matter the full-time or part-time status of the student(0)
Enrollment	Amount of full time students at an included University.
Acceptance Rate	Is the acceptance rate (percentage) of the University
ACT Above 75	Is the percentage of students at an included University that ranked in the 75th percentile (or above).
profsalary	Refers to the average salary of professors at each University (in thousands of dollars) of the 106 very high research activity institutions from the Carnegie index
tuition	Refers to the average tuition students pay per year (in thousands of dollars) at each of the 106 very high research activity institutions from the Carnegie index

UO Research Variables

Variable Name:	Variable Description:
Plateaus	If students graduated from University of Oregon before the tuition plateau was phased out in the 2001-2002 school year
Male	Dummy variable displaying 1 if the student is male and 0 if the student is female
Percentile	ACT or SAT composite score compared to other students that took either test the same year in the form of the percent of other students they did better than
SATInt	Interaction term between the plateaus variable and the percentile a student was in with their SAT or ACT score (plateaus*Percentile)
Credits Deducted	The number of credits that were not counted towards the University of

	Oregon graduation credit requirement when a student transferred
GED	If student took GED
HS_0creds	If student came to the University of Oregon after graduating High School with 0 transfer hours
HS_creds	If student came to the University of Oregon after graduating High School with transfer hours
Transfer_1-11	If student transferred to the University of Oregon with 1-11 transfer hours
Transfer_12-35	If student transferred to the University of Oregon with 12-35 transfer hours
Transfer_36-44	If student transferred to the University of Oregon with 36-44 transfer hours
Transfer_45-89	If student transferred to the University of Oregon with 45-89 transfer hours
Transfer_90-134	If student transferred to the University of Oregon with 90-134 transfer hours
Tansfer_135+	If student transferred to the University of Oregon with 135+ transfer hours
Hispanic	If Student is Hispanic/Latino
American_Indian	If Student is American Indian or Alaska Native
Asian	If Student is Asian
Black	If Student is Black or African American
Pacific_Islander	If Student is Native Hawaiian or Other Pacific Islander
White	If Student is White
Multiple_race	If Student is 2 or more races
Non_resident	If Student is non resident from another country
Unknown_race	Race and ethnicity unknown
Black Interaction	Interaction term between the plateaus variable and if the student is black (plateaus*black)

Hisp Interaction	Interaction term between the plateaus variable and if the student is hispanic (plateaus*hispanic)
NA Interaction	Interaction term between the plateaus variable and if the student is American Indian (plateaus*American_Indian)
Asian Interaction	Interaction term between the plateaus variable and if the student is Asian (plateaus*Asian)
White Interaction	Interaction term between the plateaus variable and if the student is white (plateaus*white)
MR Interaction	Interaction term between plateaus variable and if the student is Multiple races (plateaus*Multiple_races)
NR Interaction	Interaction term between plateaus variable and if the student is a Non Resident (plateaus*Non_resident)
Un Interaction	Interaction term between plateaus variable and if the student is an Unknown race (plateaus*Unknown_race)
Bach_Arts	Bachelor of Arts
Bach_Architecture	Bachelor of Architecture
Bach_Education	Bachelor of Education
Bach_FineArts	Bachelor of Fine Arts
Bach_InteriorArch	Bachelor of Interior Architecture
Bach_LandscapeArch	Bachelor of Landscape Architecture
Bach_MusicEd	Bachelor of Music in Music Ed
Bach_Music	Bachelor of Music
Bach_Science	Bachelor of Science
Admittance Age	How old a student was when they were admitted
Admittance Age Interaction	Interaction term between the plateaus variable and the age_admit variable (plateaus*age_admit)
hsgpa	Student cumulative GPA in High School
Hsgpa Interaction	Interaction term beteween the plateaus variable and the hsgpa variable (plateaus*hsgpa)

Plateauspanel	How the tuition plateau affects students after each term at the University of Oregon
Gpa_uo	Student GPA in an individual term at University of Oregon
Freshman	Student class standing is Freshman
Sophomore	Student class standing is Sophomore
Junior	Student class standing is Junior
Senior	Student class standing is Senior
ANTH	Student's major is Anthropology
ARBF	Student's major is Art-BFA Degree
ARCH	Student's major is Architecture
ARDF	Student's major is Digital Arts
ARDG	Student's major is Digital Arts
ARH	Student's major is Art History
ARMM	Student's major is Multimedia Design
ART	Student's major is Art
ARTC	Student's major is Ceramics
ARTD	Student's major is Multimedia Design
ARTF	Student's major is Fibers
ARTM	Student's major is Metalsmithing and Jewelry
ARTO	Student's major is Photography
ARTP	Student's major is Painting
ARTR	Student's major is Printmaking
ARTS	Student's major is Sculpture
ARTV	Student's major is Visual Design
AST	Student's major is Asian Studies
BADM	Student's major is Business Administration

BI	Student's major is Biology
BIC	Student's major is Biochemistry
CCIV	Student's major is Classical Civilization
CDS	Student's major is Communication Disorders & Science
CH	Student's major is Chemistry
CHN	Student's major is Chinese
CINE	Student's major is Cinema Studies
CIS	Student's major is Computer & Information Science
CLAS	Student's major is Classics
COLT	Student's major is Comparative Literature
DANC	Student's major is Dance
EC	Student's major is Economics
EDF	Student's major is Educational Foundations
EDST	Student's major is Educational Studies
EELM	Student's major is Elementary
EMS	Student's major is Exercise & Movement Science
ENG	Student's major is English
ENV	Student's major is Environmental Studies
ESCI	Student's major is Environmental Science
ETHN	Student's major is Ethnic Studies
FAA	Student's major is Fine & Applied Arts
FHS	Student's major is Family and Human Services
FIN	Student's major is Finance
FLR	Student's major is Folklore
FR	Student's major is French

GEOG	Student’s major is Geography
GEOL	Student’s major is Geological Sciences
GER	Student’s major is German
GRK	Student’s major is Greek
GS	Student’s major is General Science
GSB	Student’s major is General Science
GSS	Student’s major is General Social Science
GSSB	Student’s major is General Social Science
GSSC	Student’s major is General Social Science
HIST	Student’s major is History
HPHY	Student’s major is Human Physiology
HUM	Student’s major is Humanities
IARC	Student’s major is Interior Architecture
IND	Student’s major is Independent Study
INTL	Student’s major is International Studies
ITAL	Student’s major is Italian
J	Student’s major is Journalism
JAD	Student’s major is Journalism: Advertising
JCOM	Student’s major is Journalism: Communication Studies
JDST	Student’s major is Judaic Studies
JEM	Student’s major is Journalism: Electronic Media
JMAG	Student’s major is Journalism: Magazine
JMS	Student’s major is Journalism: Media Studies
JNE	Student’s major is Journalism: News Editorial
JPN	Student’s major is Japanese

JPR	Student's major is Journalism: Public Relations
LA	Student's major is Landscape Architecture
LAS	Student's major is Latin American Studies
LAT	Student's major is Latin
LING	Student's major is Linguistics
MACS	Student's major is Mathematics & Computer Science
MARB	Student's major is Marine Biology
MATH	Student's major is Mathematics
MCOM	Student's major is Music Composition
MDVL	Student's major is Medieval Studies
ME	Student's major is Music Education
MJS	Student's major is Music: Jazz Studies
MKTG	Student's major is Marketing
MPS	Student's major is Material & Product Studies
MPTL	Student's major is Music: Pre Teacher Licensure
MTHB	Student's major is Mathematics
MTHE	Student's major is Music Theory
MUED	Student's major is Music Education
MUP	Student's major is Music Performance
MUS	Student's major is Music
P3PM	Student's major is Pre-Planning Public Policy Management
PAD	Student's major is Pre-Journalism: Advertising
PBA	Student's major is Pre-Business Administration
PCIS	Student's major is Pre-Computer & Information Science
PDSG	Student's major is Product Design

PED	Student’s major is Pre-Education
PEN	Student’s major is Pre-Engineering
PFHS	Student’s major is Pre-Family and Human Services
PHIL	Student’s major is Philosophy
PHYS	Student’s major is Physics
PINS	Student’s major is Pre-International Studies
PJ	Student’s major is Pre-Journalism
PJC	Student’s major is Pre-Journalism: Communication Studies
PJEM	Student’s major is Pre-Journalism: Electronic Media
PJMS	Student’s major is Pre-Journalism: Media Studies
PMAG	Student’s major is Pre-Journalism: Magazine
PMB	Student’s major is Pre-Marine Biology
PMCS	Student’s major is Pre-Mathematics & Computer Science
PNE	Student’s major is Pre-Journalism: News-Editorial
PPPM	Student’s major is Planning, Public Policy & Management
PPR	Student’s major is Pre-Journalism: Public Relations
PPSY	Student’s major is Pre-Psychology
PS	Student’s major is Political Science
PSY	Student’s major is Psychology
PSYB	Student’s major is Psychology
R&ES	Student’s major is Russian, East Euro & Eurasia Studies
REL	Student’s major is Religious Studies
RL	Student’s major is Romance Languages
RUSS	Student’s major is Russian
SOC	Student’s major is Sociology

SPAN	Student's major is Spanish
TA	Student's major is Theatre Arts
UNDL	Student's major is Undeclared
WGS	Student's major is Women's & Gender Studies
WST	Student's major is Women's Studies

7. References

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