



# INDIANA UNIVERSITY

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DEPARTMENT OF ECONOMICS

College of Arts and Sciences  
Bloomington

A proposal for the Learning Analytics Fellows Program

Inflection Points of Economics Majors: A closer look at enrollments in Intermediate  
Microeconomics (E321)

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Abstract:

Based on the results of my previous study of Economics majors titled *Do general or specific characteristics of E201 and E202 affect the number of Economics majors?* I was unable to determine more specific inflection points on when and possibly why students opted in or out of an Economics major.

What is causing these changes? I plan to see if instructor selection, class pedagogy, and student preferences and expectations in Intermediate Microeconomics (E321) caused some of these changes. I will use the grade penalty measurement for E321 to see if this had any effect. In addition I would like to include students who took Introductory Microeconomics (E201) and/or Introductory Macroeconomics (E202) from another institution to see if these courses had any effect on Economics Majors at Indiana University-Bloomington. Finally, I will compare success in E321 between students who took E201 and/or E202 at other institutions versus students who took E201 and/or E202 at Indiana University-Bloomington.

## Project Description

### Purpose:

Having studied how overall enrollments trends at Indiana University – Bloomington as well as Economics majors have changed in my previous study, I would like to continue my use of Tableau to ideally construct a Sankey type diagram to illustrate the inflection points for Economics Majors. I will track how students who took Introductory Microeconomics (E201) and Introductory Macroeconomics (E202) both at Indiana University-Bloomington and other institutions changed their major over time (semesters). I also will focus on enrollments in Intermediate Microeconomics (E321) as a point of emphasis affecting the changing enrollments of Economics majors. So what is causing students to change their major to or from Economics?

Specifically, I would like to determine if class size, instructor selection, class pedagogy or student preferences affect the enrollments for Economics majors. Also, I would like to see how many Economics majors transferred credit for E201 and E202 from another institution and whether it had any effect on the Economics major.

I would like to look deeper into instructor specific E321 classes to see if the choice of instructor or time had any effect on Economics majors. In other words, does there appear to be specific E321 instructors who have an effect on Economic majors?

Furthermore, I would like to see if the specific pedagogy of the class had any effect on Economic majors. In other words, does the type or number of exams, amount and type of low stakes assessments (homework, quizzes, etc.), and in class activities have any effect on Economics majors?

Finally, I would like to see to what extent does student preferences or expectations of E321 have any effect on Economics majors. How many students enroll at IU – Bloomington as an Economics major? How many students enrolled in E321 as an Economics major and changed their major the next semester or year to a related or different major? How many students were not Economics majors before enrolling in E321 and changed to the Economics major the next semester or year from a related or different major?

I plan to use Tableau's data to determine when the students declared their major along with where and when they took E321. Specifically, looking at the explicit E321 classes, their class size, instructor and pedagogy. I will use the instructor's syllabus to determine the pedagogy of the class as well as the classes GPA at the end of the semester.

### Significance:

It appears some student who take E321 have difficulty completing the course. If we can determine if E321 is a major point of inflection to changes in Economics majors, then we may be able to efficiently allocate additional resources towards E321 to improve student success. For example, if students end up switching out of Economics after E321, then additional resources such as an Undergraduate Instructor may be used to increase the success rate of E321 students.

### Anticipated Outcomes:

If inflection points are identified for Economics majors, then these points and possible factors may be supported to encourage more students to study economics. On the other hand, if there are negative factors in the E321 classes adversely affecting Economic majors, then there may be ways to resolve these issues and not lose potential Economics majors.

### Research Methodology:

With my better understanding with Tableau as well as the assistance from Mike Sauer and Dawit Galen of Bloomington Assessment & Research, I plan to use specific student data (GPA, major, completed classes, residency, and other descriptive statistics) as well as class time, instructor, class GPA, and the instructor syllabus to determine the class pedagogy. For student preferences and expectations I plan the reward/penalty method comparing a student's expected grade in E321 to her actual grade as well as a student's course selections. I will see if any class time, instructor, pedagogy and student preference and expectations have any effect on Economics majors. Also, I will see if these factors have changed over time. Thus, I may be able to see if there other factors not identified in this proposal (ex. luck) that have increased our majors.

### Means to Measure Success:

I plan to identify trends in the data identifying the causes of the changes in Economics majors. In other words, if one or more of these variables causes a change in Economics majors, then the data should hold up over time as well and not just limited to one semester or year.

### Previous Research Results:

Based on over 26,000 students who took Introductory Microeconomics (E201) and/or Introductory Macroeconomics (E202) at Indiana University Bloomington from the fall semester of 2006 to fall semester of 2014 (17 semesters), the number of students entering IU as Economics majors (all) increased from 70 (2.24% of all majors) in the fall of 2006 to 368 (12.73%) in the fall of 2011. The number of student graduating with an Economics degree (all) was the highest in the spring of 2014 (115). The distribution of Economics majors among three large sections (300+ students) taught by instructors and smaller sections (50-60 students) taught by graduate students (Associate Instructors: AIs) was fairly consistent, although one large classroom instructor was more prevalent than the others. Economics majors increased in spite of a negative grade penalty. Compared to all majors, approximately 40% of all graduate in Economics from another country and almost 80% are male. The majority of students switch to Economics within three semesters of completing E201 and/or E202 with the majority (64.3%) of new majors coming from the Business College. Finally, during the Fall 2006, 2007, 2008 fall semesters, the six-year graduation rate who began as full-time beginners and graduated with the Economics BA degree was

79.2% and exceeded the overall six-year graduation rate at IU Bloomington of 76.7% (UIRR report).

Due to the lack of data, I was unable to compare online courses of as well as transfer E201 and E202 equivalent courses to the E201 and E202 courses under the current study. I would like to receive additional Tableau training and include the additional online and transfer data. Also, I would include student data from Intermediate Microeconomics (E321) to see the effects of this course on Economics majors.

In conclusion, I would like to continue this study to better illustrate the inflection points of students who take E201, E202 and E321, hopefully with a Sankey-type diagram. I would also like to see how transfer credits of E201 and E202 affect Economics majors and course completion of E321.

Thank you for your consideration and attention in this matter.

Paul Graf

A handwritten signature in cursive script, appearing to read "Paul Graf".

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