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## Academic Involvement Levels as a Consequence of Commuting to Take Classes

### **Introduction**

Since 1970s, public blames on the high prices of dormitories near universities have never stopped. Most protestors focus on the negative effects of off-campus residences on grades of students, arguing that students who live far away from their schools are more likely to be distracted by other activities--Intuitively, commuter students at least have to spend more time on travelling. However, recent studies of small sample size have confirmed that residential choices almost have no impact on students' GPA. Recent studies ignore this contradiction and start focusing on improving academic involvements of commuter students. While these improving methods may benefit commuter students, further data analysis need to be applied for the sake of exploring real effects of living off-campus on academic involvements. Furthermore, academic institutions can use findings of this study to understand the behavior of different types of residents, help students accordingly, and improve academic involvements of both types of students as a result.

### **Literature Review**

A number of recent studies examine the effects of living off-campus on students' academic performances and offer suggestions. Jacoby (2000) refers to studies prior to 2000, directly assumes that commuter students have a lower academic involvements than traditional residents, then Jacob gives suggestions that staffs should create a better learning environment especially for commuter students. Furthermore, Jacoby later (2015) reexamines the effects of

living off-campus by psychological models, and concludes that new theoretical models are needed to provide more thorough understanding of commuter students' behavior.

Other studies zoom into main activities of college students, and examine differences of academic performances (GPA) between two types of residents. For instance, Alfano and Eduljee (2010) compare to what degree that work involvement, club activities, and academic performances affect each other among 180 students of a private college in the Northwest. This study finds that work hours have no relationship with academic performances for both two types of residents.

In addition, Ishitani and Reid (2015) present a thorough examination of first-year college life of commuter students. Focusing on drop-out rates, Ishitani and Reid concludes that off-campus residents are 13% more likely to drop off from school than students living at home during the first year. Beyond this first year transition, Gianoutsos and Rosser (2014) show that students in different residential statuses are significantly different with respect to races and family background. Apart from factors that determine residential statuses, Burlison (2015) finds that commuter students suffer more stress from time arrangements, because commuter students need to spend more time on travelling and income generating activities.

This paper distinguishes from the previous research by measuring academic involvement levels by time spent on taking classes. Reasons for this choice is discussed in "Model" Section. I divide students' time consumption into seven categories, based on seven most popular consumption choices and college experience. Firstly I examine time distribution of commuter students and traditional residents respectively, and pick up six variables that may contribute to different academic involvement levels according to the percentage of time distribution and differences between two types of students, then explore if commuting to school affects academic

involvement levels, then figure out what independent variables intensify this relationship by logistic regression analysis.

Within these new elements, this paper seeks to add to part of the research produced by Alfano and Eduljee (2010), which omitted the comparison of academic involvements between different types of residents. In particular, because conclusion of previous studies on academic performances and residential choices are not always the same, this research can add new perspectives to studies of effects of commuting choices on academic involvements. If commuting to take a class is opposite to the research conducted before, I will investigate the possible reasons for this new discovery. Here, the relationship comes out to be positive—commuter students spend more time on academics on average.

### **Data**

The data comes from American Time Use Survey (ATUS), conducted by United States Department of Labor. Bureau of Labor Statistics in 2011, which collects information on how each person, including 16% of non-institutional population age 15 and over, living in the United States spends their time. This data set contains quantitative data on a longitudinal scale, but we focus on the dataset of 2011. In this collection, respondents were interviewed once about how they spent their time on the previous day, where they were, and whom they were with. Most importantly, interviewers collect the location of each activity, so that on-campus activities can be examined separately.

To overview, the total respondents are 246,837 with a total response rate of 56.24%, among which exists 732 college students (currently enrolled). In my data analysis, I mainly use two files, including Activity Summary File which contains details of the total amount of time that each respondent spent on different activities on a typical day.

### **Summary Statistics**

## 1) Time Distribution Analysis

Time Distribution of Campus Students in One Day			
Activities	Mean	Maximum	Minimum
Research	73.24	841	0
Main Job	141.96	1265	0
Class	23.44	605	0
Relaxing	9.46	515	0
Recreation	1.54	305	0
Extracurricular	0.22	120	0
Sleeping	534.74	1110	150
		Observation	690

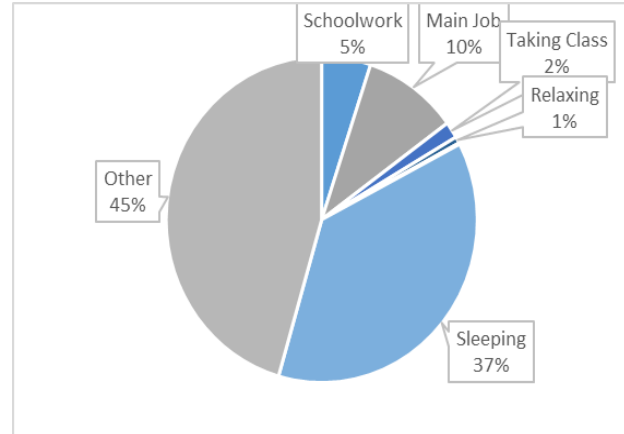


Figure 1. How Do Traditional Residents Distribute Time in One Day? (in minutes)

Time Distribution of Commuter Students in One Day			
Activities	Mean	Maximum	Minimum
Research	89.60	390	0
Main Job	105.64	525	0
Class	259.69	780	0
Relaxing	1.98	30	0
Recreation	0.00	0	0
Extracurricular	0.95	40	0
Sleeping	504.88	825	210
		Observation	42

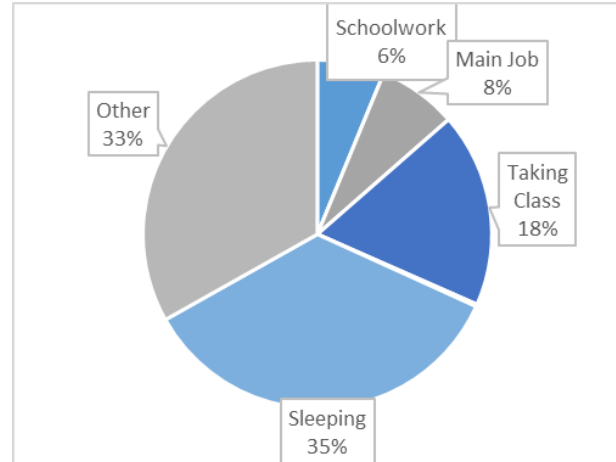


Figure 2. How Do Commuter Students Distribute Time in One Day? (in minutes)

For convenience of logistic regression analysis, this study focuses on seven common categories of activities of college students: doing research, doing nonacademic job, taking class, relaxing and leisure, (recreation) arts and music, extracurricular activities, and sleeping. To extract the influence of commuting to school or not, we firstly observe the differences of time distribution in one day for each type of students.

Assume students who travel for more than 30 minutes to take a class are defined as "commuter students." Figure 1 and Figure 2 shows how they spend time in different ways. On average, commuter students spend 15 minutes more on research, 35 minutes less on income-

generating work, and 236 minutes more on taking classes at school. Both two types of students are not interested in recreational, relaxing, or extracurricular activities--Less than 10 minutes are spent on these activities. Note that time spent on relaxing activities of traditional residents is almost 4.5 times more than commuters, so I will include it in the regression analysis. Also note that although commuter students spend time differently from on-campus residents with respect to work and academics, their time distributions are similar according to pie charts, except for time of taking classes: 2% for traditional residents and 18% for commuter students. From the Maximum column in two figures, a possible guess would be outliers of class time of commuters. We will return to this issue in the “model” section.

To explore more, commuter students spend more time on research on average, but a single traditional resident focuses on research intensively on this interviewing day, and drives the maximum of research for on-campus students to 450 minutes more than maximum of research for off-campus students. However, this isolated outlier does not affect the mean value much. Generally, commuter students work less than traditional residents. This phenomenon reflects higher financial stress of on-campus students. A potential reason for it may be high rentals of dormitories. Furthermore, college students generally lack of time for leisure or recreations. Almost nobody attends extracurricular activities for more than 1 minute on average. Faced with heavy work load, college students are rational to sleep for enough time (greater than 7 hours) on average, but a few on-campus students seem to sleep too much (maximum value approximates to 18 hours). Note that for the data described above, the number of commuter students is much less than on-campus students, which may generate biases in this study.

## **2) Academic Involvements and Commuting Status**

### **i) Model**

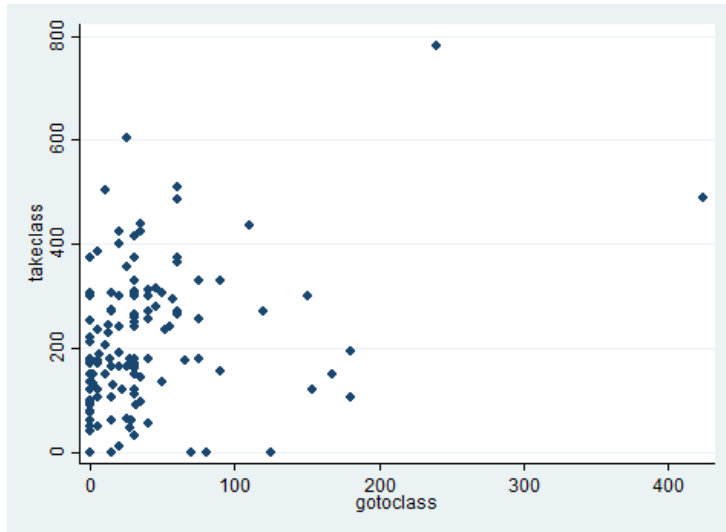


Figure 3. Outliers of Time for Taking Classes

This part will use a logistic regression model to determine the marginal effects of six variables on the dependent variable:

Y is the independent variable, which refers to the level of academic involvements. I use time for taking class to represent academic involvement levels, because many research work do not absolutely require to be conducted on campus. Also, the way I distinguish between commuters and non-commuters is to calculate the time they travel to school for class. As mentioned above, potentially data of taking class is prone to outliers, especially for commuters. From Figure 3, we confirm that two positive outliers of commuter students drive the mean value of this activity much higher. In the graph, the horizontal axis represents the time that students travel for class, and the vertical axis shows the time they spend on taking classes. Therefore, I take the mean value of taking classes for all college students in this survey--36.99 minutes--and generate a dummy variable called "academics" to measure academic involvements.

Figure 4 presents how I measure each variable. Except for academic involvements and commuting status, I use work, research, and relaxing as continuous variables. The isolated outlier of "work" does not have much power on the mean value, so I ignore this isolated outlier.

Relaxing activities do not cost much time for either type of students, but traditional students spend 4.5 times more than commuters, so I include it here. As normal empirical studies, I add demographical variables, including sex and race, as dummy variables here. Based on the logistic regression, these six variables contribute to 22.51% of variations of academic involvements.

<b>Academic</b>	Dummy	1, if takeclass>36.99
		0, otherwise
<b>Commute</b>	Dummy	1, if gotoclass>30
		0, otherwise
<b>Work</b>	Continuous	
<b>Research</b>	Continuous	
<b>Relaxing</b>	Continuous	
<b>Sex</b>	Dummy	1, if male
		0, otherwise
<b>Race</b>	Dummy	1, if white
		0, otherwise

Figure 4. Variable Description

## ii) Logistic Regression Analysis

Running logistic regression analysis in Stata, we find that commuting status has a huge influence on academic involvements, based on our assumptions. Students who commute to take classes are 10117.92% more likely to focus on academic work. This result is different from Alfano & Eduljee's finding (2010) and Gianoutsos & Rosser's study (2014). Both two research claim that commuting to school has no effect on academic performances (GPA) of students. The fact that P value is 0 within three digits implies the strong significance of this measurement. From this point of view, living near a campus does not mean spending more time on academics.

<b>Academic</b>	<b>Odds Ratio</b>	<b>Percentage Change</b>	<b>P Value</b>
<b>Commute</b>	102.179	10117.92%	0.000
<b>Work</b>	0.99857	-0.14%	0.023
<b>Research</b>	1.00168	0.17%	0.006
<b>Relaxing</b>	0.99587	-0.41%	0.155
<b>Sex</b>	0.89387	-10.61%	0.630
<b>Race</b>	0.83323	-16.68%	0.516
<b>Constant</b>	0.16435	-83.56%	0.000
		<b>Pseudo R2</b>	<b>0.2251</b>

Figure 5. Logistic Regression Results

Intuitively, a substitute choice of taking class will be income-generating work. From logistic regression analysis, time for work has significant negative impacts on academic involvements, since p value is .023 less than .05. However, the impact is not very large--working one more minutes will reduce .14% percent of academic involvements. This finding is corresponding to Gianoutsos and Rosser's research, which predicts that traditional residents are more likely to work than commuter students. Consider the underlying effects—different residential choices—behind different work hours, we say that work itself affects academic involvement levels, but not affects that much.

Opposite to the effect of work, conducting research--no matter on campus or not--does have a significant positive effect on academic involvements. In other words, for both two types of students, the more research they do, the more time they would like to spend on taking classes. This result makes sense, because doing research will help students know what they lack, for example, a student working on an independent game-theory project will quickly learn that more



statistic is necessary for this program, so this student may grab an opportunity to select more relevant courses.

Three remaining independent variables are not statistically significant, and all hold odds ratio less than 1. Though time spent on relaxing activities differ between two categories of college students that we study, however, this variable does not affect academic involvements significantly. Note that spending one more minutes to take a rest, such as having some snacks at Red Oak Cafe, is still said to reduce academic involvement level by .41%. Further studies may discover more about the relationship between leisure time and academic involvement level, and test whether it could be a bending curve, as labor markets suggest.

Besides all the activities presented above, male college students in general are less likely to devote more time on academics--to be a man implies 10.61% reduction on academic involvement levels. Nonetheless, the influence is not significant, because p value is as high as .63. From further data analysis, I find that 63.52% commuter students are female. This underlying interaction may contribute to a gender bias on academic behavior. This result is in line with 56.2% females of commuter students in Alfano and Eduljee's paper. However, this bias is not statistically significant again. Researchers in the future may be interested in exploring the gender gap related to commuting choices and academic efforts.

Social science studies in the United States hardly ignore the faculties of races, so does this study. From the regression table, to be a white students is said to involve 16.68% less academically than non-white students. This result is deviated from Alfano and Eduljee's, which claims that races do not play an important role in academic involvements. Anyway, note that our claim on racial discrepancies is not statistically significant. In this country where people keep

disputing about races, accurate studies are necessary to confirm the effects of races on academic involvements in the future.

## **Conclusion**

Our study finds that commuter students spend much more time on class work in general, which is not in harmony with previous studies. A possible explanation will be that on-campus residents are under higher financial pressure than commuter students, so that traditional residents will spend more time on working in order to pay for expensive rentals. However, traditional residents only spend 10% of their time on working on a typical day. Compared to 8% distribution on work time of off-campus residents, the difference does not seem to be strong enough to completely explain the faculties of commuting status. Future studies should explore more about the reasons behind, and then provide effective suggestions on improving academic involvement levels of on-campus residents.

The results of this research is also not perfectly impartial. Based on the selected dataset, 732 respondents are currently enrolled in a college, while only 42 of them are commuter students. Such a small sample size does not provide an accurate prediction on all college students nationwide. In addition, the way I generate dummy variables for separating commuting status and academic involvement levels also imply potential biases. Actually, time spent on working is not statistically significant if I set a baseline of commuting as 15 minute-travelling-to-school, but it is significant if I set this line as 30 minutes. Similarly, measuring academic involvement levels by time spent on taking classes is not persuasive enough to confirm our findings. Further studies should explore a more realistic way of defining academic involvement levels, and present more accurate prediction. However, this study is still good as a complementary part of traditional

studies on GPA and commuting status, and also offer new perspectives on differences of academic activities between commuter students and traditional residents.

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