Educational Attainment, "Brain Drain," and Self-employment: Examining the Interstate Mobility of Baccalaureate Graduates, 1993-2003

A Working Paper

by

Chad Moutray[1]

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[1] The author is the chief economist and director of economic research for the Office of Advocacy of the U.S. Small Business Administration (SBA). The opinions expressed in this paper are those of the author and do not necessarily reflect the views of the Office of Advocacy, the SBA, or the U.S. government. Any errors are attributable to the author.

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For states looking to grow their economies, it is essential to harness the greatest talent, ensuring that sufficient human capital exists to raise productivity, output, and incomes throughout the state. Some of these gains might stem from the creation of new enterprises, which Bruce et al. (2007) link to higher living standards. Many policymakers and economic development leaders worry about the net outflow of talent from their state, especially in rural or economically depressed areas. Each state experiences an ebb and flow of people moving in or out, but some states experience "brain drain" more than others.[2] With states investing heavily in the education of their youth, it can be disappointing to see some of their highest achieving students move away. With any luck, there is an equal influx of talent flowing into their state to compensate for those who choose to move elsewhere.

This paper explores the mobility of labor from one state to another. There are many ways, of course, that one might study labor mobility, but baccalaureate college graduates provide an excellent test group. All of these graduates have devoted years to their studies and are ready to engage the "real world" for success in the job market.[3] To some, those opportunities will await them locally, allowing them to stay close to their family and friends. For others, however, the job market dictates a move to another city, state, or country.

For many people, much of this is predestined by the time a student graduates with his or her bachelor's degree. Moutray (2008), for instance, found that one's choice of baccalaureate major was a major determinant in his or her eventual post-graduation employment decision. This research seeks to build on that work. Both papers use the U.S. Department of Education's Baccalaureate and Beyond (B&B) data series, which tracks college and university graduates from the class of 1993.[4]

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[2] While "brain drain" is often associated in the literature with the loss of human capital from one country to another, it is also a term used to refer to the net outflow of talent domestically. The Population Reference Bureau (http://www.prb.org/) reports state-level net migration statistics between July 1, 2005, and July 1, 2006, which is the most recent data available. This includes domestic and international migration.

[3] For those who pursued graduate education beyond their bachelor's degree, their "real world" experiences might have been delayed. This research looks out ten years beyond the awarding of the baccalaureate degree, which should be should be enough time to account for these individuals.

[4] The author obtained access to this data set, which is restricted in its usage because of privacy concerns, after a memorandum of understanding (MOU) was signed between the U.S. Small Business Administration and the

This longitudinal survey asks a number of questions to a nationally representative sample of college and university students who were seniors during the 1992-1993 academic year. The same students answer follow-up questions periodically. In the case of the B&B data, there is information from subsequent questionnaires in 1994, 1997, and 2003. Much of the analysis in this paper focuses on employment in 2003, or ten years after graduation. This is the first time, to the knowledge of the author, that the B&B data set has been used for the purposes of examining the mobility of college graduates by linking them with their eventual employment decisions ten years later.

This research also further divides graduates into two distinct employment groups based on their job classification in 2003: the self-employed and wage and salary workers. In this way, we are able to distinguish labor mobility differences between the two groups. Conventional wisdom, of course, holds that graduates – regardless of type – would be particularly prone to gravitate to areas where there are opportunities. This analysis, though, seeks to examine where there are differences between the self-employed and their wage and salary counterparts.

The paper begins with a discussion of some of the relevant research on "brain drain" and various motivating factors leading to labor mobility. For many communities, the loss of talent has real consequences for economic development, presenting major challenges to policymakers. Next, the paper highlights various trends within the Baccalaureate and Beyond data set and analyzes them. These will allow us to understand the data better and establish hypotheses for the model. From there, a series of multivariate logit regressions will determine the model that best explains why certain students choose to move to another state, or vice versa. Finally, the concluding section of this report will note how these findings might be useful, particularly to those states that are grappling with an exodus of their highest achieving students.

LITERATURE REVIEW

Taylor *et al.* (2008) observe in a Pew Research Center study that fewer Americans changed residences between 2007 and 2008 than at any time since the U.S. Census Bureau data began keeping track in 1948. Yet two of the most influential factors that help to determine whether or not a person moves away or stays in his or her home state, according to a Pew survey, are his or her education and geographical influences. Those with a college education were more likely to have

changed communities at least once than those with a high school diploma – 77 versus 56 percent – and they were also more likely to have lived in multiple states. In addition, individuals from the Midwest were more likely to stay put relative to other regions of the country, with those in the West more likely to be mobile. According to the survey findings, "… movers most often cite the pull of economic opportunity. Stayers most often cite the tug of family and connections."[5]

For policymakers intent on growing their economies, the net loss of human capital because better opportunities lie elsewhere is a serious concern, especially in agricultural communities. Goetz (1993) writes, "Rural areas face the prospect of educating adolescents only to see the better trained ones move away, with the owners of fixed resources incurring most of the local tax burden."[6] Fortin (2006) notes that states can influence the overall supply of young, college-educated workers, but interstate mobility tends to weaken a state's ability to influence the college wage premium within the state. Furthermore, the loss of talented workers in rural communities frustrates efforts to reduce poverty and to foster local economic development (Weber *et al.,* 2007; Grassmueck, Goetz, and Shields, 2008).

Sociologists Carr and Kefalas (2009) follow high school graduates from a small, rural town in Iowa, paying close attention to the reasons why people stay versus leave. They observe the real-life impacts of out-migration, and ironically, they find that many of the highest achieving students who have moved away were encouraged and prodded along by their parents, teachers, and guidance counselors – to the eventual detriment of their community. They write:

> "The youth exodus is a zero-sum phenomenon: it benefits the destination cities and hurts regions that migrants flee. For every thriving metropolis now, there are dozens of agroindustrial brain-drain areas where economic growth has stalled. Experts believe that regions are in so much trouble largely because too few of their most-likely-to-succeed types with college credentials and upwardly mobile aspirations remain, and too many of the local kids with vocational certificates and the most diminished economic prospects do."[7]

Using National Longitudinal Survey of Youth data, Kodrzycki (2001) finds that 30 percent of college graduates no longer lived in the state where they attended college – twice the rate of those with only a high school diploma. The author then adds:

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[5] Taylor *et al.* (2008), p. 3.

[6] p. 1167.

[7] p. 5.

> "Young adult movers are likely to be people who have moved in the past – either during childhood or to attend college. State economic and quality-of-life conditions influence migration. Young graduates are more likely to move if they are in a state that has low employment growth, high unemployment, or low pay for college graduates. The majority of moves are to states offering improved conditions along at least one dimension – high job growth, lower unemployment, higher pay, lower housing costs, or better amenities."[8]

Other authors have come to similar conclusions. Domina (2006) determines that rural college graduates are three times more likely to migrate to urban areas than are non-college graduates in the area, and Hadland (2004) finds that residents of Alaska who had obtained postsecondary education were more likely to have migrated to other states, confirming the existence of "brain drain." The same holds true in North Carolina, according to Renkow (1996), who observes that educational attainment has greater effects on overall income in urban communities than in rural ones. Earnings differentials are consistent with the more educated moving from rural to urban areas.

The challenge for rural areas is that many college-educated individuals need to relocate to urban areas in order to further their careers, as there are fewer such opportunities in non-metropolitan areas. Gould (2007), for example, observes significant wage disparities between urban and rural white-collar workers, with the greatest differences among "high-ability individuals."[9] Rauch (1993) and Huang, Orazem, and Wohlgemuth (2002) also note higher returns to human capital in urban areas, and Glaeser, Scheinkman, and Shleifer (1995) go a step further, linking city-level education levels to higher economic growth. One of the more interesting phenomena in this research area is the growth of so-called "power couples," according to Costa and Kahn (2000), which tend to locate in cities because there are increased opportunities for both people. They write, "As the share of power couples among all the college educated rises, firms in smaller cities may find that it is becoming harder and harder to attract highly skilled individuals."[10]

In addition, metro areas also provide positive networks for like-minded professionals, providing them with key contacts to grow professionally and to learn from one another.[11] Gurley-Calvez *et al.*

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[8] p. 30.

[9] It is interesting to note that the author finds no wage disparity between urban and rural blue-collar workers.

[10] p. 1309.

[11] See Glaeser (1989) and Moretti (2004).

(Forthcoming), Glaeser (1998), and Florida (2002) note that human capital accumulation is essential for economic development, with Florida gaining notoriety for stressing the "creative class" which is made up of young, creative professionals. Lee, Florida, and Acs (2004) note that "regions that are open and creative and attract human capital enjoy more dynamic entrepreneurship."[12] In a similar fashion, researchers such as Peri (2002) and Wheeler (2006), observe strong correlations between educational attainment and a metropolitan area's overall population growth. Likewise, entrepreneurs are attracted to urban areas, according to Low, Henderson, and Weiler (2005), because cities provide a larger local market and increased access to workers and financial resources.

Migration away from rural communities, of course, can make life more challenging for those individuals who stay behind. Renkow (1996) states: "Because the rural labor force tends to be older and less mobile, it is more vulnerable to negative labor market shocks than the (younger) urban labor force."[13] Simply put, many rural residents, especially those with lower educational attainment, are often reluctant or unable to leave, notes Fisher (2005).

While higher levels of educational attainment increase the likelihood of migration, there are other factors that dampen such tendencies. Shaw (1991) suggests that movers are "the well-educated workers who are seeking good job matches with employers, and that once they locate good matches they will migrate less."[14] Indeed, the author also finds that the probability of migration diminishes with age, and those skilled workers with significant experience in a particular industry are more likely to know of other similar opportunities in the local area, making a move unnecessary.

Moreover, Henderson and Abraham (2004) note that rural communities looking for high-knowledge occupations need to invest in high-quality labor, universities, local amenities, infrastructure, and regional partnerships. Indeed, Goetz and Rupasingha (2004) find: "Counties with higher levels of educational attainment, interstate highway access, levels of social capital, private employment per capita, high-tech employment, and population density"[15] had statistically higher income levels.

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[12] p. 14.

[13] p. 1027.

[14] p. 414.

[15] p. 252.

Each of these studies builds on a long history of research linking human capital to overall success, starting with the pioneering works of Schultz (1961), Becker (1975), and Jacobs (1984). Many of these studies examine the connection between educational attainment and entrepreneurship.[16] For example, Bates (1997) observes that the "level of education is the most important factor in identifying those starting skilled-services businesses,"[17] and a number of other authors have shown that increased education tends to raise the probability of starting one's own business.[18] Moutray (2007), for instance, found that heads of households with post-baccalaureate experience were up to 8.3 percent more likely to become self-employed than those without a bachelor's degree. Overall, the literature is pretty clear – increases in educational attainment are highly correlated with a willingness to become self-employed.[19]

EXAMINING THE DATA

One of the advantages of the U.S. Department of Education's Baccalaureate and Beyond (B&B) data set is that researchers have access to information about a student's educational performance and his or her status several years after graduation. Students were asked a series of questions during their senior year in college (1992-1993), and they answered additional follow-up questionnaires in 1994, 1997, and 2003. For purposes of this study, these individuals were asked about their current employer, and some of them stated that they were self-employed. This allows us to parse out differences between those who are self-employed and others who are occupied in wage and salary work. In addition, we can compare the state where one obtained his or her bachelor's degree in 1993 with their current residence in 2003. Those who live in a different state are considered "mobile" in this analysis.

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[16] Or self-employment, depending on the analysis.

[17] p. 35.

[18] Examples include: Arenius and DeClercq (2005); Borjas (1986); Brush and Manolova (2004); Cooper, Gimeno-Gascon, and Woo (1994); Crosa, Aldrich, and Keister (2002); Davidsson and Honig (2003); Delmar and Davidsson (2000); Evans and Leighton (1989); Karoly and Zissimopoulos (2007); Vesper (1990); and Weaver, Dickson, and Solomon (2006).

[19] This is true at least through the baccalaureate degree. After that, there is some disagreement in the literature; see Weaver, Dickson, and Solomon (2006). Also, Moutray (2007), (2008), using different data sets, reach differing conclusions on this issue.

In this paper, a student is deemed to be mobile if he or she lives in a different state than where they earned their bachelor's degree. The author is aware of the fact that some students attend college outside of their home state, with some of them returning to their home state for employment. This, obviously, complicates the analysis. Nonetheless, this definition was used for simplicity, since a variable point in the B&B data was readily available. Perhaps a future study could utilize a mobility definition which would compare the home state in 1993 (which may or may not be the same as the state where they obtained their bachelor's degree) with the home state in 2003.

This section will discuss observed trends in the B&B data that will assist us in developing a model for predicting which students were more likely to leave their home state and which ones were more apt to stay put. Tables 1 through 8 compare wage and salary worker characteristics with those of the self-employed for the mobile and non-mobile samples, specifically looking for proportional differences between the groupings that are statistically significant. From these univariate comparisons, we can start to think about our multivariate logit model. Results from those models will be presented in the next section.

Note that there are nearly 7,000 observations in the sample, with around 10 percent of the respondents stating that they are self-employed. This can be further broken down into the "mobile" and "non-mobile" groups. In this analysis, there are 2,950 individuals who live in a different state than the one where they earned their baccalaureate degree, reflecting mobility, and there are 4,050 students who continued to live in the same state as that in which they obtained their bachelor's degree.[20] These figures are then broken down between the self-employed and wage and salary workers. Note that these data are not weighted and reflect the actual responses of individual students.

In reading Table 1 through 8, significant differences between the self-employed mobile versus self-employed non-mobile workers are bold and asterisked, and the same is true for wage and salary worker differences. Meanwhile, differences between the self-employed and wage and salary workers within a grouping (mobile or non-mobile) are shaded in the tables. This makes reading the tables more complex, but it hopefully provides more complete information.

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[20] For confidentiality reasons, when unweighted B&B data are used, the number of observations is rounded to the nearest 10.

The mobile group for both the self-employed and wage and salary workers tends to be younger, male, non-married,[21] and without children (Table 1). Individuals who were 35 years of age or older in 2003 – meaning that they were born before 1969 – were less likely to live in a different state. This finding is not surprising, given that older (non-traditional) students would be more likely to have ties that would prevent them from moving away. Consistent with this is the fact that married individuals and those with one or more children are more likely to be non-mobile. Conversely, if someone is married to a highly educated spouse, with a master's degree or higher, they are more likely to be mobile. This reflects the fact that individuals often have to move to where their spouse is able to find employment, or as in the case of the "power couple" thesis presented in Costa and Kahn (2000), where both parties are able to have opportunities.

Racial and ethnic differences are mostly a non-factor. Non-Hispanic white wage and salary workers have a greater proportion in the sample who were mobile, whereas Hispanic wage and salary workers are more likely to be non-mobile. There are no statistically significant differences of note for other groups.

The self-employed who are mobile tend to be younger (35 years old or less) with more children than those who are non-mobile. Oddly, among those who are mobile, the proportion of the self-employed with four or more children is nearly twice the comparable proportion of wage and salary workers. In general, the self-employed are more likely to have more children.

FINANCIAL WHEREWITHAL

The availability of financial resources is a key indicator for both self-employment and labor mobility. In the case of self-employment, financial wherewithal is an important determinant in one's ability to start a business, as observed by Evans and Leighton (1989) and others. Given that this research uses the same data series as Moutray (2008), it should not be a surprise that it reaches the same conclusions on self-employment and financial issues. Table 2 shows a significantly higher difference in the proportion of the population engaged in self-employment among both those making less than $20,000 in household income and those earning $200,000 or more. In essence, this is a u-shaped distribution in which self-employment is more common at the

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[21] "Non-married" includes those who respond that they were "single, never married," "cohabitating, living with partner," or "separated, divorced, widowed" in 2003.

two extremes of income; those earning between $20,000 and $100,000 are more likely to engage in wage and salary work.

Along those lines, the self-employed tend to be more mobile at the extremes as well. Individuals who were self-employed in 2003 are more likely to live in a different state than the one in which they obtained their baccalaureate degree if their household income is either below $20,000 or at or above $200,000.

Homeownership, of course, is often looked at as a proxy for wealth, and indeed, many new business ventures utilize equity in their homes to start new ventures or for cash flow to their businesses. In the context of mobility, however, owning a home is a sign that an individual has established some ties to the community. As such, it tends to have the same effect as being married with children. The respondents, both self-employed and wage and salary workers, who said that they owned their homes in 2003 are more likely to be non-mobile and still live in the same state where they obtained their bachelor's degree. Individuals in both groups of workers who paid less than $1,000 per month in either a mortgage payment or rent are more likely to stay put as well. On the other hand, wage and salary workers who paid $1,000 or more are more likely to be mobile.

OCCUPATIONAL OBSERVATIONS

Those who stated that they were self-employed in 1997 were more likely to be self-employed six years later, when the 2003 survey was administered (Table 3). Yet it is worth noting that only 18.8 percent of self-employed respondents were self-employed in 1997. This is consistent with the fact that more than half of all those surveyed in 2003 had been in their jobs four years or less. A greater proportion of the self-employed than of the wage and salary group had been in their jobs two years or less. Moreover, those with fewer years in their current job also are more likely to be mobile—to live in a different state—and wage and salary workers in their jobs five years or more are more likely to be in the non-mobile group.

Industrial differences are more difficult to categorize. Some goods-producing industries show tendencies toward non-mobility; the self-employed in agriculture and construction are significantly less likely to be mobile. In contrast, both self-employed and wage and salary workers in the goods-producing industries of mining or manufacturing are about equally mobile and non-mobile.

The services industries are also divergent. In the two-digit North American Industry Classification System (NAICS) services industries, the significantly more mobile workers include those in

business and personal services, entertainment and recreation services, professional and related services,; communications, and the military. Workers in utilities; finance, insurance, and real estate; and public administration and public safety are significantly more likely to be non-mobile. The breakdown indicates that those working in more "professional" service industries, both the self-employed and wage and salary workers, tend toward greater mobility. Moutray (2007) referred to these industries as non-governmental "soft" services,[22] which tend to be more white-collar in nature. They also tend to require greater educational attainment.

EDUCATIONAL ATTAINMENT

Table 4 indicates that students in social sciences and "other" majors are statistically more likely to become self-employed, with engineering, math, and science students more frequently opting for wage and salary work. In terms of mobility, however, there is a greater tendency for wage and salary workers who have studied social science and engineering, mathematics, and science to have moved to another state. This is probably indicative of the types of jobs that these individuals must seek—jobs that require them to go where the opportunities are. More surprising, perhaps, is the finding that wage and salary business majors are less likely to be mobile. A more cynical version of conventional wisdom might suggest that business majors would be willing to go wherever the money might take them, but that is apparently not the case, according to these numbers. Education and health and biological science majors are also more likely to be non-mobile; although the differences are not statistically significant.

The remainder of Table 4 supports the notion that "brain drain" exists. It is clear that the highest achieving students are highly mobile, perhaps reflecting an ability of those students to gravitate to opportunities elsewhere. Graduates who responded that they received mostly As & Bs are statistically more likely to live somewhere other than the state where they earned their bachelor's degree. Average students – those with mostly Bs and Cs – tend to remain in their home state. Similarly, students who attended Research I or II institutions or who paid more than $5,000 in tuition and fees per term were more mobile than those graduates who did not. The non-mobile

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[22] Non-governmental "soft" services represented in this analysis of B&B data include the following industries: retail trade – sales and rental; finance, insurance, and real estate; business services; personal services; entertainment and recreation services; professional and related services; health care; communications; hospitality; and education.

ranks are more likely to graduate from baccalaureate and master's degree-granting institutions (or Doctoral I & II colleges and universities for the self-employed).

Likewise, students who went on to pursue graduate education – master's, professional, and doctoral degrees – are also mobile (Table 5). Again, this is more than likely a reflection of the fact that those with higher levels of educational attainment are afforded greater opportunities, often outside of their home states.

ATTITUDINAL QUESTIONS

During their senior year in college, students participating in the B&B survey were asked a series of attitudinal questions about what was important to them in life and in their careers. Some of these appear in Table 6. Two of these questions have obvious bearing on the question of eventual labor mobility. Those students who responded that it was important for them to move away from where they grew up were, not surprisingly, statistically more likely to be mobile. Conversely, family ties were a consistently significant determinant of non-mobility. Individuals who felt that living close to their family and relatives and those who stated that having children was important to them tended to stay put. In addition, respondents preferring more leisure time, including time for extracurricular activities, were also more likely to stay in their home states.

Financial factors, much like the findings regarding business majors in general, tended to favor a likelihood of non-mobility. Again, this is something of a surprise, since it might be assumed that graduates preferring to be "well-off financially" or to be "successful" would more readily opt to move to another state to pursue such goals. Yet each of these types of indicators is statistically significant for wage and salary workers, with greater proportions of the respondents living in the same state where they earned their bachelor's degree. This is an interesting finding, and one that might be leveraged by policymakers eager to stem "brain drain" from their states. It suggests that students interested in successful and well-paying careers are more likely to stay, assuming that it is an option (and assuming that they were not also one of those who said that they wanted to move away from where they grew up). Of course, more research along these lines is needed to say that with greater certainty.

ECONOMIC AND GEOGRAPHIC INDICATORS

An underlying premise of this paper is that baccalaureate graduates are willing to seek professional opportunities wherever they might exist, whether close to home or not. Much as educational

attainment provides a wider array of opportunities for students, economic growth is an essential component to ensure that jobs are plentiful. States with higher rates of real state gross domestic product (GDP), employment growth, and firm creation are also likely to generate a sufficient number of employment prospects for graduating college students. This would include a willingness to start one's own business as well. Bruce *et al.* (2007) assert that policymakers would be wise to consider policies that lead to greater entrepreneurial activities in their state. They write that "the most fruitful policy option available to state governments is to establish and maintain a fertile environment for new establishment formation."[23] These states are the ones with greater state output, income, and employment. Therefore, we would hypothesize that economic growth would tend to attract workers who have greater labor mobility, with graduates leaving their home states to find new opportunities, either through self-employment or as a wage and salary worker.[24] Likewise, geographical considerations might also be important, especially given the research and data supporting a movement from rural to urban locations.

Table 7 highlights the economic and geographic variables used in this analysis. In addition to measures of output, employment, and firm growth over the ten-year period from 1993 to 2003, other variables explore a range of possible mobility motivations. For instance, some Midwestern states have struggled because their economies have been too heavily weighted toward manufacturing, while others, particularly those in non-metropolitan areas, have searched for the "next big thing" that will propel their economies forward. For that reason, data on the percentage of employment in manufacturing, the percentage of employment in non-metropolitan statistical areas (MSAs), and the number of persons per square mile (population density) are presented for each state. Finally, to control for a state's ability to compete in the global economy, the Beacon Hill Institute's State Competitiveness Index for 2003 is included.[25] This index looks at a number of factors – especially a state's commitment to innovation and education – and ranks each state accordingly. This index was chosen because the Beacon Hill Institute, unlike many of its

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[23] pp. 24-25

[24] It is worth noting, however, that this analysis does not assert causation. It is equally likely that the direction of causation is the opposite. Perhaps increased labor mobility leads to greater economic growth. What this research tends to support is the strong correlation between the two factors.

[25] The Beacon Hill Institute at Suffolk University has put out more recent indices, including its latest in November 2008, but for consistency with the B&B data, the 2003 index was utilized in this analysis. For more information, see http://www.beaconhill.org/.

counterparts, ranks metropolitan areas, which allows for the inclusion of a data point for the District of Columbia.

Overall, the proportional analysis in Table 8 supports the view that mobility is highly correlated with economic opportunity. It examines each of these variables using the student's 1993 and 2003 home states. In the case of real state GDP, for instance, those who have moved to different states are more likely to have lived in home states in 1993 with real GDP growth slower than the national average. These same wage and salary workers tend to live in 2003 in states where real GDP growth exceeds the national average. Growth in the number of firms within a state and in state-level private employment produced similar results. Likewise, greater mobility is found among self-employed and wage and salary workers whose 2003 home states had a Beacon Hill State Competitiveness Index of five or greater.

Meanwhile, the analysis also shows a movement toward urban areas. Places with higher population density have greater proportions of workers who are mobile, and vice versa. The manufacturing measure, on the other hand, suggests that states with greater manufacturing employment as a percentage of their total employment are more likely to be non-mobile; in other words, greater mobility is found in states with less manufacturing employment. If true, this presents a challenge and an opportunity for these Midwestern (or "Rust Belt") states. While they do not need to worry as much about a loss of talent, fewer manufacturing jobs might necessitate greater emphasis on retraining these workers for new opportunities.

CONSTRUCTING A MODEL

Given the findings of Tables 1 through 8, the next step in this analysis is to determine a predictive model for labor mobility that seeks to explain why certain graduates opt to leave their home states, while others choose to stay put. Using a multivariate logit analysis, we will build three distinct models: the first using the total B&B sample, the second focusing only on self-employed respondents, and the third analyzing wage and salary workers. The purpose in constructing separate models for the self-employed and wage and salary workers is to see if there are significant differences in their labor mobility.

The model starts with the lessons learned in the previous section. As such, the logistic regressions follow this basic format:

$$M_i = \alpha_i + \beta_{1i}D_i + \beta_{2i}F_i + \beta_{3i}I_i + \beta_{4i}(E_d)_i + \beta_{5i}(M_f)_i + \beta_{6i}(E_c)_i + \varepsilon_i$$

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where M_i = labor mobility, where a student lives in a different state in 2003 than the one in which he or she earned their baccalaureate degree

D_i = a vector of demographic variables for each student

F_i = a vector of financial information on each student in 2003

I_i = a vector of industry variables regarding the student's 2003 occupation

$(E_d)_i$ = a vector of information on the student's educational background

$(M_f)_i$ = a vector of motivational factors from each student's responses to the 1993 B&B survey regarding what was important to him or her

$(E_c)_i$ = a vector of economic and geographic variables on the student's home state in 2003

The dependent variable for each model is labor mobility, and it is a dummy variable whereby students who now live in a different state than the one in which they earned a bachelor's degree are coded with a one. Non-mobile respondents are coded with a zero. The independent variables stem from the findings in the previous section.

The overarching hypothesis that we would expect to come from these regressions is one of opportunity. Why do students leave their home states? It is often because better professional opportunities await them elsewhere, especially if we believe that "brain drain" exists and is a real problem. The premise of this paper is twofold. First, educational attainment increases the number of options a student has upon graduation. Each additional degree adds more professional opportunities for advancement, and one would guess that this would increase the overall likelihood for mobility. Second, students will gravitate to areas where jobs are plentiful, and we would hypothesize that many of these students would be attracted to states with higher economic growth. Despite these two hypotheses, however, we also expect that some graduates will choose to remain close to home, opting to stay near their families and where they grew up. For them, there are different motivating factors – such as the importance of family and leisure time – and it will be important for each of these students to find opportunities locally.

RESULTS

Tables 9 and 10 show the results from our logistic regressions. For the most part, they support the earlier tables and the general thrust of this work. Only the "best fit" models are presented here. The two tables are virtually the same except for the economic variables, which needed to be separated

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due to possible multicollinearity.[26] Table 9 includes real state GDP differentials, and Table 10 shows growth in employment and the number of firms within a state. Note that the model for the self-employed is less complex than the one for wage and salary workers, and yet, the general conclusions are about the same. The following trends can be ascertained from these tables:

- **In labor mobility, the self-employed are very similar to their wage and salary counterparts.** While there are differences in the two models, it is apparent that factors that contribute to whether one moves or stays are similar. Many of the trends outlined in the following bullets are the same for those who are self-employed and those who work for others.

  There are three exceptions to this. First, as noted, the self-employed models have fewer significant variables. This is likely a function of the smaller sample size for the self-employed; with a larger sample, more variables might have been significant.[27] Second, prior experience with self-employment in 1997 was strongly associated with later self-employment in 2003. Finally, the effects of many of the variables are often larger for the self-employed than they are for wage and salary workers. Once again, this could be the result of the smaller sample size, whereby one change might have a larger impact on the overall probability of mobility.

- **Baccalaureate grades are more important for determining mobility than the majors themselves.** As was observed earlier, students with mostly As or mostly As and Bs within their majors are more likely to be mobile than their counterparts. This is especially true among the self-employed. These students are about 2.5 percent more likely to be mobile for wage and salary workers, and over 12 percent more likely for the self-employed.

  The choice of one's baccalaureate major, however, is not as important in determining mobility as the earlier tables suggested. The two exceptions are business and education

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[26] While each of these variables was statistically significant by themselves, it was clear that the real state GDP variable conflicted with the growth in employment and firm variables, as they were highly correlated. Therefore, they were separated into two separate regressions. For the most part, these two models complement one another, showing that economic success is highly related to labor mobility.

[27] Glancing through Tables 1 through 8, it can easily be observed that the self-employed and wage and salary workers often follow similar trends when comparing the proportions of each which are mobile or non-mobile. While there are some exceptions to this which were noted earlier, it suggests that the influences of whether or not someone is mobile or not are often similar between the two groups.

majors, both of which are more likely to be the choice of non-mobile wage and salary workers. Education majors are almost 6 percent less likely to move to another state, and business majors are between 3.3 and 3.5 percent less likely. None of the majors is statistically significant in the models for self-employed individuals regarding their willingness to relocate.

- **The "best and brightest" students are highly mobile.** In addition to grades within major, other educational variables also suggest that the highest achieving students are more likely to switch states within ten years after graduation. For instance, those students who attended a Research I or II university, according to its Carnegie classification, are 6 percent more likely to be mobile for wage and salary workers, or over 8 percent more likely for the self-employed. Likewise, students who paid $5,000 or more in tuition and fees per term in 1992-1993 are 18 to 21 percent more likely to be mobile. These findings suggest that students receiving an expensive, high-caliber education are highly willing to move from their home state in search of new opportunities.

  Graduate education can also be an important determinant of mobility; however, a student's pursuit of a graduate degree is significant only in the overall model, increasing the probability of mobility by 2 percent. Along similar lines, having a well-educated spouse makes it more likely that a student will move on, raising the likelihood of mobility by over 9 percent for wage and salary workers. Graduate education, either by the student or his or her spouse, is not a factor among the self-employed, though.

- **There is a strong correlation between mobility and economic growth.** Tables 9 and 10 show that various measures of economic success lead to greater probabilities of mobility among the 1993 graduates. For instance, states that experience real GDP growth of 10 percent or more than the national average between 1993 and 2003 are 13 to 15 percent more likely to have students in this sample moving there from another state. This variable is highly significant, and consistent among all of the models. Similar findings confirm the models with employment and firm growth information. Moreover, the Beacon Hill Competitiveness Index is a significant indicator of mobility for wage and salary workers (but not the self-employed), showing an increased probability of mobility by 10 to 12 percent, depending on the model. This suggests that highly innovative states, which are focused on the so-called "knowledge economy," are also attracting new workers.

It should be noted, of course, that this model is not examining causality within the data. We do not know if economic growth is *pulling* people toward a particular state, or if the massive number of people moving into a state is *driving* economic growth, or both. Yet, the implication of these findings is clear. Whatever the cause, workers are gravitating to states with higher economic growth – something that might cause concern in those areas that are struggling economically. As such, it is more evidence of possible "brain drain."

- **Having strong ties to home prevents people from leaving.** This finding confirms conventional wisdom. In general, if you are older, married, with children, and a homeowner, you are less likely to leave your home state. Marriage and children are not significant factors, however, in determining self-employment mobility. Of these variables, the strongest one is homeownership, decreasing the likelihood of mobility by over 12 percent for wage and salary workers and between 22 and 24 percent for the self-employed. The larger effect for the self-employed could reflect the fact that those without houses might be more nimble where they start a business; or conversely, those with homes are less so.

  In terms of motivational factors, the ones explicitly dealing with this topic are not a surprise. Students desiring to live close to their parents and relatives are 9 to 11 percent less likely to leave their home states. Likewise, students wishing to move away from their parents had greater probabilities of mobility. Once again, the effect for the self-employed is significantly larger on this variable, with those desiring to move away being nearly 16 percent more likely to do so – almost triple the probability rates found for wage and salary workers.

- **Noteworthy smaller findings:**

  a. Male wage and salary workers were more likely to move than women.

  b. The only racial or ethnic variable to have a significant impact in the models was for Hispanics. Hispanic wage and salary workers were 12 to 14 percent less likely to move to another state than non-Hispanics.

  c. Income is an important determinant of mobility. For the self-employed, having a household income of less than $20,000 tended to reduce the probability of mobility by around 20 percent. At the other extreme, though, wage and salary workers with household incomes of more than $100,000 were 4 percent more likely to have moved.

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d. Those who had rent or mortgage payments of less than $1,000 per month tended to stay put.

e. Those wage and salary workers who were relatively new to their current jobs (two years or less) are almost 7 percent more likely to be mobile.

f. Being self-employed in 1997 tended to decrease the likelihood of mobility by nearly 11 percent for those who were still self-employed in 2003.

g. The only industrial variable of significance is in the self-employed model. Those individuals who were employed in the "soft services" industries were roughly 9 percent more likely to be mobile.

h. Mirroring the attitudinal findings from earlier, wage and salary students who noted the importance of becoming "well-off financially" were about 3 percent less likely to move to another state. These students had found their success locally, it seems. The same could be said of those students who noted the importance of extracurricular activities. This factor is especially important for the self-employed, increasing the probability of non-mobility by 17 percent.

i. Individuals who desired to become leaders in their communities were about 3.5 to 3.7 percent more likely to move to another state. There was no statistical difference between self-employed and wage and salary models.

j. Greater student mobility tended to correlate with workers residing in states with greater population density in in 2003. This finding suggests a continuation of the trend toward more urban areas.

Finally, it is worth noting that the pseudo R^2 measures for each of these models range from 11 to over 15 percent, suggesting that much of the decision to move or not to move is unexplained, even by this model. This is not surprising, given the personal nature of such decisions. However, these models do explain enough of the mobility decision to provide interesting and, hopefully, usable results.

CONCLUSION

This paper looks at the issue of employment and location ten years beyond the awarding of a baccalaureate degree. In general, these findings are consistent with the presence of "brain drain" from many states. Bachelor's degree students with good grades, and especially those who attended expensive top-tier universities, are highly mobile and willing to move away from their home state. These students are also apparently attracted to opportunities that exist elsewhere, as evidenced by the strong relationship between mobility and economic growth. This study also notes the movement of students toward states with greater population densities, continuing the shift away from rural areas.

However, the students who remain in their home states find much there to like as well. Much of the desire to stay relates to the ties that a student has locally. It was not surprising, for instance, to see that non-mobility was highly correlated with an appreciation for living close to one's family. There are also community ties that encourage people to remain in place. These include homeownership, having an existing business (as shown by the significance of prior self-employment experience), marriage, children, and age. The exception to this, is the presence of a well-educated spouse, which increases the likelihood of mobility.

In terms of self-employment, those who work for themselves appear to have the same motivations as their wage and salary counterparts, but there are a few differences. For instance, only age is a determining factor for mobility for the self-employed, whereas wage and salary workers experience some differences in mobility based on sex, race, marriage, and children. Likewise, industrial variables appear to be more important for those who are self-employed versus those who are in wage and salary work, but one's choice of baccalaureate major has little influence. Despite these findings, though, there is a general trend within the data of more similarities than differences between the two groups, with the self-employed and wage and salary workers mirroring one another in mobility versus non-mobility. This suggests that baccalaureate graduates consider a number of factors when choosing to seek opportunities either within their home state or elsewhere, and those factors are more or less similar regardless of whether the respondent is self-employed or a wage and salary worker. In other words, the choice to become self-employed is entirely different than the decision whether or not to relocate.

Given these findings, one might ask how this information is useful for policymakers, employers, and officials trying to stem the net loss of human capital from their communities. The first point to make here is that, unfortunately, this research shows that the highest achieving students are apt to leave

if given the right opportunity. But perhaps it does not have to be so. Some of the more surprising findings are found in the motivations and future priorities students expressed in their senior years of college. For instance, students who were more likely to stay in their home state cited being "well-off financially" and "having time for extracurricular activities" as being important to them. They also noted that they wanted to pursue "intellectually challenging work." These provide some clues to what it takes for students to want to stay local, and policymakers and employers might want to think of programs that might keep the brightest students from moving away. In some ways, this is not unlike the ideas that sprang forth after Florida's (2002) suggestion that states find better ways of attracting and retaining the "creative class."

Of course, this is another way of preventing the brightest students from leaving. If they are moving to another state to pursue opportunities, it is also perfectly feasible that these students might have stayed in the area if the opportunities were there as well. This is evidenced by the highly significant relationship between mobility and economic outcomes. States with higher real GDPs, higher employment, and more firm growth tend to correlate with a movement and pull of students toward them. These are also the states that, according to the Beacon Hill Competitiveness Index, strongly embrace innovation and knowledge. If this is the case, state-level policymakers should devote their energies to growing their economies, and in so doing, economic opportunity might stem the loss of talent. That said, a rising tide might not be enough to stop all "brain drain," as some occupational choices will almost certainly take students elsewhere.

The final piece of the puzzle for stemming "brain drain" is the existence of strong ties to the community. This, of course, is not something policymakers have much control over, but this research suggests that such ties exert powerful influence. While our society does promote homeownership, marriage, and strong families, it is safe to say that we do not do so simply to prevent our local citizens from moving on. Moreover, in an age of dual-income families, it is highly likely that a spouse's job may make mobility even more likely, as evidenced in these results and in the "power couples" research of Costa and Kahn (2000).

Future research should continue to explore the notion of "brain drain" in more detail. For instance, it would be useful to explore the movement of students within their home states as well. If people are moving from rural to urban centers, local regions may be experiencing a loss of talent to large cities in the same state. Another possible avenue for research would involve extending the attitudinal factor analysis discussed earlier. Graduating students provide a number of clues as to

their life and job motivations, and a better understanding of these would allow policymakers to tailor programs that might stem migration from their communities.

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APPENDIX: TABLES

Table 1: Demographic Comparisons of Baccalaureate & Beyond 1993-2003 Respondents in Terms of State-to-State Mobility and Self-Employment (Percentages except where noted)

	Total Sample		**Mobile:** Those who live in a different state in 2003 than where they earned their BA degree in 1993		**Non-Mobile:** Those who live in the same state in 2003 where they earned their BA degree in 1993	
	Self-Employed	**Wage and Salary**	**Self-Employed**	**Wage and Salary**	**Self-Employed**	**Wage and Salary**
Number of Observations	680	6,310	290	2,660	400	3,650
Age in 2003:						
35 years old or less	76.1	75.5	**87.5 ***	**82.9 ***	67.8	70.0
36 to 49 years old	18.9	18.8	**10.1 ***	**13.9 ***	25.3	22.3
50 years old or more	5.0	5.8	**2.4 ***	**3.2 ***	6.8	7.7
Gender:						
Male	50.1	46.1	52.3	**48.2 ***	48.6	44.5
Female	49.7	53.6	47.7	**51.3 ***	51.1	55.2
Race & Ethnicity:						
White, non-Hispanic	83.5	82.5	83.3	**84.1 ***	83.8	81.4
Black, non-Hispanic	4.4	5.4	5.2	5.6	3.8	5.2
Hispanic	3.4	4.4	3.8	**3.2 ***	3.0	5.2
Asian or Pacific Islander	3.4	3.5	3.1	3.2	3.5	3.7
Other	2.2	1.6	**0.7 ****	1.4	3.3	1.6
Marital Status in 2003:						
Single, never married	19.6	20.2	**23.7 ****	**22.0 ***	16.7	18.8
Married	69.6	67.8	**64.8 ***	**66.4 ****	73.2	68.9
Cohabitating, living w/partner	5.3	5.0	**8.0 ***	**6.3 ***	3.3	4.1
Separated, divorced, widowed	5.4	7.0	**3.5 ****	**5.3 ***	6.8	8.3

Number of Children in 2003:						
No children	26.1	37.3	**38.7 ***	**43.1 ***	29.1	33.1
1 to 3 children	63.2	58.0	**54.0 ***	**53.5 ***	61.0	61.3
4 or more children	10.7	4.7	7.3	**3.4 ***	9.9	5.6
Spouse's Highest Education in 2003						
Less than a bachelor's degree	20.4	21.5	**15.7 ***	**15.8 ***	23.8	25.6
Baccalaureate degree	33.6	31.3	31.0	31.8	35.4	30.9
Master's degree	13.2	13.6	**17.1 ***	**16.4 ***	10.4	11.5
Ph.D., J.D., M.D., or other	7.2	6.1	8.4	**8.4 ***	6.3	4.4

Source: Baccalaureate & Beyond 1993/2003 including data from 1993, 1994, 1997, and 2003 from the U.S. Department of Education

Notes: For confidentiality reasons when unweighted B&B data are used, the number of observations is rounded to the nearest 10. Rounding error and/or nonresponses might prevent some columns from adding to 100 percent. The number of children includes both those within the household and those outside the household that can be claimed as dependents.

Shaded areas show where differences between the self-employed and wage and salary workers within the category are significantly different at the 95% confidence level or higher (one-tailed test).

* Differences between the mobile and non-mobile groups (for self-employed or wage and salary workers) are significant at the 99% confidence level (one-tailed test).

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 2: Financial Comparisons of Baccalaureate & Beyond 1993-2003 Respondents in Terms of State-to-State Mobility and Self-Employment (Percentages except where noted)

	Total Sample		Mobile: Those who live in a different state in 2003 than where they earned their BA degree in 1993		Non-Mobile: Those who live in the same state in 2003 where they earned their BA degree in 1993	
	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary
Number of Observations	680	6,310	290	2,660	400	3,650
Total Household Income in 2002:						
Less than $20,000	7.5	4.4	5.6 ***	4.7	8.9	4.2
$20,000 to $39,999	9.8	10.4	10.8	9.0 *	9.1	11.4
$40,000 to $59,999	14.5	16.8	13.6	16.6	15.1	16.9
$60,000 to $79,999	13.5	18.3	13.2	16.6 *	13.7	19.6
$80,000 to $99,999	11.9	15.8	11.5	15.1	12.2	16.2
$100,000 $199,999	29.8	26.0	29.6	28.3 *	29.9	24.3
$200,000 or more	7.9	4.4	9.8 ***	6.1 *	6.6	3.2
Own or Rent Home in 2003:						
Own home	74.6	72.4	66.2 *	66.2 *	80.8	77.0
Rent home	18.6	21.9	26.8 *	29.0 *	12.7	16.7
Neither own nor rent home	5.4	3.7	5.9	3.0 *	5.1	4.2
Monthly Rent or Mortgage in 2003:						
No rent or mortgage payment	9.4	7.1	9.1	4.7 *	9.6	8.9
$1 to $499	7.0	7.1	4.5 **	5.2 *	8.9	8.5
$500 to $999	27.1	33.8	26.5	32.2 **	27.6	34.9
$1,000 to $1,499	24.5	25.3	25.4	26.6 **	23.8	24.3
$1,500 to $1,999	13.9	11.4	14.3	13.3 *	13.7	10.0
$2,000 to $2,499	5.1	5.7	6.3	7.4 *	4.3	4.5

$2,500 or more	7.3	3.9	8.0	**5.4 ***	6.8	2.8

Notes: For confidentiality reasons when unweighted B&B data are used, the number of observations is rounded to the nearest 10. Rounding error and/or nonresponses might prevent some columns from adding to 100 percent.

Shaded areas show where differences between the self-employed and wage and salary workers within the category are significantly different at the 95% confidence level or higher (one-tailed test).

* Differences between the mobile and non-mobile groups (for self-employed or wage and salary workers) are significant at the 99% confidence level (one-tailed test).

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 3: Occupational Comparisons of Baccalaureate & Beyond 1993-2003 Respondents in Terms of State-to-State Mobility and Self-Employment (Percentages except where noted)

	Total Sample		**Mobile:** Those who live in a different state in 2003 than where they earned their BA degree in 1993		**Non-Mobile:** Those who live in the same state in 2003 where they earned their BA degree in 1993	
	Self-Employed	**Wage and Salary**	**Self-Employed**	**Wage and Salary**	**Self-Employed**	**Wage and Salary**
Number of Observations	680	6,310	290	2,660	400	3,650
Self-employment in 1997	18.8	3.0	14.3 *	2.8	22.0	3.2
Years in Current Job (2003):						
0 to 2 years	34.6	30.6	**39.0 ****	**35.7 ***	31.4	26.8
3 to 4 years	21.0	22.3	22.3	**24.8 ***	20.0	20.5
5 to 9 years	32.4	32.7	**29.3 *****	**30.6 ***	34.7	34.3
10 to 14 years	7.8	11.1	6.6	**7.7 ***	8.6	13.6
15 years or more	2.1	3.2	1.4	**1.2 ***	2.5	4.6
Industry for Job in 2003:						
Agriculture, forestry, and fisheries	3.5	1.0	**1.7 ****	0.9	4.8	1.1
Mining, petroleum, and drilling	0.3	0.5	0.3	0.4	0.3	0.5
Construction	8.4	2.2	**5.9 ****	**1.7 ***	10.1	2.7
Manufacturing	2.9	7.2	3.1	7.0	2.8	7.4
Utilities	0.3	1.4	**0.7 ****	**0.9 ***	0	1.8
Wholesale distribution & recycling	0.4	0.8	**0 *****	**0.5 ****	0.8	1.0
Retail trade	7.8	5.4	8.4	5.3	7.3	5.4
Finance, insurance, & real estate	10.7	9.2	11.5	**8.1 ***	10.1	9.9
Business and personal services	12.2	3.7	**10.1 *****	**4.3 ****	13.7	3.3
Entertainment & rec. services	5.7	2.5	**9.8 ***	**3.3 ***	2.8	1.9
Professional & related services	17.0	15.1	15.7	**16.8 ***	18.0	13.8
Public admin. & public safety	0.6	5.6	0.7	**4.4 ***	0.5	6.4

Health care	14.2	18.8	14.6	18.2	13.9	19.3
Communications	5.7	5.0	**7.0 ***	**6.1 ***	4.8	4.2
Transportation	0.7	1.8	**0 ***	1.8	1.3	1.8
Hospitality	2.2	1.6	2.4	1.8	2.0	1.5
Education	3.5	13.4	4.5	13.0	2.8	13.7
Military	0.1	1.8	0.3	**2.5 ***	0	1.3
Other	3.5	2.7	3.1	2.7	3.8	2.7

Source: Baccalaureate & Beyond 1993/2003 including data from 1993, 1994, 1997, and 2003 from the U.S. Department of Education

Notes: For confidentiality reasons when unweighted B&B data are used, the number of observations is rounded to the nearest 10. Rounding error and/or nonresponses might prevent some columns from adding to 100 percent.

Shaded areas show where differences between the self-employed and wage and salary workers within the category are significantly different at the 95% confidence level or higher (one-tailed test).

* Differences between the mobile and non-mobile groups (for self-employed or wage and salary workers) are significant at the 99% confidence level (one-tailed test).

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 4: Undergraduate Education Comparisons of Baccalaureate & Beyond 1993-2003 Respondents in Terms of State-to-State Mobility and Self-Employment (Percentages except where noted)

	Total Sample		Mobile: Those who live in a different state in 2003 than where they earned their BA degree in 1993		Non-Mobile: Those who live in the same state in 2003 where they earned their BA degree in 1993	
	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary
Number of Observations	680	6,310	290	2,660	400	3,650
Undergraduate Major:						
Business and management	14.2	13.9	14.3	**11.4 ***	14.1	15.8
Education	9.1	9.4	7.7	8.9	10.1	9.8
Engineering, math, and science	9.7	15.4	8.4	**16.7 ***	10.6	14.5
Health and biological sciences	13.8	15.4	12.2	14.8	14.9	15.9
Social science fields	34.6	31.1	**38.3 ***	**33.1 ***	31.9	29.6
Other	18.6	14.7	19.2	15.1	18.2	14.4
Undergraduate Grades (All Courses):						
Mostly As	11.1	12.7	11.5	13.1	10.9	12.4
As & Bs	30.2	29.4	**33.8 ***	**30.7 ***	27.6	28.4
Mostly Bs	42.7	40.6	40.1	40.3	44.6	40.8
Bs & Cs	12.2	12.7	**10.1 ****	**11.3 ***	13.7	13.7
Mostly Cs	2.1	2.0	2.8	**1.7 ****	1.5	2.2
Cs & Ds	0.1	0.2	0	**0.3 ***	0.3	0.1
Mostly Ds or below	0.3	0.3	0.3	**0.2 ****	0.3	0.4
Undergraduate Grades (Major):						
Mostly As	22.0	22.6	22.6	**23.5 ****	21.5	21.9
As & Bs	28.6	28.6	**34.1 ***	**29.7 ***	24.6	27.8
Mostly Bs	39.7	28.6	**36.2 ***	**36.2 ***	42.3	39.1

Bs & Cs	5.4	6.6	**3.5 ****	**6.1 *****	6.8	7.0
Mostly Cs	1.0	1.3	1.0	1.1	1.0	1.4
Cs & Ds	0.1	0.2	0	0.2	0.2	0.1
Mostly Ds or below	0.3	0.3	0.3	0.2	0.2	0.3
College or University Carnegie Classifications (1994 Definitions):						
Research I & II	32.7	31.5	**37.6 *****	**34.5 ***	31.6	29.2
Doctoral I & II	10.3	12.1	**8.4 *****	12.3	11.6	11.9
Master's (comprehensive) I & II	30.5	32.7	**25.4 ***	**25.8 ***	34.2	37.6
Baccalaureate (liberal arts) I & II	17.4	17.3	**20.9 ***	**21.3 ***	14.9	14.4
Professional & specialized institutions	4.1	3.5	4.9	3.3	3.5	3.6
Tuition & Fees Per Term (Actual Amounts Charged to the Students):						
Less than $1,000	17.6	16.5	**12.5 ***	**11.5 ***	21.3	20.0
$1,000 to $2,499	29.8	30.3	**21.3 ***	**23.5 ***	35.9	35.2
$2,500 to $4,999	19.1	18.8	19.9	18.4	18.5	19.1
$5,000 to $9,999	14.2	13.7	**17.8 ****	**16.7 ***	11.6	11.5
$10,000 to $14,999	11.1	10.5	**15.3 ***	**14.2 ***	8.1	7.9
$15,000 or more	5.9	7.3	**10.5 ***	**12.5 ***	2.5	3.5

Source: Baccalaureate & Beyond 1993/2003 including data from 1993, 1994, 1997, and 2003 from the U.S. Department of Education

Notes: For confidentiality reasons when unweighted B&B data are used, the number of observations is rounded to the nearest 10. Rounding error and/or nonresponses might prevent some columns from adding to 100 percent. Social science fields include those individuals who majored in history, humanities, political affairs, psychology, and other social science disciplines. For more details on the 1994 definitions of the Carnegie classifications for colleges and universities, see http://sestat.nsf.gov/docs/carnegie.html. Professional schools and specialized institutions include religious, medical, engineering, business, fine arts, and teacher-dedicated institutions. Shaded areas show where differences between the self-employed and wage and salary workers within the category are significantly different at the 95% confidence level or higher (one-tailed test).

* Differences between the mobile and non-mobile groups (for self-employed or wage and salary workers) are significant at the 99% confidence level (one-tailed test).

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 5: Graduate Degree Attainment Comparisons of Baccalaureate & Beyond 1993-2003 Respondents in Terms of State-to-State Mobility and Self-Employment (Percentages except where noted)

	Total Sample		Mobile: Those who live in a different state in 2003 than where they earned their BA degree in 1993		Non-Mobile: Those who live in the same state in 2003 where they earned their BA degree in 1993	
	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary
Number of Observations	680	6,310	290	2,660	400	3,650
Graduate Degree Attainment or Current Status as of 2003:						
No graduate enrollment	63.0	57.1	**58.5 ****	**49.7 ***	66.3	62.5
Attained master's degree	14.7	19.4	**18.1 ****	**21.6 ***	12.2	17.8
Attained professional degree	8.4	4.8	8.7	**6.8 ***	8.1	3.3
Attained doctoral degree	1.3	2.9	**2.1 *****	**4.7 ***	0.8	1.6
Currently enrolled, master's program	0.6	3.9	1.0	3.6	0.3	4.1
Currently enrolled, professional degree	0.3	0.6	0.3	0.7	0.3	0.5
Currently enrolled, doctorate degree	1.0	1.4	1.0	**2.0 ***	1.0	0.9
No attainment, previously enrolled	10.6	9.8	10.1	**10.9 ***	10.9	9.0

Source: Baccalaureate & Beyond 1993/2003 including data from 1993, 1994, 1997, and 2003 from the U.S. Department of Education

Notes: Note: For confidentiality reasons, when unweighted B&B data are used, the number of observations is rounded to the nearest 10. Rounding error and/or nonresponses might prevent some columns from adding to 100 percent.

Shaded areas show where differences between the self-employed and wage and salary workers within the category are significantly different at the 95% confidence level or higher (one-tailed test).

* Differences between the mobile and non-mobile groups (for self-employed or wage and salary workers) are significant at the 99% confidence level (one-tailed test).

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 6: 1992-1993 School Year Attitudinal Questions Comparisons of Baccalaureate & Beyond 1993-2003 Respondents in Terms of State-to-State Mobility and Self-Employment
(Percentages except where noted)

	Total Sample		Mobile: Those who live in a different state in 2003 than where they earned their BA degree in 1993		Non-Mobile: Those who live in the same state in 2003 where they earned their BA degree in 1993	
	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary
Number of Observations	680	6,310	290	2,660	400	3,650
Percent stating that this factor is important to them, in general:						
Ability to find steady work	74.2	79.0	74.2	**76.1** *	74.2	81.0
Becoming an authority in your field	60.1	62.2	61.3	**60.4** *	59.2	63.5
Being a leader in the community	48.5	50.4	47.4	51.3	49.4	49.8
Being successful in your line of work	76.7	81.2	75.6	**78.4** *	77.5	83.2
Being well-off financially	48.5	51.9	46.3	**47.9** *	50.1	54.9
Getting away from where you grew up	22.6	22.6	**29.3** *	**25.0** *	17.7	20.9
To have children	62.3	62.0	**59.2** ***	**59.0** *	64.6	64.2
Having more leisure time	74.5	77.9	73.2	**75.0** *	75.4	80.1
To influence the political structure	34.0	32.0	32.8	32.3	34.9	31.9
To live close to parents and relatives	37.8	37.4	**31.0** *	**30.1** *	42.8	42.8
Owning your own business	39.7	25.3	**35.2** **	**23.5** *	43.0	26.7
Percent stating that this factor is important for them in considering their choice of work in the future:						
Allows roots to be established	4.5	5.1	4.2	5.0	4.8	5.1
Freedom to make own decisions	6.3	5.8	5.6	5.6	6.8	5.9
Good income potential over career	17.7	17.1	18.5	17.3	17.2	17.0
Good income to start	27.9	26.4	27.2	**24.8** *	28.4	27.6
Great deal of travel	3.1	2.3	2.4	2.4	3.5	2.3
Ability to work independently	4.0	4.6	4.2	**4.0** **	3.8	5.1

Intellectually challenging work	11.9	12.7	10.1	**11.2 ***	13.2	13.9
Interaction with people	38.4	40.4	36.9	39.9	39.5	40.7
Interesting work	16.3	18.5	14.3	**17.0 ***	17.7	19.6
Job security	16.6	15.7	16.0	15.5	17.0	15.9
Prestige and status	7.2	6.3	7.3	**5.6 ****	7.1	6.8
Previous work experience in the area	12.0	14.6	13.2	14.2	11.1	14.9
Time for extracurricular activities	4.3	3.8	**2.8 *****	**3.0 ***	5.3	4.3

Source: Baccalaureate & Beyond 1993/2003 including data from 1993, 1994, 1997, and 2003 from the U.S. Department of Education

Notes: For confidentiality reasons, when unweighted B&B data are used, the number of observations is rounded to the nearest ten. Rounding error and/or nonresponses might prevent some columns from adding to 100 percent.

Shaded areas show where differences between the self-employed and wage and salary workers within the category are significantly different at the 95% confidence level or higher (one-tailed test).

* Differences between the mobile and non-mobile groups (for self-employed or wage and salary workers) are significant at the 99% confidence level (one-tailed test).

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 7: Various State-Level Economic and Other Indicators, 1993-2003

	Difference in State Real GDP Growth and the National Average, *in percent*	Difference in Growth in the Number of Firms and the National Average, *in percent*	Average Yearly Percentage Change in Private Employment	Percentage of Manufacturing Employment Relative to the State Total (2003)	Percentage of Overall Employment in Non-Metropolitan Areas (2003)	Beacon Hill Institute State Competitiveness Index (2003)	State-Level Land Area, *in thousands of square miles* (2000)	State-Level Persons Per Square Mile (2000)
Alabama	-11.51	-6.67	0.99	17.47	13.10	3.76	50.74	87.6
Alaska	-45.31	11.11	2.03	4.58	24.60	5.01	571.96	1.1
Arizona	48.73	11.02	4.00	8.26	3.78	3.70	113.63	45.2
Arkansas	-2.84	-19.57	1.41	21.12	17.77	3.55	52.07	51.3
California	3.08	4.91	1.86	11.62	0.91	5.27	155.96	217.2
Colorado	27.36	18.15	2.76	7.36	8.97	5.74	103.72	41.5
Connecticut	-10.13	-31.28	0.58	12.85	0.02	5.85	4.84	702.9
Delaware	12.85	21.65	1.81	9.82	0.03	7.81	1.95	401.0
District of Columbia	-24.08	-22.82	1.24	0.44	0	5.40	0.06	9378.0
Florida	10.26	20.82	2.86	5.65	8.80	4.59	53.93	296.4
Georgia	15.59	4.20	2.33	13.27	7.13	4.63	57.91	141.4
Hawaii	-39.68	-18.66	0.49	3.13	38.55	3.30	6.42	188.6
Idaho	16.47	25.84	2.97	13.24	14.80	5.45	82.75	15.6
Illinois	-5.56	-22.42	0.86	13.56	3.46	4.36	55.58	223.4
Indiana	0.77	-2.08	1.01	21.55	4.41	4.80	35.87	169.5
Iowa	-0.30	-2.83	1.26	17.93	30.32	5.37	55.87	52.4

Kansas	-7.66	3.31	1.64	15.80	11.71	5.36	81.81	32.9
Kentucky	-9.38	-0.62	1.48	17.73	17.27	4.63	39.73	101.7
Louisiana	-26.58	1.92	1.52	9.33	5.09	3.64	43.56	102.6
Maine	-10.88	6.61	1.73	13.39	29.71	4.99	30.86	41.3
Maryland	-4.13	-2.30	1.86	7.05	1.27	5.29	9.77	541.9
Massachusetts	3.21	1.91	1.27	10.72	0.33	7.00	7.84	809.8
Michigan	-3.37	-7.09	1.08	17.49	5.80	5.09	56.80	175.0
Minnesota	12.07	12.91	1.81	14.25	9.85	5.95	79.61	61.8
Mississippi	-12.71	-15.47	1.02	18.92	20.03	2.74	46.91	60.6
Missouri	-3.39	4.21	1.10	12.93	8.77	5.06	68.89	81.2
Montana	-12.02	15.07	2.28	6.03	30.12	5.21	145.55	6.2
Nebraska	-3.29	-16.35	1.95	13.37	56.67	5.37	76.87	22.3
Nevada	32.09	46.23	5.09	4.25	11.03	3.60	109.83	18.2
New Hampshire	13.78	-39.18	2.14	14.47	67.99	5.87	8.97	137.8
New Jersey	-8.49	-4.39	1.40	9.46	1.01	5.00	7.42	1134.5
New Mexico	4.60	-0.65	2.21	5.77	4.37	4.56	121.36	15.0
New York	-10.18	-0.54	0.91	8.26	1.59	4.77	47.21	401.9
North Carolina	11.34	10.69	1.50	17.72	6.41	4.65	48.71	165.2
North Dakota	-2.03	-17.31	1.82	8.72	27.32	4.94	68.98	9.3
Ohio	-8.62	1.25	0.96	17.58	3.24	4.54	40.95	277.3
Oklahoma	-12.57	3.03	1.73	12.05	12.91	4.06	68.67	50.3

Oregon	28.14	8.70	1.90	13.45	2.69	5.63	96.00	35.6
Pennsylvania	-12.77	-10.97	0.97	13.57	2.12	4.81	44.82	274.0
Rhode Island	-6.63	2.17	1.27	14.04	0.03	5.19	1.04	1003.2
South Carolina	1.35	10.09	1.55	18.27	4.90	4.20	30.11	133.2
South Dakota	7.37	-5.94	2.05	12.18	19.40	5.74	75.88	9.9
Tennessee	0.46	-5.83	1.38	17.13	7.96	4.38	41.22	138.0
Texas	11.21	7.78	2.39	10.70	4.42	4.66	261.80	79.6
Utah	19.17	32.64	3.08	12.08	5.17	6.46	82.14	27.2
Vermont	-3.06	-37.87	1.49	15.33	31.91	6.26	9.25	65.8
Virginia	3.30	9.93	2.12	10.52	8.35	5.64	39.59	178.8
Washington	0.23	-3.59	1.62	10.81	2.02	6.45	66.54	88.6
West Virginia	-21.62	-14.18	1.20	12.40	24.18	3.30	24.08	75.1
Wisconsin	-1.44	8.09	1.44	20.56	10.64	5.21	54.31	98.8
Wyoming	-22.89	10.06	2.00	5.73	31.67	6.58	97.10	5.1

Source: Author calculations based on data from the U.S. Bureau of the Census, U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, U.S. Small Business Administration Office of Advocacy, and the Beacon Hill Institute at Suffolk University

Notes: Real GDP is based on chained 2000 dollars, with U.S. real GDP growing 41.22 percent between 1993 and 2003. There was an 11.02 percent increase in the number of firms in the United States over the same time period. Due to data suppressions in 2003, some states utilize 2002 firm size data to calculate their non-MSA percentages. The Beacon Hill competitiveness index value for Washington, DC, uses the index for the overall metropolitan area.

Table 8: State-Level Economic and Other Comparisons of Baccalaureate & Beyond 1993-2003 Respondents in Terms of State-to-State Mobility and Self-Employment (Percentages except where noted)

	Total Sample		Mobile: Those who live in a different state in 2003 than where they earned their BA degree in 1993		Non-Mobile: Those who live in the same state in 2003 where they earned their BA degree in 1993	
	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary	Self-Employed	Wage and Salary
Number of Observations	680	6,310	290	2,660	400	3,650
Ten-Year Change in Real GDP Relative to the National Average (1993 home state):						
10% or greater than national average	26.1	25.3	24.0	**23.1 ***	27.6	27.0
0 to 9.99% more than national average	22.6	21.8	**19.2 ** **	**20.8 ** **	25.1	22.6
-9.99 to 0.01% less than national average	24.0	24.6	25.8	**25.6 ** **	22.8	23.9
-10% or less than the national average	20.7	22.3	22.3	**24.4 ***	19.5	20.8
Ten-Year Change in Real GDP Relative to the National Average (2003 home state):						
10% or greater than national average	31.2	29.1	33.4	**31.1 ***	29.6	27.7
0 to 9.99% more than national average	27.1	25.5	28.9	**26.8 ** **	25.8	24.5
-9.99 to 0.01% less than national average	21.1	24.0	19.2	23.5	22.5	24.3
-10% or less than the national average	19.1	19.9	**15.7 ** **	**16.3 ***	21.5	22.5
Difference in the Growth of the # of Firms and the National Average (1993 home state):						
10% or greater than national average	18.5	15.9	19.5	**16.6 *** ***	17.7	15.4
0 to 9.99% more than national average	38.0	37.3	**28.6 ***	**31.9 ***	44.8	41.2
-9.99 to 0.01% less than national average	23.5	26.5	**26.1 *** ***	**29.0 ***	21.5	24.7
-10% or less than the national average	13.5	14.3	**17.1 ***	**16.3 ***	10.9	12.9
Difference in the Growth of the # of Firms and the National Average (2003 home						

state):						
10% or greater than national average	21.3	18.1	**24.7 ****	**21.1 ***	18.7	15.9
0 to 9.99% more than national average	43.7	40.8	**39.4 ****	**37.6 ***	46.8	43.2
-9.99 to 0.01% less than national average	21.6	25.5	**19.2 *****	24.7	23.3	26.1
-10% or less than the national average	12.0	14.1	**13.9 *****	14.4	10.6	13.8
Average Yearly Change in State-Level Private Employment (1993 home state):						
0 to 0.99 percent	22.1	25.0	**26.5 ***	**26.5 ****	19.0	24.0
1.00 to 1.99 percent	47.5	45.5	**41.1 ***	44.6	52.2	46.1
2.00 to 2.99 percent	21.5	21.7	20.9	**20.9 *****	21.8	22.3
3.00 percent or greater	2.3	1.9	2.8	1.9	2.0	1.8
Average Yearly Change in State-Level Private Employment (2003 home state):						
0 to 0.99 percent	18.8	22.8	16.7	**18.4 ***	20.3	26.1
1.00 to 1.99 percent	50.0	48.5	**46.0 ****	**49.8 ****	52.9	47.7
2.00 to 2.99 percent	26.4	24.8	**30.3 ****	**26.7 ***	23.5	23.4
3.00 percent or greater	3.4	2.2	4.2	**2.8 ***	2.8	1.8
Percentage of Manufacturing Employment within the State (1993 home state):						
0 to 4.99 percent	0.9	0.8	1.4	**1.0 ****	0.5	0.6
5.00 to 9.99 percent	23.5	21.8	**27.9 ****	**25.8 ***	20.3	18.9
10.00 to 14.99 percent	48.1	47.1	**42.5 ***	**43.9 ***	52.2	49.4
15.00 percent or greater	21.0	24.4	19.5	**23.1 ****	22.0	25.3
Percentage of Manufacturing Employment within the State (2003 home state):						
0 to 4.99 percent	1.9	1.3	**3.8 ***	**2.4 ***	0.5	0.5
5.00 to 9.99 percent	24.0	21.9	**27.2 *****	**25.2 ***	21.8	19.5

10.00 to 14.99 percent	52.1	51.6	49.5	50.8	53.9	52.3
15.00 percent or greater	20.5	23.6	**16.7 ****	**19.4 ***	23.3	26.7
Percentage of Overall Employment in Non-Metropolitan Areas (1993 home state):						
0 to 4.99 percent	51.9	53.1	53.7	53.4	50.6	52.8
5.00 to 9.99 percent	25.5	24.3	**21.3 ****	24.1	28.6	24.5
10.00 to 14.99 percent	8.5	7.7	**6.6 *****	**6.4 ***	9.9	8.7
15.00 percent or greater	7.5	8.9	**9.8 ****	**10.0 ***	5.8	8.1
Percentage of Overall Employment in Non-Metropolitan Areas (2003 home state):						
0 to 4.99 percent	53.2	55.5	53.7	**54.5 *****	52.9	56.3
5.00 to 9.99 percent	30.1	27.7	30.3	**31.0 ***	29.9	25.3
10.00 to 14.99 percent	8.2	7.3	**4.9 ***	**5.2 ***	10.6	8.9
15.00 percent or greater	7.0	7.9	8.4	**7.0 ****	6.1	8.5
Beacon Hill State-Level Competitiveness Index (1993 home state)						
Less than 4.00 (less competitive)	8.2	7.3	7.7	**6.6 ****	8.6	7.8
4.00 to 4.99	43.3	47.8	42.9	47.2	43.5	48.3
5.00 to 5.99	36.1	32.8	35.2	33.4	36.7	32.3
6.00 or greater (more competitive)	5.9	6.2	5.6	**6.6 *****	6.1	5.8
Beacon Hill State-Level Competitiveness Index (2003 home state)						
Less than 4.00	8.5	7.0	8.0	**5.9 ***	8.9	7.9
4.00 to 4.99	45.2	47.3	43.6	**41.6 ***	46.3	51.5
5.00 to 5.99	37.7	36.9	36.9	**41.6 ***	38.2	33.6
6.00 or greater	7.2	7.1	**8.7 *****	**8.5 ***	6.1	6.1

State-Level Land Area, in Thousands of Square Miles (1993 home state)						
Less than 25.00	11.3	11.3	**14.3 ****	**14.8 ***	9.1	8.7
25.00 to 49.99	26.1	31.5	27.9	**33.5 ***	24.8	30.0
50.00 to 74.99	26.5	25.7	**22.0 ****	**23.7 ***	29.9	27.3
75.00 to 99.99	6.7	7.6	7.3	7.9	6.3	7.3
100.00 or greater	22.7	18.0	**19.9 *****	**14.0 ***	24.8	20.9
State-Level Land Area, in Thousands of Square Miles (1993 home state)						
Less than 25.00	11.4	12.5	**13.9 ****	**17.5 ***	9.6	8.9
25.00 to 49.99	25.7	30.4	23.7	**27.2 ***	27.1	32.8
50.00 to 74.99	27.7	26.4	**24.4 ****	**24.4 ***	30.1	27.9
75.00 to 99.99	5.3	7.6	**3.5 ****	7.5	6.6	7.8
100.00 or greater	28.4	21.4	**31.7 ****	21.0	26.1	21.7
State-Level Persons per Square Mile (1993 home state)						
Less than 100.00 people per square mile	33.1	33.4	**28.2 ***	**31.0 ***	36.7	35.2
100.00 to 199.99	16.6	19.1	**14.3 *****	18.7	18.2	19.3
200.00 to 299.99	27.6	24.7	27.9	**22.7 ***	27.3	26.2
300.00 or greater	16.1	16.8	**20.9 ***	**21.4 ***	12.7	13.5
State-Level Persons per Square Mile (2003 home state)						
Less than 100.00 people per square mile	35.3	34.1	**30.7 ****	**30.9 ***	38.7	36.4
100.00 to 199.99	20.4	21.6	21.6	**23.6 ***	19.5	20.1
200.00 to 299.99	27.6	25.7	28.2	**22.2 ***	27.1	28.2
300.00 or greater	15.2	17.1	16.7	**21.0 ***	14.2	14.2

Notes: For confidentiality reasons, when unweighted B&B data are used, the number of observations is rounded to the nearest 10. Rounding error and/or nonresponses might prevent some columns from adding to 100 percent.

Shaded areas show where differences between the self-employed and wage and salary workers within the category are significantly different at the 95% confidence level or higher (one-tailed test).

* Differences between the mobile and non-mobile groups (for self-employed or wage and salary workers) are significant at the 99% confidence level (one-tailed test).

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 9: Multivariate Logit Analysis using Baccalaureate & Beyond 1993/2003 Data

Dependent Variable: Mobility (Living in a Different State in 2003 than where the Student Earned Their Bachelor's Degree)

REAL GDP DIFFERENTIAL VERSION

	Total sample		Only those who were self-employed in 2003		Only those who were wage and salary workers in 2003	
	Coefficient estimate/ standard error	Marginal effects after logit	Coefficient estimate/ standard error	Marginal effects after logit	Coefficient estimate/ standard error	Marginal effects after logit
Constant	-0.7247 * (0.1184)	--	-0.4235 (0.4010)	--	-0.6429 * (0.1218)	--
Demographic variables:						
Individual is 35 years or older in 2003 (born before 1968)	-0.4897 * (0.0617)	-0.1116	-0.8750 * (0.2284)	-0.1969	-0.4660 * (0.0639)	-0.1062
Male	0.0867 *** (0.0508)	0.0205			0.0951 *** (0.0531)	0.0224
Hispanic	-0.5630 * (0.1248)	-0.1228			-0.6268 * (0.1306)	-0.1348
Married in 2003	-0.1625 ** (0.0718)	-0.0386			-0.1573 ** (0.0747)	-0.0373
Number of children (both at home and as dependents)	-0.0767 * (0.0203)	-0.0181			-0.0826 * (0.0214)	-0.0195
Financial variables:						
Household income in 2003 is less than $20,000			-0.9308 ** (0.3711)	-0.1981		
Household income in 2003 is greater than $100,000	0.1552 ** (0.0609)	0.0370			0.1648 * (0.0642)	0.0392
Owns his or her own home in 2003	-0.5204 *	-0.1254	-0.9253 *	-0.2259	-0.5013 *	-0.1205

	(0.0626)		(0.2270)		(0.0650)	
Mortgage or rent payment is less than $1,000 each month in 2003	-0.3114 * (0.0552)	-0.0734	-0.3828 ** (0.1864)	-0.0915	-0.3131 * (0.0578)	-0.0737
Industry variables (2003):						
Number of years in current job is 2 years or less	0.2529 * (0.0532)	0.0604			0.2827 * (0.0556)	0.0674
Individual was self-employed in 1997			-0.4599 ** (0.2312)	-0.1068		
Individual works in the "soft service" or "professional" service industry			0.3759 *** (0.2233)	0.0882		
Education variables:						
Business major					-0.1422 *** (0.0811)	-0.0331
Education major	-0.2470 * (0.0721)	-0.0571			-0.2482 * (0.0746)	-0.0572
Grades within major were mainly "As" or "As & Bs" at bachelor's level	0.1364 * (0.0500)	0.0322	0.5266 * (0.1753)	0.1261	0.1032 ** (0.0518)	0.0243
Carnegie classification of bachelor's degree – either Research I or II	0.2568 * (0.0546)	0.0613	0.3467 *** (0.1869)	0.0841	0.2556 * (0.0573)	0.0609
Tuition and fees for bachelor's degree was $5,000 or more per term	0.7721 * (0.0547)	0.1858	0.8551 * (0.1933)	0.2080	0.7749 * (0.0571)	0.1863
Student has since earned a graduate degree, or is working toward one	0.0872 *** (0.0528)	0.0207				
Spouse has earned a bachelor's degree or greater, if applicable	0.3826 * (0.0624)	0.0901			0.3906 * (0.0651)	0.0918
Motivational factors (1992-1993):						

Important to become a leader in the community	0.1552 * (0.0526)	0.0366				
Becoming well-off financially is important	-0.1642 * (0.0529)	-0.0388			-0.1224 ** (0.0542)	-0.0288
Important to get away from where they grew up	0.2368 * (0.0595)	0.0567	0.6486 * (0.2057)	0.1590	0.2175 * (0.0619)	0.0519
Student desires to live close to parents and relatives	-0.4739 * (0.0534)	-0.1102	-0.3932 ** (0.1825)	-0.0935	-0.4528 * (0.0548)	-0.1052
Student hopes to have intellectually challenging work in their career	-0.1605 ** (0.0765)	-0.0374			-0.1453 *** (0.0789)	-0.0338
Having time for extracurricular activities is important	-0.2956 ** (0.1348)	-0.0673	-0.8149 *** (0.4492)	-0.1753	-0.2924 ** (0.1402)	-0.0664
Economic and geographic factors (1993-2003):						
States with 10% or greater difference between its state real GDP and the national average	0.6177 * (0.0576)	0.1485	0.5538 * (0.1970)	0.1347	0.6240 * (0.0602)	0.1498
Beacon Hill Competitiveness Index in 2003 is 5.00 or greater	0.5027 * (0.0516)	0.1189			0.5171 * (0.0539)	0.1220
State has 100 people per square mile or Greater (population density)	0.2664 * (0.0564)	0.0622	0.2530 (0.1962)	0.0604	0.2614 * (0.0589)	0.0609
Logit regression statistics:						
# of observations	8240		680		7560	
Log likelihood	-4921.93		-397.34		-4513.05	
Chi-squared	**1239.84 * ***		**133.59 ***		**1127.86 ***	
Pseudo R-squared	0.1119		0.1439		0.1111	

Note: For confidentiality reasons, when unweighted B&B data are used, the number of observations is rounded to the nearest 10.

* Significant at the 99% confidence level.

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.

Table 10: Multivariate Logit Analysis using Baccalaureate & Beyond 1993/2003 Data

Dependent Variable: Mobility (Living in a Different State in 2003 than where the Student Earned Their Bachelor's Degree)

FIRM AND EMPLOYMENT GROWTH VERSION

	Total sample		Only those who were self-employed in 2003		Only those who were wage and salary workers in 2003	
	Coefficient estimate/ standard error	Marginal effects after logit	Coefficient estimate/ standard error	Marginal effects after logit	Coefficient estimate/ standard error	Marginal effects after logit
Constant	**-0.6865 *** (0.1168)	--	-0.5050 (0.3998)	--	**-0.6020 *** (0.1202)	--
Demographic variables:						
Individual is 35 years or older in 2003 (born before 1968)	**-0.5034 *** **(0.0620)**	**-0.1145**	**-0.8737 *** **(0.2302)**	**-0.1962**	**-0.4809 *** **(0.0643)**	**-0.1094**
Male	**0.0919 ***** **(0.0510)**	**0.0217**			**0.1016 ***** **(0.0533)**	**0.0240**
Hispanic	**-0.6088 *** **(0.1259)**	**-0.1316**			**-0.6748 *** **(0.1317)**	**-0.1438**
Married in 2003	**-0.1871 *** **(0.0723)**	**-0.0445**			**-0.1834 **** **(0.0751)**	**0.0435**
Number of children (both at home and as dependents)	**-0.0786 *** **(0.0204)**	**-0.0186**			**-0.0836 *** **(0.0215)**	**-0.0197**
Financial variables:						
Household income in 2003 is less than $20,000			**-0.9693 *** **(0.3754)**	**-0.2044**		
Household income in 2003 is greater than $100,000	**0.1654 *** **(0.0612)**	**0.0394**			**0.1762 *** **(0.0645)**	**0.0419**
Owns his or her own home in 2003	**-0.5358 ***	**-0.1291**	**-0.9663 ***	**-0.2356**	**-0.5148 ***	**-0.1237**

	(0.0629)		(0.2295)		(0.0653)	
Mortgage or rent payment is less than $1,000 each month in 2003	-0.3330 * (0.0555)	-0.0784	-0.4006 ** (0.1880)	-0.0955	-0.3353 * (0.0580)	-0.0788
Industry variables:						
Number of years in current job (2003) is 2 years or less	0.2538 * (0.0534)	0.0605			0.2845 * (0.0558)	0.0678
Individual was self-employed in 1997			-0.4623 ** (0.2332)	-0.1072		
Individual works in the "soft service" or "professional" service industry			0.3828 *** (0.2256)	0.0896		
Education variables:						
Business major					-0.1504 *** (0.0816)	-0.0349
Education major	-0.2469 * (0.0724)	-0.0570			-0.2509 * (0.0748)	-0.0578
Grades within major were mainly "As" or "As & Bs" at bachelor's level	0.1400 * (0.0502)	0.0330	0.5143 * (0.1765)	0.1230	0.1078 ** (0.0520)	0.0254
Carnegie classification of bachelor's degree – either Research I or II	0.2487 * (0.0548)	0.0593	0.2936 (0.1890)	0.0711	0.2507 * (0.0575)	0.0597
Tuition and fees for bachelor's degree was $5,000 or more per term	0.7854 * (0.0550)	0.1889	0.8832 * (0.1950)	0.2146	0.7873 * (0.0573)	0.1892
Student has since earned a graduate degree, or is working toward one	0.0855 (0.0530)	0.0203				
Spouse has earned a bachelor's degree or greater, if applicable	0.4011 * (0.0627)	0.0944			0.4080 * (0.0654)	0.0958
Motivational factors (1992-1993):						

Important to become a leader in the community	**0.1486 *** **(0.0528)**	**0.0351**				
Becoming well-off financially is important	**-0.1655 *** **(0.0531)**	**-0.0391**			**-0.1220 **** **(0.0545)**	**-0.0287**
Important to get away from where they grew up	**0.2419 *** **(0.0597)**	**0.0579**	**0.6348 *** **(0.2084)**	**0.1555**	**0.2227 *** **(0.0621)**	**0.0532**
Student desires to live close to parents and relatives	**-0.4735 *** **(0.0537)**	**-0.1100**	**-0.4145 **** **(0.1843)**	**-0.0983**	**-0.4518 *** **(0.0550)**	**-0.1048**
Student hopes to have intellectually challenging work in their career	**-0.1631 **** **(0.0768)**	**-0.0379**			**-0.1496 ***** **(0.0791)**	**-0.0348**
Having time for extracurricular activities is important	**-0.2800 **** **(0.1356)**	**-0.0638**	**-0.7697 ***** **(0.4535)**	**-0.1666**	**-0.2798 **** **(0.1411)**	**-0.0636**
Economic and geographic factors (1993-2003):						
States with 10% or greater difference between a state's growth in the number of firms and the national average	**0.5303 *** **(0.0642)**	**0.1285**	**0.5222 **** **(0.2287)**	**0.1278**	**0.5305 *** **(0.0671)**	**0.1284**
2% or greater average yearly change in private employment	**0.4385 *** **(0.0597)**	**0.1052**	**0.5214 **** **(0.2198)**	**0.1268**	**0.4385 *** **(0.0621)**	**0.1051**
Beacon Hill Competitiveness Index in 2003 is 5.00 or greater	**0.4406 *** **(0.0508)**	**0.1042**			**0.4530 *** **(0.0531)**	**0.1069**
State has 100 people per square mile or Greater (population density)	**0.2299 *** **(0.0554)**	**0.0538**	0.3071 (0.1984)	0.0730	**0.2188 *** **(0.0577)**	**0.0511**
Logit regression statistics:						
# of observations	8240		680		7560	
Log likelihood	-4890.65		-392.07		-4486.38	

Chi-squared	**1302.39 ***	**144.13 ***	**1181.20 ***
Pseudo R-squared	0.1175	0.1553	0.1163

Note: For confidentiality reasons, when unweighted B&B data are used, the number of observations is rounded to the nearest 10.

* Significant at the 99% confidence level.

** Significant at the 95% confidence level.

*** Significant at the 90% confidence level.