

Info.Econ: Increasing Diversity Among Economics Majors¹

Andrea Chambers, Stacy Dickert-Conlin, Carey Elder, Steven J. Haider, and Scott Imberman

Online Appendix

January 2021

Chambers, Dickert-Conlin, Elder, Haider and Imberman (2021) reports the results of implementing an informational experiment intended to increase the diversity of students who take additional economics courses, as well as major and minor in economics. In this unpublished appendix, we provide additional details about the experiment, the data cleaning process, and the results of the experiment.

1. Experiment Details

Previous studies have found success with two different types of informational treatments, one focused on providing more information about the breadth of issues addressed by economics and one focused on the grades that are often earned in introductory courses. We designed treatments to examine both types of information issues.

1.1. Treatment 1: The Video/Infographic Treatment

This treatment entailed individuals receiving five emails or text messages (depending on whether students provided phone numbers in the introductory survey) with a link to a video

¹ This project was made possible through small grants from MSU's Office of Inclusion and Intercultural Initiative and Hub for Innovation in Learning and Technology and in-kind videography support from the MSU College of Social Sciences.

and an infographic that focused on a particular subject matter. The following table provides the title of each module, as well as links for the videos and the full-sized versions of the infographics; the infographics are also provided in Figure A1.1.

	Video link	Infographic link
Why Do Students Like Economics?	https://tinyurl.com/snqq7mz	https://tinyurl.com/slj9qa5
Why Do Economics Professors Like Economics?	https://tinyurl.com/v4vd4t6	https://tinyurl.com/ukhpwec
EconoMYTHs and REALITIES	https://tinyurl.com/svzanua	https://tinyurl.com/vsckf66
What Can You Do with An Economics Degree?	https://tinyurl.com/rgm2y5d	https://tinyurl.com/gp5mtcv
Experiences in Economics at MSU	https://tinyurl.com/vhgsdol	https://tinyurl.com/vhr88j8

Because students were randomized within sections, we developed a protocol to try to hide who was being treated. All students received emails and text messages that included random facts about the department, but the treatment group additionally received the links listed above. Below are the random facts that were provided with each of the modules:

1. Did you know? The Economics Department has a website that includes a lot of useful information for undergraduates, including departmental news and a link to undergraduate resources: <http://www.econ.msu.edu>
2. Did you know? The Economics Department runs Help Rooms for its core courses to provide assistance to those students who need it:
<https://socialscience.msu.edu/undergraduate/current-students/student-success/help-rooms.html>
3. Did you know? The Economics Department has a Facebook page to provide relevant information to students: <https://www.facebook.com/msueconomics>
4. Did you know? The Economics Department offers numerous online courses during the summer, which allows students to conveniently take additional courses regardless of

whether they stay in East Lansing:

http://www.econ.msu.edu/online_courses/index.php

5. Did you know? Undergraduate students can make appointments online to see an Economics Department advisor by clicking here: <https://msu.campus.eab.com>

Thus, the control group received emails and text messages (at the same time as the treatment group) with the above five random facts, but with no video or infographic link. Non-consenting students also received the control via email but had no further data about them recorded.

1.2. Treatment 2: The Letter Treatment

The second treatment was designed to provide students better information about how they performed relative to their peers, in addition to providing information about the value of majoring in economics. This letter came from the Department Chair about two weeks after classes ended. Control and non-consenting students received no letters.

Figure A1.2 provides a reproduction of this letter.

1.3. The Experiment Mechanics

The experiment was fielded during three semesters (Spring, Summer, and Fall) of the calendar year 2020. We asked all faculty who taught an introductory course in microeconomics or macroeconomics (numbered EC201 and EC202, respectively) to enroll their students in Info.Econ. We received permission to run the experiment in 21 of 23 sections, comprising 95.2% of undergrads who enrolled in these two courses.

We used a design where both treatments were independently assigned. In other words, we assigned half of the students randomly between the treatment group and control group for both the first experiment and the second experiment. This means that, in the end, about one

quarter of the students received both treatments, about quarter received just the first treatment, about one quarter received just the second treatment, and about one quarter received neither treatment. Such a design will allow us to directly compare the effectiveness of both experiments, as well as study whether there are any interactive effects.

The introductory survey additionally served to consent students and request phone numbers for texting. All later surveys were emailed to students, as well as texted for those students who provided a valid phone number.

Figure A1.3 provides the exact text of our introductory survey. The exit survey largely replicated the questions from the introductory survey. Q22 contains the key outcome variables for Panel A in the published paper.

1.4. Administrative Data

We supplemented the survey data with administrative data obtained from MSU. The administrative data included gender, U.S. citizenship, year at MSU, and course grade, as well as student MSU email address that was used to merge the data with our survey data. In December 2020, we additionally obtained class rosters for all economics courses for Fall 2020 and Spring 2021 to examine future course taking behavior.

2. Data Processing Notes

We created two analysis samples, one that includes all participants during the 2020 (Spring, Summer, and Fall semesters) calendar year, and a Restricted Analysis Sample that just includes those individuals for Spring and Summer. The Restricted Analysis Sample is the group for which we can meaningfully examine whether the Letter Treatment affected course taking behavior.

2.1. Full Sample

Over the three semesters 6,665 students enrolled in participating classes and 3,508 provided consent to participate in the study. Eight provided consent late, and thus were dropped from the study. Further, we dropped 30 students who accessed a treatment they were not initially assigned through sharing of text and email links. Finally, we dropped all students that were dually enrolled in EC201 and EC202.

Among the students who consented to participate through responding to the introductory survey, not all students followed through in responding to the surveys that delivered the treatment/control material and the exit survey. The following are the participation rates in each of these surveys.²

- Module 1: 78.5%
- Module 2: 79.5%
- Module 3: 79.3%
- Module 4: 78.0%
- Module 5: 78.9 %
- Exit: 60.0%

Because the exit survey contained our key outcome variables (the self-reported chances of taking another economics course or majoring in economics), only students who responded to the exit survey could be included in our analysis. Our suspicion is that exit survey participation

² Recall that the treatment and control groups were sent these surveys through email and text (if a phone number was provided); all surveys had the “Did you know?” information, and the treatment surveys additionally had the video and infographic link. To obtain course credit inducement, the students had to respond to these surveys with their email address.

rate was lower because of the pass/fail option that MSU provided to all students due to the COVID-19 pandemic.

Once we restricted our data to those that responded to the exit survey (and were not missing other key data elements), our Full Sample that was used for primary analysis included 2,209 individuals. Basic sample descriptive and balance tests for the Full Sample appear as Table 1 in the published paper.

2.1. Restricted Sample

To examine the effect of the letter treatment, we create a Restricted Sample, which only includes those in the Full Sample who enrolled during the Spring and Summer semesters. Individuals in the Fall semester had not received the letter treatment at the time we pulled the data, so we could not examine its effects on these individuals.

The Restricted Analysis Sample contains 1,361 individuals. Basic sample descriptives and balance tests for the Restricted Analysis Sample, akin to Table 1 in the published paper, are contained in Table A2.1.

3. Further Results

Table A3.1 shows alternative results for Panel A of Table 2. Panel A replicates Panel A of Table 2. Panel B excludes control variables, other than the direct effects and interaction. Panel B includes the same control variables as Panel A, but instead restricts the sample to individuals who are in their first or second year. All major conclusions follow from each set of results.

Table A3.2 examines the effects of treatment 1 on three attitudinal questions—see questions Q7-Q9 of the introductory survey for the exact wording of the questions. Panel A uses information from the exit survey only, coding “strongly agree” and “agree” as a 1, with the

other responses as a 0. Panel B instead looks at the change in Likert scale between the exit survey and the introductory survey.

4. Obtaining Access to the Data

The data used in this paper include MSU student record data. To gain access to these data, we necessarily created a data protection protocol that restricts us from directly sharing these data with other researchers. Thus, no publicly accessible data are provided.

With that said, researchers may obtain access to our data, but they must go through a multi-step process that is similar to the process that we went through. To do so, researchers should follow these steps.

1. The researcher will need to obtain access to MSU administrative data on students. Such access can be obtained by following the directions here:
<https://esp.msu.edu/datarequest.asp>.
2. When requesting the administrative data, the researcher should specify that (1) they want to merge the administrative data with Info.Econ survey data, (2) they will abide by the access protocols specified in our consent statement (see Figure A1.3), and (3) they sign and abide by the data protection protocol (Figure A1.4).
3. For researchers who follow the two previous steps, we will provide access to our survey data that is stripped of personally identifying information and appropriately merged with the administrative data.

Consistent with AEA guidelines, we are able to provide such access for five years (through June 2026). Individuals interested in such access should contact Scott Imberman (imberman@msu.edu) or Steven Haider (haider@msu.edu).

Table A2.1: Balance Check for the Background Characteristics in the Restricted Sample

	Overall Mean	Treatment 1 Gap	Treatment 2 Gap	Both Treats Gap
Female	0.50	0.03 (0.04)	-0.01 (0.04)	0.03 (0.04)
Underrepresented Groups	0.08	-0.00 (0.02)	0.00 (0.02)	-0.01 (0.02)
International	0.08	-0.02 (0.02)	0.02 (0.02)	0.00 (0.02)
First Generation	0.18	0.00 (0.03)	0.02 (0.03)	-0.01 (0.03)
Prior GPA	3.42	0.07 (0.04)*	0.04 (0.04)	-0.02 (0.04)
Year at MSU	1.64	0.01 (0.07)	-0.04 (0.07)	0.12 (0.07)*
Major in Economics	0.10	-0.00 (0.02)	0.00 (0.02)	-0.01 (0.02)
Major in Business	0.58	0.01 (0.04)	0.00 (0.04)	-0.02 (0.04)
Major in Other CSS Majors	0.09	-0.00 (0.02)	0.02 (0.02)	0.00 (0.02)
Major in Other Non-CSS Majors	0.51	-0.03 (0.04)	-0.05 (0.04)	-0.03 (0.04)
Expected Grade (4.0 scale)	3.55	-0.00 (0.03)	0.01 (0.03)	-0.03 (0.03)

Notes. This table provides the balance test for our Restricted Analysis Sample (N=1,361). Each row provides the overall mean for the given background characteristic, as well presents the results of a regression of the background characteristic on the indicator variables for receiving treatment 1, treatment 2, or both treatments. See Table 1 for the analogous results for the Full Analysis Sample.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table A3.1: Sensitivity Analysis for Table 2, Panel A

	Mean	Primary Effect	Female Gap	URG Gap	First Gen Gap
<u>Panel A (results from paper)</u>					
Chance of taking another econ course	55.5	-1.50 (1.43)	0.82 (2.88)	6.44 (5.32)	3.04 (3.83)
Chance of majoring in economics	22.3	0.01 (1.06)	2.64 (2.07)	2.45 (3.83)	1.88 (2.77)
Actual grade	3.25	-0.02 (0.03)	0.02 (0.06)	0.14 (0.11)	0.09 (0.08)
Δ chance of taking another econ course	-3.5	-1.21 (1.20)	1.69 (2.40)	1.79 (4.45)	-0.42 (3.21)
Δ chance of majoring in economics	-1.7	-0.22 (1.03)	2.96 (2.06)	4.23 (3.82)	6.68 (2.76)
<u>Panel B (no controls)</u>					
Chance of taking another econ course		-3.16 (1.57)	2.54 (3.09)	8.55 (5.83)	-0.06 (4.20)
Chance of majoring in economics		-1.13 (1.19)	2.24 (2.32)	4.59 (4.41)	0.45 (3.19)
Actual grade		-0.03 (0.03)	0.03 (0.07)	0.07 (0.12)	0.08 (0.09)
Δ chance of taking another econ course		-1.43 (1.19)	2.03 (2.39)	2.24 (4.43)	-0.81 (3.21)
Δ chance of majoring in economics		0.11 (1.03)	3.10 (2.06)	4.16 (3.82)	6.79 (2.77)
<u>Panel C (controls, 1st & 2nd years)</u>					
Chance of taking another econ course		-1.42 (1.55)	1.95 (3.11)	8.26 (6.01)	5.08 (4.25)
Chance of majoring in economics		-0.61 (1.14)	2.59 (2.28)	2.02 (4.41)	2.28 (3.12)
Actual grade		-0.02 (0.03)	0.31 (0.07)	0.14 (0.13)	0.07 (0.09)
Δ chance of taking another econ course		-0.86 (1.31)	1.35 (2.62)	2.88 (5.09)	0.49 (3.60)
Δ chance of majoring in economics		-1.67 (1.17)	2.99 (2.30)	4.56 (4.46)	9.31 (3.16)

Notes. This table provides alternative results for Table 2, Panel A. Panel B uses no other controls (just the primary effects and interactions). Panel C uses the same controls as Panel A, but only includes 1st and 2nd year students.

Table A3.2: Attitudinal Question Results for Full Sample

	Mean	Primary Effect	Female Gap	URG Gap	First Gen Gap
<u>Panel A (1=strongly agree, agree)</u>					
Agree “friendly and welcoming”	0.51	0.02 (0.02)	0.07* (0.04)	0.05 (0.08)	0.02 (0.06)
Agree “diverse students”	0.61	0.02 (0.02)	0.05 (0.04)	0.12 (0.08)	0.08 (0.06)
Agree “diverse faculty”	0.50	0.03 (0.02)	0.10** (0.04)	0.01 (0.08)	0.05 (0.06)
<u>Panel B (Change in Likert scale)</u>					
Δ “friendly and welcoming”	-0.01	0.03 (0.04)	0.16* (0.08)	0.24 (0.15)	0.12 (0.11)
Δ “diverse students”	-0.02	0.06 (0.04)	0.05 (0.08)	0.09 (0.14)	0.19* (0.10)
Δ “diverse students”	0.00	0.06 (0.04)	0.14* (0.08)	0.03 (0.14)	0.21** (0.10)

Notes. See questions Q7-Q9 of the introductory survey for the exact question wording.

Figure A1.1: The Infographics

WHY DO STUDENTS LIKE ECONOMICS?

ECONOMICS PROVIDES TOOLS FOR PROBLEM SOLVING

"Having a framework to think about a problem is really an invaluable skill...my training in economics gave me the tools to conquer complicated problems."

Katerina, '15, Boston University Law Student

ECONOMICS APPLIES TO THE REAL WORLD

"Reading the news and becoming aware about the world really got me trying to investigate ...what causes poverty, and thinking about people that really made big changes in the world...through Economics."

Gregory, Current Major

ECONOMICS GOES WITH EVERYTHING

"I think economics is really flexible. It pairs well with anything you really want to do and it's just a good foundation for solid critical thinking."

Jacob, '19, Supply Chain Analyst, Medline Industries

DID YOU KNOW?

EC 499 is a fan-favorite, capstone course where you can put everything together to answer a real-world research question about topics including sports, the environment, or developing countries.

STUDENTS OFTEN DOUBLE MAJOR IN:

- Finance
- Math
- International Relations
- Philosophy
- Supply Chain
- Actuarial Science
- Statistics
- Accounting
- Computer Science
- Foreign Languages

MICHIGAN STATE UNIVERSITY PART 1 OF THE INFOECON INITIATIVE || CONTACT: INFOECON@MSU.EDU

WHO ARE OUR ECONOMICS FACULTY?

DID YOU KNOW?

- News outlets such as the WSJ, NYT, CNN, Fox, WaPo, MSNBC, & L.S.J quote our faculty.
- Charles Ballard directs the Michigan State of the State Survey that gathers data for scientific and policy research.

I like economics because it provides some tools to think about a lot of decisions we make, including personal ones like where to live, what to do for a living, or who to marry. But these decisions also include broader ones...that governments make. Like what to do with the healthcare system, environmental regulations, and the education system. So these tools are very flexible in that sense, but also they are very rigorous and logical and organized.

-Ajin Lee, Assistant Professor

AWARD-WINNING FACULTY

- MSU Teacher-Scholar Award: Charles Ballard and Steven Hilder
- CSS Alumni Association Outstanding Teacher: Charles Ballard and Todd Elder
- Spirit of Ability Award: Stacy Dickert-Carlin
- University Distinguished Faculty: Jinyi Qi, Carl Davidson, Peter Schmitz and Jeffrey Waddock

FACULTY RESEARCH

- *Allocating Scarce Organs: How a Change in Supply Affects Transplant Waiting Lists* (Stacy Dickert-Carlin & Todd Elder)
- *An Economic View of Food Deserts in the United States* (Steven Hilder)
- *Designing Policies to Make Cars Greener* (Stacy Dickert-Carlin)
- *Is Gifted Education a Bright Idea?* (Scott Imberman)
- *The Mortality Consequences of Distinctively Black Names* (Lisa Clark)
- *The Effect of an Agent's Experience on NFL Contract Structure* (Mike Conkin & Joe Grant (Alumnus '13))

MICHIGAN STATE UNIVERSITY PART 2 OF THE INFOECON INITIATIVE || CONTACT: INFOECON@MSU.EDU

ECONO-MYTHS AND REALITIES

MYTH

ECONOMICS IS ONLY MICRO AND MACRO

REALITY

MSU ECON OFFERS CLASSES IN:

- Poverty
- Sports
- Health
- International Finance
- Development
- Econometrics
- Education
- Behavioral Science
- Law
- Game Theory
- Labor
- Monetary Policy

MYTH

ECONOMICS IS BORING

REALITY

"It's a whole big picture...it gives you a sense of what is going on in the world."

David, '09, Chief Global Strategist, JP Morgan

MYTH

ECONOMICS IS A BUSINESS DEGREE

REALITY

"Econ is still a social science because it's all about people and the choices they make."

Dominic, Current Major

MYTH

ECONOMICS IS THE STUDY OF MONEY & STOCKS

REALITY

"Economics is the study of allocating scarce resources among a population with lots of different wants and needs."

Kim, '17, Poverty Researcher, MIT

MYTH

ECONOMICS MAJORS HAVE LIMITED JOB OPTIONS

REALITY

MSU ECON ALUMNI WORK IN DIVERSE FIELDS:

- Public Policy
- Management Consulting
- Data Analytics
- Research
- Supply Chain
- Marketing
- Law
- Financial Analysis
- Journalism
- Health Care

MICHIGAN STATE UNIVERSITY PART 3 OF THE INFOECON INITIATIVE || CONTACT: INFOECON@MSU.EDU

WHAT CAN YOU DO WITH AN ECON DEGREE?

Katerina Powers, '15, started her career as an Associate Economist at the Federal Reserve Bank of Chicago where she realized what she found most interesting about her job was the interaction of law and economics. After leaving the Fed for Boston University Law School, she spent a summer as a legal intern at the Federal Trade Commission. "There's not a day that goes by where those words 'monopoly,' 'complements'... 'deadweight loss' are not brought up in our litigation strategies." Katerina's next position will be Assistant District Attorney, representing the People of the State of New York.

DID YOU KNOW? THE MEDIAN SALARY FOR ECON MAJORS IS \$76,000/YEAR

"The Economic Value of College Majors" by Carnevale, et al., 2015

JOB TITLES

- Chief Executive Officer
- Management Consultant
- Artial Marketing Manager
- Legislative Director
- Vice President of Investments
- Data Management Analyst
- Chief Global Strategist
- Chief Financial Officer
- Banking Editor
- Attorney
- Supply Chain Analyst
- Portfolio Manager
- Technical Threat Investigator

EMPLOYERS

- JP Morgan Asset Management
- Michigan Department of Environment, Great Lakes and Energy
- Cleveland Clinic
- SoundCloud
- National Archives
- Federal Reserve Bank of Chicago
- Lockheed Martin
- S&P Global Market Intelligence
- Consumer Financial Protection Bureau
- Qualtrics
- McKinsey and Company
- Deloitte
- Facebook

ADVANCED DEGREES

- Master's in Public Policy
- Master's in Applied Economics
- PhD in Economics
- MBA - Master's of Business Administration
- Master's in Public Health
- MD - Doctor of Medicine
- JD - Doctor of Law
- Master's in Health Administration
- Master's in Business Analytics
- Master's in Human Resources & Labor Relations
- Master's in Marketing Research
- PhD in Political Economy

MICHIGAN STATE UNIVERSITY PART 4 OF THE INFOECON INITIATIVE || CONTACT: INFOECON@MSU.EDU

EARNING AN ECONOMICS DEGREE

ACADEMICS

BACHELOR OF ARTS (BA) BACHELOR OF SCIENCE (BS) ADDITIONAL MAJOR MINOR IN ECONOMICS

Foundational classes in micro, macro, and econometrics set the stage for electives in areas like Health and Welfare, International Trade and Finance, Monetary Theory, Government Expenditures and Taxation, Law and Economics, and Game Theory.

EXTRACURRICULAR

ECONOMICS SCHOLARS

This program provides opportunities for educational and career enhancement for selected high-performing economics majors, including trips to Chicago and Detroit, faculty mentoring, and small group meetings with alumni.

[click here for website](#)

MSU STUDENT ECONOMICS ASSOCIATION

MSEEA sponsors activities to promote professional development, networking, faculty interaction, and social events for students interested in economics.

[click here for website](#)

FED CHALLENGE

Students study the U.S. Economy through the lens of the U.S. Central Bank. Research, analyze, and make suggestions regarding monetary policy in preparation for a collegiate competition at the Chicago Fed.

[click here for website](#)

WOMEN AND MINORITIES IN ECONOMICS

WAMIE seeks to promote diversity in economics by challenging misconceptions about who economists are. Students learn about the wide variety of opportunities and issues in the field that might be especially interesting to women and minorities.

[click here for website](#)

FOR MORE INFO

Contact infoecon@msu.edu, OR Schedule an appointment with an advisor here: <https://msu.comput.edu.com>

MICHIGAN STATE UNIVERSITY PART 5 OF THE INFOECON INITIATIVE || CONTACT: INFOECON@MSU.EDU

Figure A1.2: The Letter Treatment

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF ECONOMICS - 110 MARSHALL-ADAMS HALL - 486 W. CIRCLE DRIVE - EAST LANSING, MI 48824-1038

Professor Timothy J. Vogelsang

Department Chair

Frederick S. Addy Distinguished Chair of Economics

Phone: 517.355.5238

Fax: 517.432.1068

E-Mail: tjv@msu.edu

May 6, 2020

Dear EC201/EC202 Student:

Thank you for taking an introductory course in economics, particularly during such a trying semester. I very much hope you and your loved ones are healthy and safe.

I hope you will consider taking additional economics courses and perhaps even choosing economics as a major or minor. To help you consider whether economics might be right for you, I would like to point out the following:

- Grades in introductory courses for economics tend to be lower than those in introductory courses for many other majors, so a 3.5 often puts you in the top 25% and a 3.0 often puts you in the top half for economics.

Grade Frequency for EC201 and EC202 (%)		
	EC201	EC202
4.0	15.9	15.3
3.5	18.5	17.4
3.0	21.9	22.0
2.5	15.9	16.3
2.0	10.7	11.7
Less than 2.0	17.1	17.3

Note: These percentages are based on all EC201 and EC202 courses for 2018/19.

- The introductory courses set the stage for topical courses in areas such as health policy, economic development, poverty, labor markets, international trade and finance, sports, environmental policy, and law and economics.
- Outside of the classroom, students can get involved in the Economic Scholars Program, the Fed Challenge team, the Undergraduate Economics Society, and the Women and Minorities in Economics group.
- Economics majors pursue a variety of career paths, such as consulting and data science, and educational paths, such as advanced degrees in economics, law, and public policy. According to a recent study, the median earnings for economics majors is \$76,000/year (see "The Economic Value of College Majors" by Carnevale, et al. 2015).

If you are interested in choosing economics as a major, please schedule an appointment with one of our academic advisers: <https://msu.campus.eab.com>.

Once again, thank you for taking an introductory economics course.

Sincerely,



Timothy J. Vogelsang
Professor and Chair, Department of Economics

MSU is an Affirmative Action/Equal Opportunity Employer

Figure A1.3: The Info.Econ Consent & Introductory Survey

NOTE: When appropriate, we have added the potential answers (denoted with ANSWERS:) and provided a note (denoted with NOTE:) following a question. In all cases, the added text is shown in italics to clearly delineate it from the actual survey text.

Start of Block: Default Question Block

Q1 We would like your permission to use your responses to several very short surveys and some of your university administrative data for anonymous research purposes. The research is being conducted by the Info.Econ research team (Professors Stacy Dickert-Conlin, Steven Haider, and Scott Imberman) and is approved by MSU's Department of Economics. The purpose of the research is to learn more about students in our introductory courses and to evaluate strategies for communicating with undergraduates, with the goals of improving the ability of the Department of Economics to communicate with undergraduates and publishing the research findings. This study has been determined to be exempt from review by the MSU Human Research Protection Program. Upon agreeing to participate, you will be asked to complete an Introductory Survey about you and your background. You will also be randomly assigned to receive text and email messages from Info.Econ. These messages provide students information about MSU's Department of Economics and the field of economics more generally. Over the entire semester, your participation should take less than 20 minutes. Your participation is completely voluntary. Michigan State University and the personnel involved in this project acknowledge and appreciate the trust that you place in us to protect your personal information. We are very committed to protecting your privacy. All information collected will be held in the strictest confidence, and only authorized project personnel will have access to the data for the research project outlined above. If you agree to participate, information from your responses to the surveys and your student information on ESAF (Electronic Student Academic Folder) may be used for up to six years. The information that will be used is transcript information (the courses in which you enroll and the grade you receive) and background information (e.g., email address, class level, dates of enrollment, gender, and home country). These data are protected under the Federal Education Rights Privacy Act (FERPA). The purpose of disclosing the data is only for research related to the research project outlined above. The identifying information used to link these data to your survey (your email address) will only be disclosed to the researcher who performs the linkages, and your email address will not be included in any analyses undertaken. The rest of the data will only be made available to researchers and research assistants who sign a confidentiality statement. These individuals will not attempt to identify you or contact you, will not use or disclose any of your information for any other purpose, and you will not be individually identified in the research. You may withdraw your participation at any time by contacting info.econ@msu.edu. You may only participate in this project if you are at least 18 years old. To receive credit for this exercise, you only need to provide your NetID when prompted; you do not need to consent to participate in the research project itself. You will still be asked to perform a similar set of tasks to receive course credit if you do not consent to participate, but the information you provide will not be used in the research project. Your professor will not be informed about whether you choose to participate in the research or about how you answer any particular question. You may contact info.econ@msu.edu if you have

further questions. For information regarding your rights as a participant, you may also contact the Michigan State University's Human Research Protection Program at 517-355-2180 or irb@ora.msu.edu. If you agree, a copy of this consent will be emailed to you.

Q2 All students, whether they choose to participate in the research component or not, are eligible to receive points towards their course grade. To receive these points, please provide the following information:

Q3 MSU NetID (i.e., your MSU email leaving off @msu.edu):

Q4

All students will receive survey links through email. If you would also like to receive the surveys through text message, please provide your mobile phone number below.

Mobile phone number:
[XXX-XXX-XXXX]

Q5 To participate in the research component of the survey, we must obtain your consent. Please indicate if you are over 18 and agree to participate in the research component:

- I am over the age of 18 and wish to participate. (1)
- I am either under the age of 18 **or** do not wish to participate. (2)

*Skip To: End of Block If Q5 = I am either under the age of 18 **or** do not wish to participate.*

Q6 Please type your name and today's date to provide written consent to participate in this research project and verification that you are 18 years of age or older.

Q7 Name

Q8 Today's Date

Month (1)

▼ January (1) ... (150)

Day (2)

▼ January (1) ... (150)

Year (3)

▼ January (1) ... (150)

Q9 The next set of questions ask about you and your reasons for taking an introductory economics course.

Q10 What year in college are you based on credit hours?

▼ 1st (1) ... 5th or beyond (5)

ANSWERS:

1-1st

2-2nd

3-3rd

4-4th

5-5th or beyond

Q11 How many years have you been a student at MSU?

▼ 1 year (1) ... 5 or more years (5)

ANSWERS:

- 1-1 year
 - 2-2 years
 - 3-3 years
 - 4-4 years
 - 5-5 or more years
-

Q12 Are you a first-generation college student (i.e., none of your parents and/or guardians attended college)?

▼ Yes (1) ... No (2)

Q13 What is your current GPA?



Q14 Think about the grade you want to receive in this course. Below there are categories representing the different grades you may receive in the class. In each grade category you are going to type the percentage you think are the chances you will earn each grade. The more likely you think it is that you will receive a particular grade, the higher the percent you should state in that category. For example, if you put 30 for the 4.0, 50 for 3.5, and 20 for 3.0, it means you are 30% certain you will receive a grade of 4.0, 50% certain you will receive a grade of 3.5, and 20% certain you will receive a grade of 3.0.

[Note: Your total should add up to 100%.]

- 4.0 : _____ (1)
- 3.5 : _____ (2)
- 3.0 : _____ (3)
- 2.5 : _____ (4)
- 2.0 : _____ (5)
- Below 2.0 : _____ (6)
- Total : _____

NOTE: This question forced the total to sum to 100 before the s

Q15 How certain are you about the major in which you will earn your MSU degree?
 Completely Uncertain Completely Certain



Q16 What major (or primary major) is most likely?

▼ A major in Broad College of Business (4) ... A major in Lyman Briggs College (16)

ANSWERS:

<p>1-A major in Broad College of Business 2-A major in College of Agriculture and Natural Resources 3-A major in College of Arts and Letters 4-A major in College of Communication Arts and Sciences 5-A major in College of Education 6-A major in College of Engineering 7-A major in College of Music</p>	<p>7-A major in College of Music 8-A major in College of Natural Science 9-A major in College of Nursing 10-A major in College of Social Science 11-A major in College of Veterinary Medicine 12-A major in James Madison College 13-A major in Lyman Briggs College</p>
--	--

Display This Question:
 If Q16 = A major in College of Social Science

Q17 Select the major:

▼ Anthropology (1) ... World Politics (20)

ANSWERS:

<p>1-Anthropology 2-Child Development 3- Criminal Justice 4-Early Care and Education 5-Economics 6-Environmental Geography 7-Geographic Information Science 8-Global and International Studies</p>	<p>11-Human Development and Family Studies 12-Human Geography 13-Interdisciplinary Studies 14-Political Science 15-Psychology 16-Public Policy 17-Social Work 18-Sociology</p>
---	---

<i>9-History</i> <i>10-Human Capital and Society</i>	<i>19-Urban and Regional Planning</i> <i>20-World Politics</i>
---	---

Q18 Is there another major you are considering?

▼ Yes (4) ... No (5)

Display This Question:

If Q18 = Yes

Q19 Please select:

▼ A major in Broad College of Business (4) ... A major in Lyman Briggs College (16)

ANSWERS:

<i>1-A major in Broad College of Business</i> <i>2-A major in College of Agriculture and Natural Resources</i> <i>3-A major in College of Arts and Letters</i> <i>4-A major in College of Communication Arts and Sciences</i> <i>5-A major in College of Education</i> <i>6-A major in College of Engineering</i> <i>7-A major in College of Music</i>	<i>7-A major in College of Music</i> <i>8-A major in College of Natural Science</i> <i>9-A major in College of Nursing</i> <i>10-A major in College of Social Science</i> <i>11-A major in College of Veterinary Medicine</i> <i>12-A major in James Madison College</i> <i>13-A major in Lyman Briggs College</i>
--	--

Display This Question:

If Q19 = A major in College of Social Science

Q20 Select the major:

▼ Anthropology (1) ... World Politics (20)

ANSWERS:

<i>1-Anthropology</i> <i>2-Child Development</i> <i>3- Criminal Justice</i> <i>4-Early Care and Education</i>	<i>11-Human Development and Family Studies</i> <i>12-Human Geography</i> <i>13-Interdisciplinary Studies</i> <i>14-Political Science</i>
--	---

<i>5-Economics</i>	<i>15-Psychology</i>
<i>6-Environmental Geography</i>	<i>16-Public Policy</i>
<i>7-Geographic Information Science</i>	<i>17-Social Work</i>
<i>8-Global and International Studies</i>	<i>18-Sociology</i>
<i>9-History</i>	<i>19-Urban and Regional Planning</i>
<i>10-Human Capital and Society</i>	<i>20-World Politics</i>

Q21 Among the following occupations, which best matches your career goals?




▼ Agriculture, Fishing, Forestry (1) ... I do not know what occupation I want to work in. (24)

ANSWERS:

<i>1-Agriculture, Fishing, Forestry</i>	<i>14-Mathematical Sciences: Actuary, Mathematician, Statistician, Data Scientist</i>
<i>2-Architecture, Surveying, Cartography</i>	<i>15-Military</i>
<i>3-Arts, Entertainment, Media</i>	<i>16-Office & Administrative Support</i>
<i>4-Business</i>	<i>17-Other Education Services</i>
<i>5-Community and Social Services</i>	<i>18-Other Manual Occupations (e.g., Construction, Installation, Production, Transportation, etc.)</i>
<i>6-Computing and Information Technology</i>	<i>19-Other Social Scientist</i>
<i>7-Economist</i>	<i>20-Sales</i>
<i>8-Engineering</i>	<i>21-Services: Protective, Food, Building, or Personal Care</i>
<i>9-Finance</i>	<i>22-Teacher</i>
<i>10-Health Practitioner or Support</i>	<i>23-Other Not Listed</i>
<i>11-Law</i>	<i>24-I do not know what occupation I want to work in.</i>
<i>12-Life or Physical Scientist</i>	
<i>13-Management</i>	

Q22 We are also interested in the chances you will take additional economics courses. What are the chances you will (i.e., how likely are you):

Extremely Unlikely	Unsure	Extremely Likely
0	50	100

Take another econ course? ()	
Major (including an additional major) in econ? ()	
Minor in econ? ()	

Q23 Please indicate how much you agree with each of the following statements:

	Strongly Agree (1)	Agree (2)	Neither Agree nor Disagree (3)	Disagree (4)	Strongly Disagree (5)
I look forward to studying economics. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economics courses are exciting. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economics courses require too much math. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economics courses are too theoretical. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economics courses are easy. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economics is a major that is very similar to a business major. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economics is a major that is friendly and welcoming. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Economics is a major with diverse students. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Economics is a major with diverse faculty. (10)

Economics is a useful tool in many different careers. (7)

Economics is a useful tool for public policy. (6)

NOTE: Questions 24-28 comprised a module on COVID-19 that was not used for the current paper.

End of Block: Default Question Block

Start of Block: Block 1

Display This Question:

If Q5 = I am either under the age of 18 **or** do not wish to participate.

Q29 Thank you for your consideration. None of your responses will be used in the research portion of this project, and your professor will not be informed about your decision. To receive course credit, you must still provide your NetID in the short survey links you will be sent.

I understand and will submit my NetID in the short surveys I am sent if I want to receive course credit. (4)

End of Block: Block 1

Figure A1.4: Info.Econ: Increasing Diversity among Economics Majors

Data Protection Protocol

Andrea Chambers, Stacy Dickert-Conlin, Steven J. Haider, and Scott Imberman
Michigan State University

Throughout this Data Protection Protocol, the following procedures will be followed:

- Only project personnel will have access to the data. All project personnel who are given access to data will sign a confidentiality agreement (see the last page).
- *Identified Administrative Data* (any administrative data that contains student emails or student phone numbers or student IDs) will be stored encrypted. It will be unencrypted only when it is being processed to produce a “De-identified Analysis File.” Only project personnel who are MSU faculty members will have access to the Identified Data and its passwords. Identified data will only be handled/analyzed in the offices of faculty. Faculty offices all have locked doors and computers that are password protected.
- *Identified Survey Data* (any survey data that contains student emails) will be made available to all project personnel who have signed a confidentiality agreement. Identified survey data will only be handled/analyzed in secure research areas, where secure research areas must include the following: (1) a password protected computer account, (2) a computer that is primarily used by the project personnel or a secure computer facility (such as the Department of Economics Computer Lab), and (3) the computer is in a protected space (such as a faculty office or a student office or restricted access computer lab such as the Department of Economics Computer Lab).
- *De-Identified Analysis Files* (data that is stripped of identifying student information including student emails, PID, and phone numbers) will be made available to all project personnel who have signed a confidentiality agreement. De-identified data will only be handled/analyzed (1) a password protected computers that are primarily used by project personal or (2) a computer that is in a restricted access facility (such as the Department of Economics Secure Data Lab).
- All administrative data will be destroyed five years after the project is completed.
- All violations of the data protection protocol will be documented.

The following lays out the flow of how data are collected and processed:

- Students will be directed to a Qualtrics survey where the student will be consented, student email and phone number will be collected, and the Introductory Survey will be administered. Qualtrics will also be used to distribute the text surveys and the exit survey. These data will be treated as Identified Data.
- The project is requesting administrative student outcome data available through the Economics Department, which will be treated as Identified Data. This information includes student name, email address, PID, course information, GPA, courses taken, courses dropped, and course grades, year at MSU, gender, and home country. These

data will be merged to the survey data using the student's MSU email address to the survey data.

- We will produce from these data the De-Identified Analysis File. This file will contain all of the survey data and administrative data, but the identifying information (student name, email address, and PID) will be stripped off. This De-Identified Analysis File will be made available to all project personnel who have signed a confidentiality agreement.
- The project will retain on file a list of all authorized users for the project. Each authorized user will clearly state the data directories an individual has access to and the procedures for handling the files. Encrypted passwords will be changed whenever a project team member has their access revoked.

Please initial each section, and then sign the bottom.

1. I have read the Data Protection Protocol and understand its content. _____
2. Below is the Identified Data Directory I have been provided access to. All data sets that contained identifiable data must be stored in this directory. _____
3. Below is the De-identified Data Directory I have been provided access to. All data sets that are derived from these data will be analyzed according to the protocols listed in the Data Protection Protocol. _____
4. Below are the protected spaces I will analyze the data in. _____
5. I will notify Steven Haider (haider@msu.edu) or another project PI if an event led to a potential data breach within 48 hours of learning of the event. _____

Name: _____ Signature: _____ Date: _____

(At the end of the project): I have deleted all data files from my computer.

Name: _____ Signature: _____ Date: _____