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Geographic Differences in the Earnings of Economics Majors

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Abstract

Economics has been shown to be a relatively high earning college major, but geographic differences in earnings have been largely overlooked. This paper uses the American Community Survey to examine geographic differences in both absolute earnings and relative earnings for economic majors. We find that there are substantial geographic differences in both the absolute and relative earnings of economics majors even controlling for individual characteristics such as age and advanced degrees. We argue that mean earnings in specific labor markets are a better measure of the benefits of majoring in economics than simply looking at national averages.

Keywords: economics major; earnings differentials; college education; local labor markets

JEL Codes: I23, J24, J31, R23

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INTRODUCTION

Economists argue that students interested in pursuing a college education weigh the costs and benefits of doing so. The various costs and benefits are well documented. The costs typically include tuition and fees, room and board, expenditures on textbooks and supplies, and the opportunity cost of the student's time including the foregone earnings that a student could have earned had they gone to work instead of college. There are a number of non-pecuniary benefits from gaining a college education, but for most students the primary benefit is the higher future earnings that they expect to receive after completing a degree.[1] However, the extent to which a college education increases future earnings depends very heavily on the field of study in which a student decides to major (Rumberger and Thomas 1993; Montmarquette, Cannings, and Mahseredjian 2002; Freeman and Hirsch 2008). Some majors offer very high earnings while others offer much lower earnings.

Previous researchers have documented that economics is a relatively high earning college major in the United States (Black, Sanders, and Taylor 2003; Allgood et al. 2011; Altonji, Blom and Meghir 2012). This is true both for recent graduates and for workers several years after graduation. Chevalier (2011) also reports economics to be a relatively high earning major in the United Kingdom. For Canada, though, Finnie and Frennette (2003) find that earnings for economics majors are similar to the average earnings of other majors. Allgood et al. (2011, 2012) also report differences between economics and non-economics majors for a variety of other outcomes including self-employment, graduate degrees, home equity, savings, investment decisions, retirement plans, and civic behaviors.

[1] In addition to higher future earnings, other benefits of a college education include better future health (Eide and Showalter 2011), opportunities to meet higher ability potential spouses (Becker 1973; Lefgren and McIntyre 2006), and the consumption value of education itself (Alstadsæter 2011).

Studies interested in earnings differences by college major typically use national data and do not look at earnings differences for specific geographic areas. This is largely because the typical datasets that have been used do not provide detailed information on earnings by college major and geographic area. Furthermore, the surveys used typically have relatively small samples, so that even if detailed information on college major and geographic area are available, the number of economics majors in a given geographic area in the sample is too small to produce precise estimates of geographic differences. However, there are important differences in the earnings of economics majors across geographic areas that have been largely overlooked.[2] Many students intend to work in a particular state or metropolitan area after college and national average salaries by college major may not be very informative for them. Geographically constrained students considering majoring in economics are likely more interested in the earnings of economics majors in the labor market(s) in which they intend to work. Furthermore, some recent economics graduates do have flexibility to choose a particular state or metropolitan area in which to start their careers but have limited information on the average salaries they can expect to earn in different locations with a degree in economics.

In 2009 the American Community Survey (ACS) introduced a new question that asks college graduates to report the undergraduate field in which they majored. The ACS is a large survey conducted by the U.S. Census Bureau and includes geographic identifiers for state and metropolitan area. The ACS, therefore, now makes it possible to examine geographic differences in earnings for specific college majors. Altonji et al. (2012) use the ACS to examine earnings differences by college major but they do not examine geographic differences.

[2] There is a separate literature that investigates geographic differences in earnings more generally (e.g. DuMond, Hirsch, and Macpherson 1999; Glaeser and Maré 2001; Yankow 2006; Winters 2009), but that literature has not examined geographic differences for specific college majors.

This paper uses the ACS to estimate geographic differences in both the absolute and relative earnings of economics majors. Absolute earnings differences are computed based on geographic differences among economics majors. These provide insight into what a given economics major might earn by working in a different labor market. Relative earnings are computed relative to the earnings of non-economics majors in the same labor market. Relative earnings shed light on the higher earnings that could be achieved by majoring in economics conditional on working in a particular labor market. We find that there are considerable geographic differences in both absolute and relative earnings. We are unable to fully account for potential issues with selection, and thus our results should not be interpreted as causal. However, we offer a novel descriptive analysis that has not previously been possible. We hope that this new information allows geographically constrained students to make more informed decisions about their college majors and allows geographically mobile economics graduates to make more informed decisions about where to start their careers.

THE DATA AND SUMMARY STATISTICS

This research uses the 2009 and 2010 American Community Survey (ACS), both of which are one percent samples of the U.S. population. We obtain the data from the Integrated Public Use Microdata Series USA (IPUMS USA), created and maintained by Ruggles et al. (2010). The ACS includes individual information on geographic location, earned income, education, and demographic characteristics. The 2009 ACS was the first year to collect information on college major for college graduates and at the time this paper was written data for the 2011 ACS had not yet been released, so we only use the 2009 and 2010 ACS. Earnings in the 2009 ACS are

converted to year 2010 dollars using the Consumer Price Index. We restrict our sample to persons between ages 22 and 61 that have completed a bachelor's degree or higher, are not currently in school, had positive earned income in the prior twelve months, and worked in the U.S. during the week prior to the survey.[3] We also exclude observations with imputed data for earnings or college major.

Table 1 reports mean annual earnings by college major ranked from highest to lowest and also reports the share of all college graduates majoring in each field. We treat both economics majors and business economics majors as economics majors. We also group some of the other detailed majors into slightly broader categories (e.g. we combine history and U.S. history majors into one group). We end up with 147 detailed college major fields. Economics majors rank near the top of the list. With mean annual earnings of $116,133, economics ranks fourth behind only pre-med, math/computer science, and actuarial science, all of which are fairly small majors. Economics majors have higher mean earnings than engineers, biologists, and other disciplines in business and the social sciences. On average, economics is a very financially rewarding college major. However, there are likely important geographic differences in the earnings of economics majors.

The geographic variables in the ACS include the state and the metropolitan area in which individuals reside and work. Since we are interested in income earned from working, our analysis defines locations based on where individuals work. We conduct separate analyses for states and metropolitan areas. The lowest level of identifiable geography in the publicly available ACS data is a sub-state area referred to as a PUMA (Public Use Microdata Area). For some respondents, the PUMA in which they work overlaps a metropolitan area and a non-

[3] In results not shown we also explored the effects of restricting the sample to persons with only a bachelor's degree. Doing so does not qualitatively alter the qualitative results in this study. These results are available by request.

metropolitan area, and Census confidentiality procedures prevent us from knowing exactly where they work. We exclude this small group of individuals from the metropolitan area analysis since their work location is unknown. However, PUMAs do not cross states so states are perfectly identified and these individuals are included in the state analysis.

Because only relatively large metro areas have a sufficiently large number of economics majors to compute fairly precise coefficient estimates, we combine small and mid-size metropolitan areas into several groups. More specifically, we rank metropolitan areas by the number of college graduates working in each. We define the 50 metros with the most college graduates as large, the next 50 as mid-size, and the remaining metros as small. The sample also includes persons working in non-metropolitan areas. Using these definitions 63.9 percent of our metro sample work in large metro areas, 11.7 percent work in mid-size metros, 12.6 percent work in small metros, and 11.8 percent work in non-metropolitan areas. We further divide the mid-size, small, and non-metropolitan areas by Census region (Northeast, Midwest, South, and West) resulting in 12 metro/non-metro groups. Each of the fifty large metro areas is treated as its own group giving us a total of 62 geographic groups for our metro analysis.

Tables 2 and 3 present mean values for some important variables for each state (Table 2) and each metro area/group (Table 3). These include mean real earnings for economics majors, mean real earnings for non-economics majors, relative earnings of economics majors, and the percentage of college graduates working in the area that majored in economics. There are considerable geographic differences in the mean earnings of economics majors with more densely populated areas tending to have much

higher earnings. New York State and New York MSA[4] (Metropolitan Statistical Area) stand out for several reasons and will be used as the base groups in our regression analysis that looks at geographic differences in absolute earnings among economics majors. First, New York City is the nation's financial capital and also its largest city. As a result, New York State and New York MSA have by far the highest mean earnings for economics majors at $167,634 and $170,234. These are more than twice as large as mean earnings in several states and metro areas/groups. New York MSA also has a higher percentage (4.4 percent) of economics majors than any other metro area, and New York State is second only to the District of Columbia among states (D.C. is not an actual state but is treated as such in our analysis).

Geographic areas with high mean earnings for economics majors also tend to have high earnings for non-economics majors. Consistent with previous literature on geographic differences in earnings (e.g., DuMond, Hirsch, and Macpherson 1999; Glaeser and Maré 2001; Yankow 2006; Winters 2009), earnings for both economics and non-economics majors tend to be higher in large densely populated states and metropolitan areas with high costs of living. Thus, persons interested in geographic differences in the earnings of economics majors may be primarily interested in the relative earnings of economics majors, that is, how earnings for economics majors compare to non-economics majors in the same geographic area.[5] One way to measure relative earnings that is reported in Tables 2 and 3 is to divide mean earnings for economics majors by mean earnings for non-economics majors. Most states and metropolitan areas/groups have relative earnings ratios greater than one because economics majors typically

[4] We reference MSAs by their primary core city, though the official names often include other smaller cities in the metropolitan area.

[5] A considerably more complicated alternative to examining earnings relative to non-economics majors is to construct a cost of living index for each geographic area and assess the value of each area's location specific amenities. One could then compute a "real wage" for economics majors in each area. Winters (2009) reports a cost of living index available for use but valuing location specific amenities is considerably more subjective.

out-earn non-economics majors. However, there is wide variation in the relative earnings for economic majors across geographic areas. New York State and New York MSA have relative earnings for economics majors of 1.89 and 1.77, the second highest among states (surprisingly behind Wyoming) and the third highest among the metro groups (behind St. Louis MSA and the Northeastern mid-size metro group).

Tables 2 and 3 also report the percentage of college graduates in each area that majored in economics. Economic theory suggests that higher relative earnings will make economics a more desirable major and increase the percentage who major in economics. A rigorous analysis is beyond the scope of our study, but the simple correlation between relative earnings and the percentage of economics majors is 0.24 for states in Table 2 and 0.09 for metro areas in Table 3. Interestingly, the correlation between the percentage of economics majors and mean earnings for economics majors is much higher at 0.70 in Table 2 and 0.62 in Table 3. In results not shown, we also found similar relationships measuring the percentage of economics majors using institutional degree conferral surveys from the Integrated Postsecondary Education Data System (IPEDS); the state correlation is 0.15 with relative earnings and 0.47 with mean earnings for economics majors.

REGRESSION FRAMEWORK

The information in Tables 2 and 3 clearly illustrates geographic differences in earnings for economics majors both among economics majors and relative to non-economics majors in the same geographic area. However, looking at mean earnings does not account for the fact that workers also differ across areas in individual characteristics such as sex, race/ethnicity, and

advanced degrees. The regression analysis below controls for these. Areas also differ in the mix of occupations and industries that they offer and this could affect salaries. However, the mix of occupations and industries is in many ways part of what an area offers to its residents, so controlling for industry and occupation may inappropriately net out some of the wage premium that an area offers. Therefore, we present regression results both without and with controls for occupation and industry. However, there is still some concern that individuals select into majors, locations, and the workforce based on unobservable characteristics and omitted variables. The regression results, therefore, should still be interpreted as descriptive and not necessarily causal.

The dependent variable for the regression analysis is log real annual earnings. We first examine geographic differences in absolute earnings. This analysis restricts the sample to economics majors and regresses log real annual earnings for person i in geographic area g on a set of geographic (state or metro) dummies and set of dummies for individual characteristics:

$$\ln(Earnings_{ig}) = \Gamma_g + \beta X_{ig} + \varepsilon_{ig} \quad (1)$$

The individual characteristics in X include dummy variables for age, sex, race, Hispanic origin, foreign born status, highest degree completed, and in some cases occupation and industry. Our interest is in the Γ coefficients for the geographic dummies. These can be interpreted as geographic differences in log annual earnings for economics majors. New York State and New York MSA are the omitted base groups for the state and metro analyses, so geographic differences are measured relative to them.[6]

We next use regression analysis to examine geographic differences in relative earnings of economics majors. This analysis includes both economics and non-economics majors and estimates a separate regression for each state and each metropolitan area/group. For each

[6] Making these the omitted base groups also produces much more precise Γ estimates than would result if the omitted groups were areas with relatively few economics majors.

geographic area we regress log real annual earnings on the individual characteristics above and a dummy variable for being an economics major:

$$\ln(Earnings_{ig}) = \beta_g X_{ig} + \theta_g ECONMAJOR_{ig} + \mu_{ig} \quad (2)$$

Both β_g and θ_g are allowed to vary across geographic areas. The coefficients in θ_g measure the log earnings premium received by economic majors relative to non-economics majors working in the same geographic area. Some states are likely to have high relative earnings for economics majors while others have low relative earnings.

One final issue is that the composition of college majors differs across geographic areas, which alters the non-economics comparison group. Some places have a high percentage of majors with high mean earnings while others have more persons with majors with relatively low earnings. To account for this we reweight individual observations so that the composition of non-economics majors in each state or metro area is the same as their shares in the national workforce. This procedure uses separate weights for the state and metro analyses. The reweighting, therefore, makes the non-economics comparison group equivalent across areas. We did estimate the regressions without reweighting, and the results were generally similar to those below but there were some moderate differences. Reweighting is the preferred method, so we do not report results without reweighting.

REGRESSION RESULTS

Geographic Differences in Absolute Earnings among Economics Majors

We first discuss the geographic differences in absolute earnings among economics majors. Absolute earnings differences offer insight into what an economics major working in one area might earn by working in a different area. Table 4 presents regression results for the state

analysis. New York is the omitted base group. We report results without and with controls for occupation and industry since the mix of jobs and industries is a potentially important driver of earnings differences across states.[7] However, adding occupation and industry controls has only a moderate effect on the results for absolute earnings differences. All of the state dummy coefficients are negative, meaning that New York still has the highest absolute earnings for economics majors even after controlling for observable individual characteristics. The coefficients are statistically significant for all but two states (D.C. and Wyoming) in the specification without occupation and industry and significant for all but four states (D.C., Idaho, West Virginia, and Wyoming) with occupation and industry controls. Other states with relatively high earnings for economics majors include Connecticut, California, New Jersey, Illinois, and Massachusetts. Large and densely populated states, therefore, tend to have higher earnings.[8] States with low earnings for economics majors are typically small and have low population density such as South Dakota, Iowa, Vermont, Alaska, Montana, and New Hampshire.

Table 5 presents regression results for the metropolitan area analysis. New York MSA is the omitted base group. All of the metro dummy coefficients are negative and all are statistically significant except for San Jose without controls for occupation and industry. New York still has the highest mean earnings for economics majors among the metro areas/groups even controlling for individual characteristics. Others with relatively high earnings include San Francisco, Boston, Los Angeles, and Chicago. The lowest earnings for economics majors are found in the non-metropolitan area groups, West Palm Beach, Greensboro, Oklahoma City, and Memphis.

[7] We use 83 dummies for occupation and 16 dummies for industry. Additional groupings provided similar results.
[8] A few smaller states have relatively large coefficients but have small samples of economics majors and are not precisely estimated. For example, Wyoming is the least populous state in the U.S. and has only seven observations in our sample who are economics majors causing its coefficient estimate to be very imprecisely estimated.

Geographic Differences in Relative Earnings for Economics Majors

Relative earnings offer insight into the benefits of majoring in economics conditional on working in a given geographic area. For the state analysis in Table 4, the economics major coefficient is statistically significantly positive for only 22 of the 51 states when we exclude occupation and industry; including these controls reduces the number of significant coefficients to 15. Some states have relatively large coefficients that are imprecisely estimated due to the relatively small number of economics majors in the sample in those states, but many states have coefficients that are close to zero or even negative, though none are significantly negative. Thus, economics does not seem to be an especially financially rewarding major for students planning to work in states such as New Hampshire, Alaska, Iowa, or even Florida. However, economics majors in New York enjoy a log earnings premium of 0.434 without controlling for occupation and industry and 0.237 with these additional controls. Thus, even controlling for individual characteristics economics majors working in New York do quite well relative to non-economics majors. Other states with strongly positive relative earnings coefficients include California, Connecticut, Idaho, Illinois, Massachusetts, Minnesota, Missouri, New Jersey, Pennsylvania, Texas, and Washington. However, there is some difference in coefficients with and without the occupation and industry controls.

For the metro analysis in Table 5, the economics major coefficients are statistically significantly positive for 31 of the 62 metropolitan areas/groups without occupation and industry controls and significant for 23 areas with the additional controls. Several areas have insignificant coefficients that are negative or close to zero. The lowest relative earnings coefficients are in areas such as Memphis, West Palm Beach,

Oklahoma City, Greensboro, and the Southern non-metropolitan group. Areas with the highest relative earnings coefficients include the Northeastern mid-size metro group, New York, Chicago, Louisville, Boston, Seattle, and San Francisco, though there are again some differences in coefficients with and without the occupation and industry controls.[9]

CONCLUSION

Earnings differences across college majors provide important signals for young people pursuing higher education. While there are important non-monetary factors affecting college major choices, potential earnings certainly play an important role. Economics majors have relatively high earnings, which may partially explain the major's relatively high popularity. However, there are considerable geographic differences in the earnings of economics majors. New York State has the highest mean earnings for economics majors among states and New York MSA has the highest mean earnings for economics majors among metropolitan areas, both with mean earnings twice as large as in several other areas. More generally, high earnings for economics majors are found in densely populated areas such as Chicago, Boston, and San Francisco. The lowest earnings are typically in less populated and lower density areas. These results are also generally true even controlling for individual characteristics and measuring earnings relative to those of non-economics majors, though there are some exceptions.

Students considering choosing economics as a major should not base their decision solely on the average earnings for economics majors in the U.S. Instead, a more informed decision can be made based on the earnings of economics majors in the labor market(s) in which a student

[9] The high relative earnings for the Northeastern mid-size metropolitan group may partially result from proximity to New York. The Northeastern mid-size metropolitan group includes the following metropolitan areas: Allentown, PA; Harrisburg, PA; Monmouth, NJ; New Haven, CT; Portland, ME; Providence, RI; Scranton, PA; Springfield, MA; Stamford, CT; Syracuse, NY; Trenton, NJ.

expects to work. Until recently reliable earnings information by college major and geographic area has been quite scarce. However, with the recent addition of college major information to the American Community Survey, reliable earnings information by college major and geographic area can now be obtained. Disseminating this information has the potential to help students make more informed decisions both about their college major and about the geographic area in which to start their careers after they have chosen a major. Furthermore, while this paper focuses on geographic differences in the earnings of economics majors, the ACS can also be used to estimate geographic earnings differences in other popular majors and this is a useful exercise for future research.

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Table 1: Mean Earnings by College Major Field

Earnings Rank	College Major Field	Mean Earnings	% of College Graduates
1	Health and Medical Preparatory Programs	162,619	0.15
2	Mathematics and Computer Science	121,352	0.02
3	Actuarial Science	118,109	0.03
4	Economics	116,133	2.28
5	Zoology	114,685	0.24
6	Chemical Engineering	114,099	0.58
7	Chemistry	110,608	1.11
8	Miscellaneous Engineering	107,599	0.41
9	Pharmacy, Pharmaceutical Sciences, and Admin.	107,589	0.53
10	Electrical Engineering	106,953	2.12
11	Aerospace Engineering	105,783	0.21
12	Physics	104,791	0.53
13	Biology	103,523	3.48
14	Mechanical Engineering	102,237	1.70
15	Statistics and Decision Science	100,576	0.08
16	Materials Science	99,443	0.02
17	Astronomy and Astrophysics	99,147	0.02
18	Political Science and Government	97,742	2.49
19	Finance	97,269	2.15
20	Industrial and Manufacturing Engineering	96,842	0.40
21	Civil Engineering	96,419	1.00
22	Molecular Biology	95,549	0.11
23	General Engineering	94,240	1.11
24	Microbiology	93,780	0.25
25	Pharmacology	93,122	0.02
26	Mathematics	92,800	1.32
27	Materials Engineering and Materials Science	92,520	0.08
28	Computer Engineering	92,460	0.47
29	International Relations	90,233	0.26
30	Accounting	89,661	4.17
31	Computer Science	89,352	2.21
32	Agricultural Economics	87,397	0.10
33	Construction Services	87,149	0.18
34	Geology and Earth Science	86,510	0.38
35	Miscellaneous Social Sciences	86,488	0.06
36	Physiology	86,293	0.17
37	Cognitive Science and Biopsychology	84,633	0.02
38	Neuroscience	83,958	0.03
39	General Business	83,009	3.97
40	History	82,421	2.07
41	Engineering and Industrial Management	82,131	0.30
42	Management Info Systems and Statistics	81,255	0.41
43	Military Technologies	81,236	0.01
44	Public Administration	80,861	0.22
45	Operations, Logistics and E-Commerce	80,143	0.14
46	Transportation Sciences and Tech	79,997	0.29
47	Multi-disciplinary or General Science	79,579	0.44
48	Biological Engineering	79,471	0.10
49	Physical Sciences	78,197	0.03
50	Interdisciplinary and Multi-Disciplinary Studies	75,694	0.68
51	Oceanography	75,588	0.04
52	Atmospheric Sciences and Meteorology	75,481	0.05
53	Miscellaneous Biology	74,996	0.13

54	Architecture	74,833	0.76
55	Business Management and Administration	74,567	7.17
56	Industrial and Organizational Psychology	74,294	0.05
57	Philosophy and Religious Studies	74,234	0.66
58	Marketing and Marketing Research	73,810	2.52
59	Electrical Engineering Technology	73,644	0.22
60	Miscellaneous Engineering Tech	73,556	0.24
61	Information Sciences	72,598	0.38
62	Area, Ethnic, and Civilization Studies	72,484	0.31
63	Forestry	71,917	0.16
64	Computer and Information Systems	71,350	0.66
65	Miscellaneous Agriculture	71,097	0.10
66	Other Foreign Languages	70,756	0.14
67	Mechanical Engineering Related Tech	69,740	0.08
68	Human Resources and Personnel Management	69,635	0.45
69	International Business	69,528	0.20
70	Miscellaneous Business and Medical Admin	69,151	0.21
71	Miscellaneous Psychology	67,940	0.12
72	Health and Medical Administrative Services	67,808	0.24
73	Geography	67,305	0.31
74	Agriculture Production and Management	67,291	0.23
75	Medical Technologies Technicians	66,831	0.39
76	English Language and Literature	66,541	2.84
77	Nursing	65,996	3.67
78	Journalism	65,620	1.03
79	Humanities	65,347	0.11
80	Pre-Law and Legal Studies	65,172	0.14
81	Plant Science and Agronomy	64,905	0.21
82	Educational Administration and Supervision	64,864	0.10
83	General Medical and Health Services	64,632	0.26
84	French, German, Latin and Other Foreign Language	64,215	0.63
85	General Agriculture	64,146	0.24
86	Anthropology and Archeology	63,814	0.42
87	Botany	63,508	0.06
88	Computer Networking and Telecommunications	63,486	0.14
89	Linguistics and Comparative Language and Literature	63,456	0.18
90	General Social Sciences	62,988	0.28
91	Communications	62,763	2.32
92	Natural Resources Management	62,635	0.22
93	Liberal Arts	62,633	1.36
94	Psychology	62,224	4.34
95	Animal Sciences	61,800	0.28
96	Intercultural and International Studies	61,621	0.15
97	Court Reporting	61,574	0.01
98	Environmental Science	61,270	0.30
99	Nuclear, Industrial Radiology, and Biological Tech	61,220	0.03
100	Art History and Criticism	60,759	0.22
101	Treatment Therapy Professions	60,468	0.74
102	Precision Production and Industrial Arts	60,451	0.01
103	Criminal Justice and Fire Protection	60,417	1.73
104	Nutrition Sciences	59,439	0.17
105	Criminology	59,116	0.16
106	Sociology	58,740	1.61
107	Hospitality Management	58,588	0.40
108	Medical Assisting Services	57,938	0.15
109	Advertising and Public Relations	57,690	0.42

110	Ecology	57,549	0.13
111	Community and Public Health	57,483	0.14
112	Miscellaneous Education	57,329	0.47
113	Composition and Speech	57,184	0.17
114	Social Science or History Teacher Education	56,493	0.31
115	Physical and Health Education Teaching	56,422	0.74
116	Interdisciplinary Social Sciences	55,671	0.15
117	Secondary Teacher Education	55,670	0.59
118	Science and Computer Teacher Education	55,581	0.15
119	Communication Disorders Sciences	55,580	0.42
120	Film, Video and Photographic Arts	54,759	0.25
121	Communication Technologies	54,302	0.14
122	Mass Media	53,851	0.52
123	Electrical and Mechanic Repairs and Tech	53,705	0.03
124	Mathematics Teacher Education	52,938	0.22
125	Library Science	52,255	0.05
126	Special Needs Education	51,638	0.57
127	Physical Fitness, Parks, Recreation, and Leisure	51,574	0.88
128	Cosmetology Services and Culinary Arts	51,494	0.07
129	Miscellaneous Health Medical Professions	51,211	0.19
130	General Education	50,817	2.76
131	Music	50,376	0.72
132	Language and Drama Education	50,330	0.49
133	Commercial Art and Graphic Design	50,161	0.95
134	Fine Arts	49,630	1.09
135	Art and Music Education	48,656	0.62
136	Teacher Education: Multiple Levels	48,574	0.22
137	Drama and Theater Arts	47,723	0.44
138	Counseling Psychology	47,433	0.09
139	Social Work	46,090	0.96
140	Family and Consumer Sciences	45,488	0.76
141	Elementary Education	45,421	3.46
142	Theology and Religious Vocations	44,806	0.53
143	Human Services and Community Organization	44,262	0.17
144	Visual and Performing Arts	42,110	0.12
145	Studio Arts	40,244	0.17
146	Early Childhood Education	39,883	0.39
147	Miscellaneous Fine Arts	36,753	0.01

Table 2: State Means for Selected Variables

State	Mean Real Earnings for Economics Majors	Mean Real Earnings for Non-Economics Majors	Relative Earnings of Economics Majors	Percentage of Economics Majors
New York	167,634	88,922	1.89	3.99
Alabama	112,021	66,188	1.69	0.73
Alaska	68,637	74,278	0.92	1.60
Arizona	96,507	70,798	1.36	1.54
Arkansas	82,619	60,442	1.37	1.00
California	115,328	83,096	1.39	3.20
Colorado	94,191	70,412	1.34	2.27
Connecticut	154,854	87,807	1.76	3.32
Delaware	105,752	77,919	1.36	2.08
District of Columbia	141,532	101,630	1.39	5.94
Florida	83,967	66,849	1.26	2.04
Georgia	103,923	71,491	1.45	1.76
Hawaii	73,582	63,541	1.16	2.23
Idaho	99,699	59,245	1.68	0.85
Illinois	123,524	76,843	1.61	2.55
Indiana	86,639	63,217	1.37	1.05
Iowa	72,613	60,691	1.20	1.01
Kansas	79,169	62,324	1.27	1.14
Kentucky	97,519	61,694	1.58	1.26
Louisiana	94,935	64,963	1.46	0.75
Maine	77,511	56,004	1.38	1.71
Maryland	101,757	79,945	1.27	2.53
Massachusetts	131,518	81,911	1.61	2.91
Michigan	98,343	68,596	1.43	1.41
Minnesota	109,004	70,612	1.54	2.09
Mississippi	60,430	59,030	1.02	0.34
Missouri	115,257	64,956	1.77	1.41
Montana	53,229	51,856	1.03	0.70
Nebraska	80,280	60,607	1.32	1.12
Nevada	85,919	70,664	1.22	2.04
New Hampshire	81,095	67,502	1.20	1.71
New Jersey	123,061	85,508	1.44	3.01
New Mexico	78,734	63,826	1.23	1.35
North Carolina	98,752	66,347	1.49	1.86
North Dakota	51,062	53,591	0.95	0.72
Ohio	97,926	67,390	1.45	1.48
Oklahoma	67,160	60,916	1.10	1.04
Oregon	86,159	63,966	1.35	1.87
Pennsylvania	112,134	70,923	1.58	2.13
Rhode Island	98,588	71,346	1.38	2.67
South Carolina	84,253	60,597	1.39	1.69
South Dakota	70,954	56,073	1.27	1.27
Tennessee	89,678	65,140	1.38	1.50
Texas	101,996	75,531	1.35	1.70
Utah	78,390	66,872	1.17	2.05
Vermont	72,774	57,753	1.26	1.80

Virginia	102,975	79,303	1.30	2.63
Washington	109,226	73,518	1.49	2.42
West Virginia	86,800	57,691	1.50	0.67
Wisconsin	91,018	64,766	1.41	1.87
Wyoming	109,890	57,390	1.91	0.84

Table 3: Metropolitan Area Group Means for Selected Variables

Metropolitan Area/Group	Mean Real Earnings for Economics Majors	Mean Real Earnings for Non-Economics Majors	Relative Earnings of Economics Majors	Percentage of Economics Majors
New York, NY	170,234	96,098	1.77	4.39
Albany, NY	69,407	69,787	0.99	2.86
Atlanta, GA	109,835	75,893	1.45	2.09
Austin, TX	91,476	73,397	1.25	2.27
Baltimore, MD	106,327	77,994	1.36	2.37
Boston, MA	139,070	86,900	1.60	3.16
Buffalo, NY	80,555	63,593	1.27	1.79
Charlotte, NC	116,565	74,578	1.56	2.39
Chicago, IL	124,811	80,310	1.55	2.80
Cincinnati, OH	117,239	73,301	1.60	1.50
Cleveland, OH	109,104	69,949	1.56	1.80
Columbus, OH	103,628	68,449	1.51	1.72
Dallas, TX	104,292	80,522	1.30	1.93
Detroit, MI	111,784	74,813	1.49	1.62
Fort Lauderdale, FL	109,968	70,031	1.57	2.22
Greensboro, NC	76,980	61,188	1.26	1.89
Hartford, CT	108,923	82,224	1.32	2.65
Houston, TX	115,945	87,233	1.33	1.85
Indianapolis, IN	92,818	68,715	1.35	1.08
Jacksonville, FL	84,742	67,802	1.25	2.09
Kansas City, MO	92,949	69,764	1.33	1.72
Las Vegas, NV	78,905	69,810	1.13	2.09
Los Angeles, CA	119,102	81,323	1.46	3.43
Louisville, KY	102,146	66,416	1.54	1.62
Memphis, TN	108,789	72,796	1.49	1.88
Milwaukee, WI	93,744	72,092	1.30	2.27
Minneapolis, MN	106,174	74,819	1.42	2.57
Nashville, TN	87,948	66,768	1.32	1.72
Norfolk, VA	98,155	66,686	1.47	1.68
Oklahoma City, OK	87,896	63,742	1.38	0.95
Orlando, FL	86,088	64,936	1.33	2.00
Philadelphia, PA	114,963	79,892	1.44	2.54
Phoenix, AZ	104,607	74,821	1.40	1.66
Pittsburgh, PA	114,198	68,154	1.68	2.01
Portland, OR	95,117	68,483	1.39	2.05
Raleigh, NC	100,844	71,882	1.40	1.86
Richmond, VA	115,609	74,571	1.55	2.85
Riverside, CA	80,209	70,776	1.13	1.52
Rochester, NY	83,860	67,379	1.24	1.84

Sacramento, CA	102,360	76,403	1.34	3.00
St. Louis, MO-IL	131,379	70,960	1.85	1.79
Salt Lake City, UT	80,324	69,570	1.15	2.22
San Antonio, TX	108,107	69,821	1.55	1.36
San Diego, CA	104,855	79,326	1.32	2.57
San Francisco, CA	124,265	90,611	1.37	4.18
San Jose, CA	131,730	107,577	1.22	3.22
Seattle, WA	112,986	79,937	1.41	2.95
Tampa, FL	89,101	68,797	1.30	1.58
Washington, DC	120,312	93,512	1.29	4.07
West Palm Beach, FL	77,019	74,033	1.04	2.38
Northeast Mid-size Metros	139,430	77,005	1.81	2.66
Midwest Mid-size Metros	82,435	65,892	1.25	1.40
South Mid-size Metros	92,673	66,353	1.40	1.35
West Mid-size Metros	91,176	67,357	1.35	1.87
Northeast Small Metros	107,959	67,957	1.59	1.86
Midwest Small Metros	91,824	61,861	1.48	1.21
South Small Metros	84,892	62,274	1.36	1.15
West Small Metros	78,755	67,165	1.17	1.92
Northeast Non-Metro Areas	90,862	60,053	1.51	1.89
Midwest Non-Metro Areas	81,100	54,238	1.50	0.92
South Non-Metro Areas	66,699	56,025	1.19	0.95
West Non-Metro Areas	75,031	57,578	1.30	1.42

Table 4: State Regression Results

	Absolute Differences in Log Earnings among Economics Majors				Differences in Relative Log Earnings for Economics Majors			
	No Occ/Ind		With Occ/Ind		No Occ/Ind		With Occ/Ind	
	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.
New York	N/A	N/A	N/A	N/A	0.434***	(0.029)	0.237***	(0.025)
Alabama	-0.478***	(0.184)	-0.386**	(0.157)	0.180	(0.171)	0.124	(0.147)
Alaska	-0.893***	(0.295)	-0.722***	(0.225)	-0.237	(0.295)	-0.336	(0.257)
Arizona	-0.546***	(0.082)	-0.453***	(0.080)	0.091	(0.079)	0.037	(0.079)
Arkansas	-0.596***	(0.162)	-0.366***	(0.138)	0.123	(0.169)	0.067	(0.149)
California	-0.218***	(0.035)	-0.186***	(0.031)	0.225***	(0.021)	0.152***	(0.020)
Colorado	-0.524***	(0.058)	-0.479***	(0.052)	0.147***	(0.053)	0.038	(0.052)
Connecticut	-0.137**	(0.067)	-0.149**	(0.061)	0.317***	(0.061)	0.140**	(0.056)
Delaware	-0.374**	(0.177)	-0.500***	(0.177)	0.084	(0.174)	-0.061	(0.166)
Dist. of Columbia	-0.113	(0.072)	-0.070	(0.066)	0.164***	(0.063)	0.066	(0.058)
Florida	-0.606***	(0.050)	-0.482***	(0.045)	0.044	(0.041)	0.043	(0.036)
Georgia	-0.480***	(0.074)	-0.438***	(0.067)	0.128*	(0.069)	0.047	(0.063)
Hawaii	-0.589***	(0.133)	-0.447***	(0.119)	0.049	(0.132)	0.088	(0.116)
Idaho	-0.507***	(0.174)	-0.269	(0.165)	0.325**	(0.157)	0.326**	(0.154)
Illinois	-0.248***	(0.044)	-0.203***	(0.040)	0.316***	(0.035)	0.217***	(0.032)
Indiana	-0.575***	(0.093)	-0.521***	(0.085)	0.163*	(0.088)	0.108	(0.083)
Iowa	-0.835***	(0.133)	-0.715***	(0.113)	-0.108	(0.133)	-0.099	(0.113)
Kansas	-0.743***	(0.141)	-0.669***	(0.133)	-0.075	(0.136)	-0.129	(0.123)
Kentucky	-0.456***	(0.100)	-0.511***	(0.091)	0.269***	(0.092)	0.110	(0.092)
Louisiana	-0.697***	(0.152)	-0.516***	(0.138)	-0.067	(0.152)	0.013	(0.139)
Maine	-0.742***	(0.153)	-0.584***	(0.139)	0.085	(0.153)	0.099	(0.154)
Maryland	-0.391***	(0.058)	-0.300***	(0.054)	0.088	(0.055)	0.037	(0.052)
Massachusetts	-0.251***	(0.051)	-0.201***	(0.047)	0.277***	(0.043)	0.183***	(0.041)
Michigan	-0.538***	(0.075)	-0.459***	(0.058)	0.139*	(0.072)	0.111**	(0.057)
Minnesota	-0.345***	(0.066)	-0.328***	(0.063)	0.282***	(0.062)	0.153***	(0.059)
Mississippi	-0.744***	(0.185)	-0.622***	(0.201)	-0.007	(0.186)	-0.093	(0.185)
Missouri	-0.439***	(0.076)	-0.402***	(0.067)	0.258***	(0.071)	0.196***	(0.064)
Montana	-0.990***	(0.215)	-0.685***	(0.194)	-0.064	(0.233)	0.038	(0.206)
Nebraska	-0.637***	(0.195)	-0.575***	(0.129)	0.082	(0.206)	0.033	(0.134)
Nevada	-0.510***	(0.106)	-0.336***	(0.084)	0.072	(0.100)	0.108	(0.093)
New Hampshire	-0.999***	(0.330)	-0.848***	(0.321)	-0.288	(0.334)	-0.331	(0.314)
New Jersey	-0.237***	(0.047)	-0.209***	(0.042)	0.207***	(0.039)	0.127***	(0.035)
New Mexico	-0.658***	(0.099)	-0.570***	(0.083)	0.039	(0.096)	0.017	(0.082)
North Carolina	-0.510***	(0.059)	-0.454***	(0.054)	0.145***	(0.052)	0.091*	(0.050)
North Dakota	-0.715***	(0.252)	-0.762**	(0.317)	0.148	(0.186)	-0.082	(0.210)
Ohio	-0.579***	(0.065)	-0.489***	(0.057)	0.095	(0.060)	0.091*	(0.052)
Oklahoma	-0.788***	(0.135)	-0.606***	(0.109)	-0.049	(0.140)	-0.054	(0.115)
Oregon	-0.610***	(0.086)	-0.492***	(0.071)	0.111	(0.083)	0.086	(0.067)
Pennsylvania	-0.429***	(0.052)	-0.367***	(0.046)	0.230***	(0.045)	0.149***	(0.041)
Rhode Island	-0.561***	(0.106)	-0.489***	(0.084)	0.101	(0.105)	0.041	(0.092)
South Carolina	-0.602***	(0.074)	-0.518***	(0.074)	0.117*	(0.069)	0.076	(0.062)
South Dakota	-0.818***	(0.270)	-0.521***	(0.200)	0.148	(0.211)	0.216	(0.187)
Tennessee	-0.762***	(0.098)	-0.683***	(0.094)	-0.054	(0.096)	-0.099	(0.089)
Texas	-0.397***	(0.044)	-0.359***	(0.039)	0.150***	(0.034)	0.093***	(0.031)
Utah	-0.758***	(0.098)	-0.651***	(0.102)	-0.078	(0.093)	-0.116	(0.092)
Vermont	-0.841***	(0.167)	-0.625***	(0.153)	-0.085	(0.162)	-0.002	(0.148)
Virginia	-0.358***	(0.048)	-0.313***	(0.043)	0.139***	(0.040)	0.041	(0.037)
Washington	-0.308***	(0.056)	-0.254***	(0.052)	0.282***	(0.050)	0.213***	(0.045)

West Virginia	-0.454**	(0.198)	-0.285	(0.232)	0.308	(0.253)	0.380	(0.248)
Wisconsin	-0.542***	(0.080)	-0.470***	(0.069)	0.158**	(0.074)	0.093	(0.075)
Wyoming	-0.249	(0.261)	-0.066	(0.258)	0.515	(0.314)	0.142	(0.251)

Notes: New York is the omitted state in the absolute differences regressions. All regressions include individual controls for age, sex, race, Hispanic origin, foreign born status, and highest degree completed. The second and fourth regressions also include dummies for 83 occupation and 16 industries. Robust standard errors in parentheses. *Significant at 10%; **Significant at 5%; ***Significant at 1%.

Table 5: Metropolitan Area/Group Regression Results

	Absolute Differences in Log Earnings among Economics Majors				Differences in Relative Log Earnings for Economics Majors			
	No Occ/Ind		With Occ/Ind		No Occ/Ind		With Occ/Ind	
	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.
New York, NY	N/A	N/A	N/A	N/A	0.370***	(0.026)	0.202***	(0.023)
Albany, NY	-0.767***	(0.130)	-0.515***	(0.104)	-0.071	(0.112)	0.006	(0.100)
Atlanta, GA	-0.494***	(0.085)	-0.449***	(0.078)	0.122	(0.081)	0.044	(0.075)
Austin, TX	-0.390***	(0.070)	-0.364***	(0.069)	0.242***	(0.068)	0.147**	(0.067)
Baltimore, MD	-0.453***	(0.074)	-0.348***	(0.070)	0.095	(0.071)	0.026	(0.068)
Boston, MA	-0.238***	(0.054)	-0.205***	(0.051)	0.285***	(0.047)	0.170***	(0.046)
Buffalo, NY	-0.622***	(0.109)	-0.507***	(0.114)	0.210**	(0.104)	0.202*	(0.109)
Charlotte, NC	-0.428***	(0.097)	-0.409***	(0.081)	0.205**	(0.094)	0.132	(0.085)
Chicago, IL	-0.248***	(0.042)	-0.203***	(0.039)	0.325***	(0.034)	0.219***	(0.033)
Cincinnati, OH	-0.415***	(0.107)	-0.414***	(0.096)	0.253**	(0.111)	0.121	(0.102)
Cleveland, OH	-0.564***	(0.150)	-0.473***	(0.123)	0.133	(0.149)	0.121	(0.115)
Columbus, OH	-0.605***	(0.109)	-0.509***	(0.109)	0.081	(0.108)	0.063	(0.110)
Dallas, TX	-0.432***	(0.058)	-0.392***	(0.053)	0.110**	(0.052)	0.046	(0.048)
Detroit, MI	-0.491***	(0.101)	-0.430***	(0.080)	0.209*	(0.107)	0.158*	(0.090)
Fort Lauderdale, FL	-0.483***	(0.119)	-0.329***	(0.109)	0.194	(0.120)	0.224**	(0.109)
Greensboro, NC	-0.810***	(0.141)	-0.743***	(0.141)	-0.066	(0.141)	-0.181	(0.139)
Hartford, CT	-0.309***	(0.103)	-0.230**	(0.093)	0.226**	(0.097)	0.127	(0.089)
Houston, TX	-0.276***	(0.066)	-0.266***	(0.061)	0.226***	(0.063)	0.136**	(0.058)
Indianapolis, IN	-0.684***	(0.170)	-0.677***	(0.157)	0.031	(0.165)	-0.084	(0.161)
Jacksonville, FL	-0.472***	(0.111)	-0.406***	(0.103)	0.202*	(0.108)	0.172	(0.106)
Kansas City, MO	-0.680***	(0.116)	-0.637***	(0.107)	-0.037	(0.111)	-0.129	(0.100)
Las Vegas, NV	-0.610***	(0.114)	-0.414***	(0.088)	-0.003	(0.106)	0.026	(0.099)
Los Angeles, CA	-0.241***	(0.041)	-0.206***	(0.037)	0.246***	(0.032)	0.175***	(0.030)
Louisville, KY	-0.491***	(0.135)	-0.405***	(0.105)	0.295**	(0.135)	0.193*	(0.115)
Memphis, TN	-0.950***	(0.274)	-0.908***	(0.263)	-0.273	(0.272)	-0.349	(0.252)
Milwaukee, WI	-0.553***	(0.125)	-0.520***	(0.123)	0.071	(0.109)	0.005	(0.129)
Minneapolis, MN	-0.408***	(0.069)	-0.376***	(0.066)	0.230***	(0.065)	0.102	(0.063)
Nashville, TN	-0.726***	(0.123)	-0.721***	(0.134)	0.008	(0.118)	-0.122	(0.125)
Norfolk, VA	-0.587***	(0.118)	-0.472***	(0.109)	0.112	(0.115)	0.117	(0.108)
Oklahoma City, OK	-0.811***	(0.212)	-0.732***	(0.164)	-0.067	(0.208)	-0.089	(0.177)
Orlando, FL	-0.692***	(0.115)	-0.601***	(0.116)	0.030	(0.113)	0.016	(0.111)
Philadelphia, PA	-0.393***	(0.060)	-0.341***	(0.054)	0.182***	(0.055)	0.110**	(0.050)
Phoenix, AZ	-0.484***	(0.091)	-0.387***	(0.085)	0.146	(0.091)	0.112	(0.088)
Pittsburgh, PA	-0.550***	(0.101)	-0.429***	(0.084)	0.226**	(0.101)	0.198**	(0.082)
Portland, OR	-0.563***	(0.086)	-0.458***	(0.076)	0.169**	(0.082)	0.108	(0.069)
Raleigh, NC	-0.578***	(0.085)	-0.473***	(0.078)	0.118	(0.086)	0.140	(0.086)
Richmond, VA	-0.360***	(0.092)	-0.421***	(0.089)	0.255***	(0.089)	0.068	(0.088)
Riverside, CA	-0.665***	(0.150)	-0.405***	(0.112)	-0.129	(0.146)	0.033	(0.111)
Rochester, NY	-0.699***	(0.112)	-0.626***	(0.093)	0.031	(0.109)	-0.048	(0.097)
Sacramento, CA	-0.398***	(0.090)	-0.330***	(0.076)	0.127	(0.088)	0.085	(0.072)
St. Louis, MO-IL	-0.435***	(0.098)	-0.380***	(0.089)	0.266***	(0.097)	0.217**	(0.090)
Salt Lake City, UT	-0.699***	(0.084)	-0.578***	(0.089)	-0.004	(0.085)	-0.030	(0.084)
San Antonio, TX	-0.639***	(0.132)	-0.615***	(0.138)	0.042	(0.136)	-0.014	(0.143)
San Diego, CA	-0.418***	(0.073)	-0.328***	(0.066)	0.181***	(0.069)	0.144**	(0.065)
San Francisco, CA	-0.141***	(0.052)	-0.114**	(0.048)	0.270***	(0.045)	0.152***	(0.042)
San Jose, CA	-0.069	(0.065)	-0.114*	(0.059)	0.226***	(0.063)	0.119**	(0.057)
Seattle, WA	-0.285***	(0.064)	-0.269***	(0.061)	0.280***	(0.060)	0.168***	(0.055)
Tampa, FL	-0.653***	(0.110)	-0.521***	(0.093)	0.071	(0.108)	0.048	(0.093)

Washington, DC	-0.284***	(0.049)	-0.207***	(0.044)	0.116***	(0.043)	0.027	(0.040)
West Palm Beach, FL	-0.801***	(0.149)	-0.657***	(0.148)	-0.136	(0.153)	-0.124	(0.129)
Northeast Mid Metros	-0.258***	(0.055)	-0.219***	(0.050)	0.377***	(0.049)	0.241***	(0.045)
Midwest Mid Metros	-0.692***	(0.075)	-0.578***	(0.057)	0.046	(0.069)	0.021	(0.054)
South Mid Metros	-0.644***	(0.062)	-0.560***	(0.058)	0.071	(0.055)	0.024	(0.051)
West Mid Metros	-0.525***	(0.062)	-0.400***	(0.057)	0.166***	(0.056)	0.144***	(0.053)
Northeast Small Metros	-0.532***	(0.071)	-0.413***	(0.065)	0.199***	(0.066)	0.125**	(0.061)
Midwest Small Metros	-0.655***	(0.071)	-0.538***	(0.062)	0.133**	(0.066)	0.105*	(0.059)
South Small Metros	-0.628***	(0.059)	-0.466***	(0.052)	0.154***	(0.052)	0.158***	(0.049)
West Small Metros	-0.707***	(0.078)	-0.591***	(0.070)	0.012	(0.075)	-0.046	(0.071)
Northeast Non-Metros	-0.777***	(0.086)	-0.635***	(0.078)	0.091	(0.086)	0.012	(0.080)
Midwest Non-Metro	-0.806***	(0.084)	-0.619***	(0.071)	0.141*	(0.078)	0.158**	(0.065)
South Non-Metros	-0.941***	(0.081)	-0.741***	(0.070)	-0.069	(0.074)	-0.049	(0.065)
West Non-Metros	-0.873***	(0.090)	-0.617***	(0.087)	0.037	(0.091)	0.080	(0.081)

Notes: New York is the omitted metropolitan area in the absolute differences regressions. All regressions include individual controls for age, sex, race, Hispanic origin, foreign born status, and highest degree completed. The second and fourth regressions also include dummies for 83 occupation and 16 industries. Robust standard errors in parentheses.
*Significant at 10%; **Significant at 5%; ***Significant at 1%.