



Graduate Migration
from
Indiana's Postsecondary Institutions

March 1999

Graduate Migration from Indiana's Postsecondary Institutions

I. Introduction

Across the United States public and private institutions of higher education are the primary developers of highly-educated human capital, defined as persons with education beyond the high school years, and in that role constitute a system that is the envy of the rest of the world. Higher education in the U.S. is a huge undertaking, providing services to the majority of the families in our nation in one form or another and, in the process, becoming a focal point for public policymakers at every level of government. This nation's public colleges and universities raised and spent \$189.1 billion in 1994-95. Here in Indiana, our State's public and private postsecondary institutions had revenues of approximately \$4.2 billion with parents and students providing \$1.3 billion of that amount in the form of tuition and fees.¹

Indiana's postsecondary institutions produced 49,322 graduates in 1996-97.

Indiana's postsecondary institutions produced 49,322 graduates in 1996-97, spread across five different degree types, along with two other credentials. During the school year 377,782 students were enrolled [headcount], for a full-time equivalent student enrollment of 230,669.² Clearly, Indiana is a state in which higher education plays an important role. In terms of enrollment capacity, Indiana ranks 16th among the 50 states.³

Table 1			
Degrees Awarded by Level			
Indiana Public/Private Postsecondary Institutions⁴			
Fiscal Year 1996-1997			
Degree Type	Public	Private	Total
Certificate	1,966	30	1,996
Associate	7,017	737	7,754
Baccalaureate	20,260	9,419	29,679
Master's	5,702	1,712	7,414
Specialist	35	0	35
First Professional	922	425	1,347
Doctorate	969	128	1,097
Total	36,871	12,451	49,322

¹ U.S. Department of Education. National Center for Education Statistics. *Digest of Education Statistics, 1997*, NCES 98-015, Washington, D.C., 1997.

² A full-time equivalent student or FTE is defined as an annual load of 30 credit hours for undergraduate students and 24 credit hours for graduate students.

³ *Digest of Educational Statistics, 1997*, p.205.

⁴ The number of degrees is supplied by the Indiana Commission for Higher Education from its Student Information System [SIS] compiled from Public Postsecondary Education Sources, and from U.S. Department of Education's Integrated Postsecondary Education Data System [IPEDS].

II. Indiana's Supply of Human Capital

Workers go where the jobs are; the more educated the worker, the greater the

As human capital becomes a more important part of the economic development calculus, state policymakers devote more attention to increasing the supply in their own states. They do so with the recognition that the task of supplying an educated workforce, available to prospective business development, is a difficult one. Workers go where the jobs are; the more educated the worker, the greater the mobility. The higher probability of migration associated with educated workers is well established and is an important factor in the public policy debate regarding human capital retention.⁵

State officials unable to control the private economies in their states are nonetheless being asked why they can't seem to increase the education level of their incumbent workforce. State policymakers respond by pointing to the job structure of the state's economy and arguing that the human capital supply is a function of what that economy requires in its workforce.

In Indiana this dialogue has a long history. The State's educational attainment, the ratio of persons with higher education credentials to total working population, has long ranked the State near the bottom of the 50 states in the nation. In 1970, Indiana ranked 44th in the percentage of its population with four years or more of college. According to 1998 census data, it ranks 47th among the 50 states.

Why Indiana ranks so low among its sister states is not immediately clear. The State's postsecondary institutions attract

... we bring in 2.21 students for every one leaving to enroll in college elsewhere, a statistic which ranks sixth in the U.S.

more than their share of enrollees from other states. In the last year

for which there are national data, 1996, Indiana's postsecondary institutions attracted 9,800 high school graduates migrating into the State to enroll in college, putting our State in ninth place nationally. In fact, we bring in 2.21 students for every one leaving to enroll in college elsewhere, a statistic which ranks sixth in the U.S.⁶

Table 2
Educational Attainment
Persons 25+ Years
Bachelor's Degree or Higher

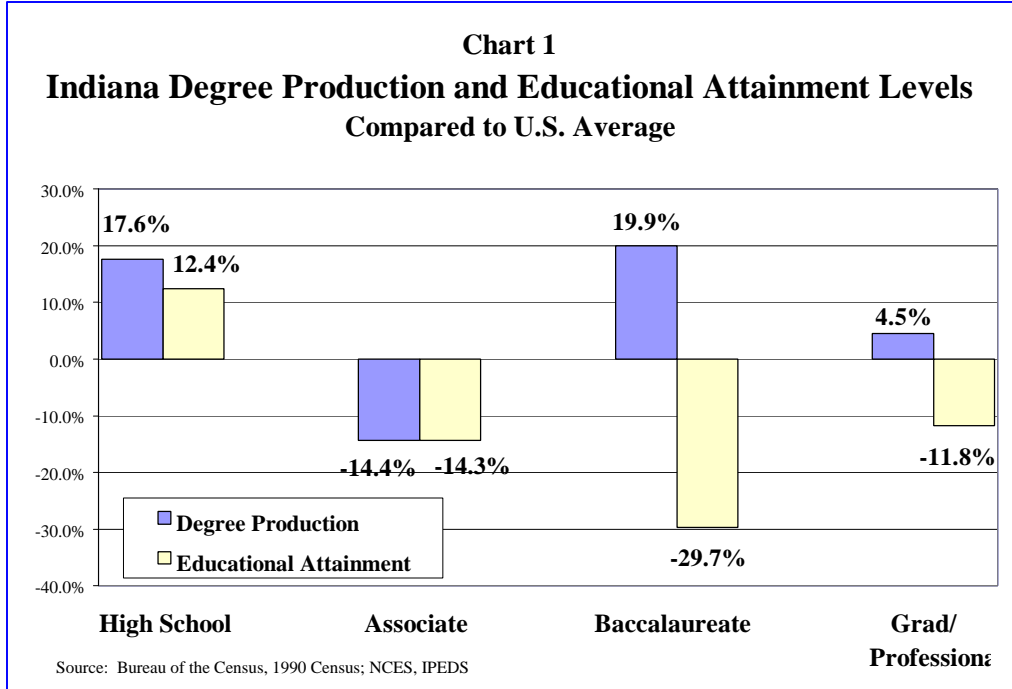
State	% of Population	Rank
Illinois	25.8	17
Michigan	22.1	29
Ohio	21.5	33
Kentucky	20.1	42
Maine	19.2	46
Indiana	17.7	47
Tennessee	16.9	48
West Virginia	16.3	49
Arkansas	16.2	50

Source: US Census Bureau, CPS, March 1998

⁵ "Very high levels of education (college or university degrees) substantially increase the likelihood of migration." A. Borsch-Supan, "The Role of Education: Mobility Increasing or Mobility Impeding," National Bureau of Economic Research, Working Paper No. 2329, p. 12.

⁶ This calculation, known as the migration exchange index is based on data from the National Center for Education Statistics [Integrated Postsecondary Education Data System].

Indiana's postsecondary system is effective in producing more educated individuals, particularly at the baccalaureate degree level. The State produces baccalaureate graduates at a rate 19.9 percent above the national average. However, as Chart 1 illustrates, Indiana's retention of baccalaureate degree holders is 29.7 percent below the national average.



Because human capital is increasingly important to State policymakers striving to improve the economic opportunities available to their citizens, a long-standing deficiency in such a vital area demands more analysis. This report investigates the residency status, employment status, and motivations for employment and migration evidenced by recent graduates of Indiana colleges and universities. It presents findings from the survey responses of those who graduated from public postsecondary institutions in 1985-86, 1990-91, and 1995-96. Graduates of private colleges and universities were also surveyed, however, those data are not yet available. It will be included in subsequent reports. This study is directed at demonstrating how the flow of graduates from Indiana's postsecondary institutions affects the stock of human capital in this State, and at providing a basic comparison with national norms.

This report investigates the residency status, employment status, and motivations for employment and migration evidenced by recent graduates of Indiana colleges and universities.

III. State Graduate Migration Studies

A number of states have approached these human capital questions by making an attempt to provide more information on the subject and thus shed light on this difficult issue within their own state. A few studies have been undertaken by national organizations to develop a nationwide picture of graduate migration. Many colleges and universities periodically perform alumni surveys to determine the degree of satisfaction with their programs and in the

process pick up graduate migration information. Alumni studies are rarely designed to produce statistically significant conclusions regarding graduate migration patterns or motivations.

Research into the interstate flow of postsecondary graduates is limited. . . . officials in forty states could not cite graduate retention rates.

Although data on graduate mobility are necessary to understanding the process of in-state human capital development, few states systematically collect such data. Research into the interstate flow of postsecondary graduates is, therefore, limited. In a survey conducted by the staff of the Indiana Fiscal Policy Institute for a companion report on postsecondary graduate retention policies, officials in forty states could not cite graduate retention rates. Officials in eight states [Florida, Indiana, New Hampshire, North Carolina, North Dakota, Oklahoma, South Dakota, and West Virginia] were able to report retention rates, while researchers in two states [Texas and Oregon] could not release their data.

A few states have developed processes for systematically gathering data on graduate migration, although in every case this is a secondary objective. The studies are conducted using state employment system data to determine if the graduates were still located within the state and if so, whether they were employed. Although these data can be very useful, the dataset is not complete for all in-state workers and, therefore, must be supplemented in order to give a true picture of graduate employment. In addition, state employment data cannot reflect the patterns of migration for graduates who leave the state.

One limiting factor to these [other] studies is the brief period since graduation . . . one year after finishing school—a time full of volatility in the employment and residency status of graduates.

Other studies are conducted either regionally or nationally to assess the mobility and employment success of recent graduates. The Southern Technology Council studied the movement of science and engineering graduates throughout the United States using data from the National Science Foundation's National Survey of Recent College Graduates. The National Center for Education Statistics [NCES] conducted the 1994 Baccalaureate and Beyond Study, which is now being updated. One limiting factor to these studies is the brief period since graduation within which the survey is

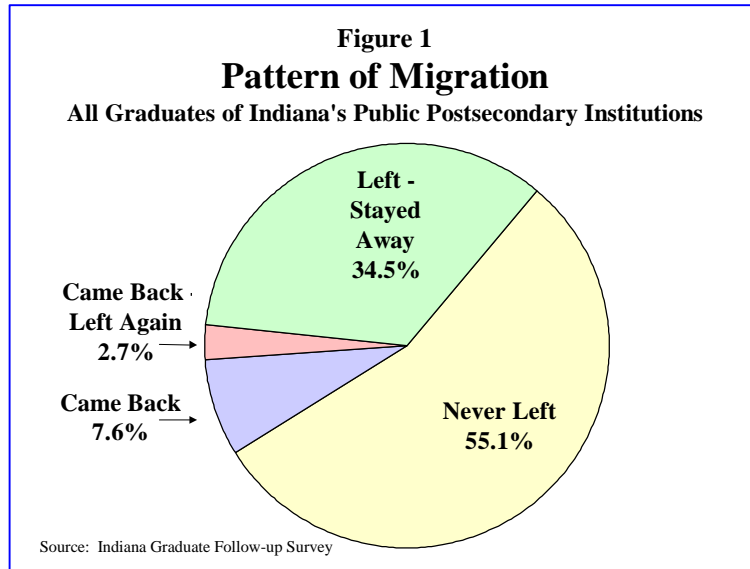
constructed. These research efforts survey graduates one year after finishing school—a time full of volatility in the employment and residency status of graduates.

IV. Characterizing the Migration of Indiana's Postsecondary Graduates

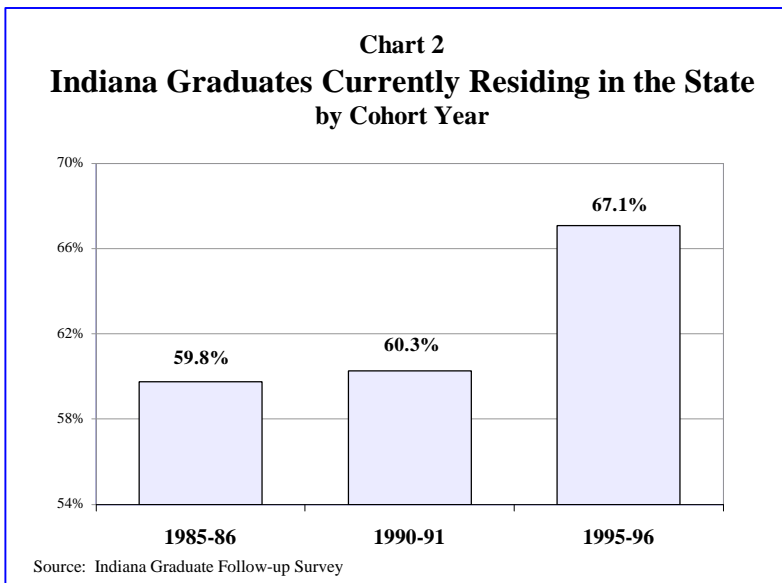
The migration of university graduates is often labeled as a "brain drain" with little thought or understanding added. The Indiana Graduate Follow-up Survey [IGFS] was designed to provide the data to better understand the behavior of this portion of the human capital pool.

The basic pattern of migration revealed in the responses to the Indiana Graduate Follow-up Survey is demonstrated in Figure 1. Across all three cohort years, all three degree levels, and an assortment of postsecondary institutional types, 55.1 percent of Indiana's graduates never leave the State. Another 34.5 percent leave the State and never return. Finally, some leave and then come back to stay, 7.6 percent, while 2.7 percent come back only to leave again.

Although Figure 1 gives the pattern of migration for all graduates from Indiana, it does not account for the effect of time. As Chart 2 illustrates, graduates from the first and second cohorts, 1986 and 1991, remain in the State at roughly the same percentages, 59.8 percent and 60.3 percent, respectively. From the 1996 cohort, 67.1 percent of the graduates remain here in Indiana. These data indicate that the pattern of leaving and coming back to the State stabilizes sometime between three and six years post-graduation, with a net retention rate of approximately 60 percent.



One factor of primary importance in predicting whether a graduate will remain in the State or leave is prior residency status.⁷ More than one in three persons [36.2 percent] whose prior residence was in Indiana end up outside the State, but nine in ten [89.2 percent] out-of-state enrollees leave and stay away. As explained above, Indiana attracts more than its share of

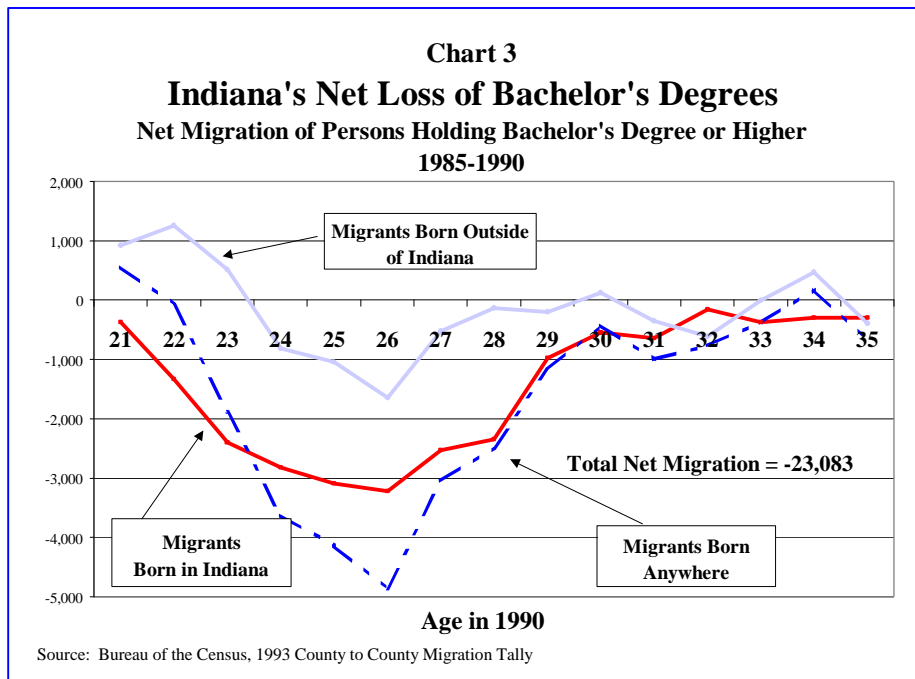


non-Hoosiers to its colleges and universities. Not surprisingly, many of the graduates who come from outside the State leave Indiana after graduation. Other states that also import large percentages of their postsecondary students include Massachusetts, Delaware, New Hampshire, North Carolina and West Virginia.

What is not apparent from the data showing Indiana to be a strong attractor of high

school graduates from other states, is the extent of out-migration of Indiana residents with baccalaureate degrees or greater. This outward migration continues from age 22 through age 30, for persons with at least a bachelor's degree. Chart 3 demonstrates the extent of this migration out of Indiana, encompassing both Hoosiers and those who have formerly migrated into the State.

⁷ For purposes of the IGFS, residency was defined by the universities' rule for fee purposes. A student enrolled as a resident and paying in-state fees was considered an Indiana resident.



The Indiana Graduate Follow-up Survey found significant variation in graduate migration behavior as differentiated by the type of postsecondary institution attended, by level of degree received, and by the major or program of study chosen. However, it is important to

The pattern of migration demonstrated by graduates from the different types of colleges and universities found in Indiana varies considerably.

remember that other significant characteristics of students are predictive of the above student choices. Economic characteristics, the type of employment in which the student is engaged during the program of study, high school academic success and a number of family factors affect the choices made by students when entering postsecondary study and when choosing where to locate after graduation.

Enrollment Mix by Type of Postsecondary Institution

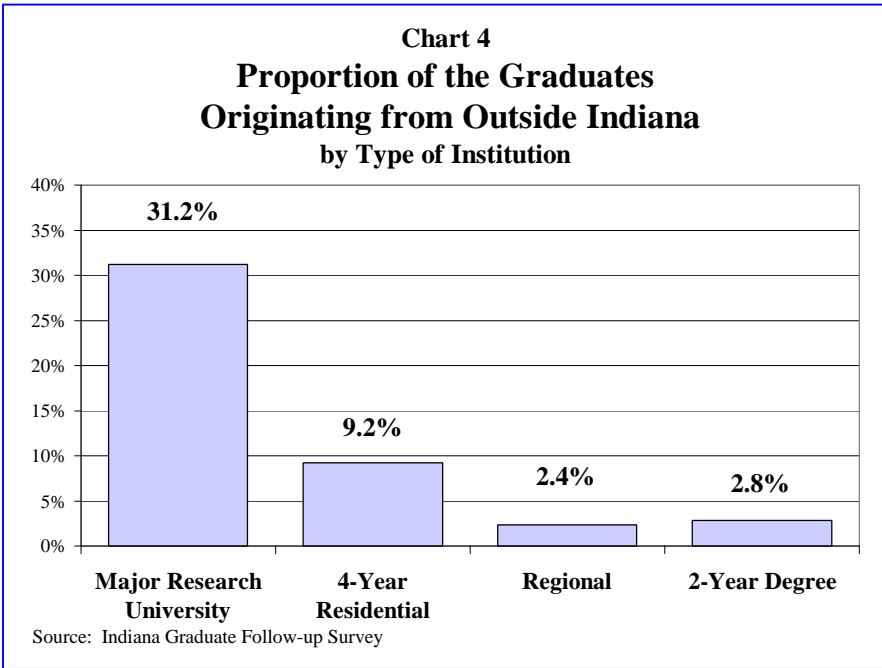
The pattern of migration demonstrated by graduates from the different types of colleges and universities found in Indiana varies considerably. For the purpose of classifying graduates by institution, Indiana's public colleges and universities are grouped into four categories: Major research campuses, Four-year Residential universities, Regional campuses, and Two-year degree granting institutions.

... Purdue University and Indiana University (main campuses) draw out-of-state students to their schools at three times the percentage of the next closest category of institutions.

For example, Indiana's major research institutions, Purdue University, West Lafayette, and Indiana University, Bloomington, draw out-of-state students to their schools at three times the percentage of the next closest category of institutions.

Major Research Campuses	
Indiana University – Bloomington	Purdue University -- West Lafayette
Four-Year Degree and Residential Campuses	
Ball State University	Indiana State University
Indiana University/Purdue University Indianapolis (IUPUI Health and non-Health)	University of Southern Indiana
Regional Campuses	
Indiana University - East	Indiana University - Kokomo
Indiana University - Northwest	Purdue University - Fort Wayne
Indiana University - South Bend	Purdue University - North Central
Indiana University - Southeast	Purdue University - Calumet
Two-Year Degree Campuses	
Ivy Tech State College - All Campuses	Vincennes University

Since the student's origin, whether from outside the State or Indiana resident has such a significant impact on migration, clearly, graduate migration patterns will vary greatly by institution type. Major research universities see 58.3 percent of their graduates leave the State, while on the low end only 9.4 percent of the graduates from two-year degree granting institutions leave. About one in four graduates from Four-year Residential universities [26.7 percent] leave Indiana, and 17.4 percent of regional campus graduates leave.



Migration by Degree Level

The Indiana Graduate Follow-up Survey sampled associate, baccalaureate, and master's degreed individuals, a group that represents 94.5 percent of all degree winners in a year (first professional and doctorate winners, and certificate recipients represent the balance). Each degree level represents a different set of institutions, curriculum choices, and occupational outcomes; therefore, the discussion of graduate migration and retention will focus on one degree level at a time.

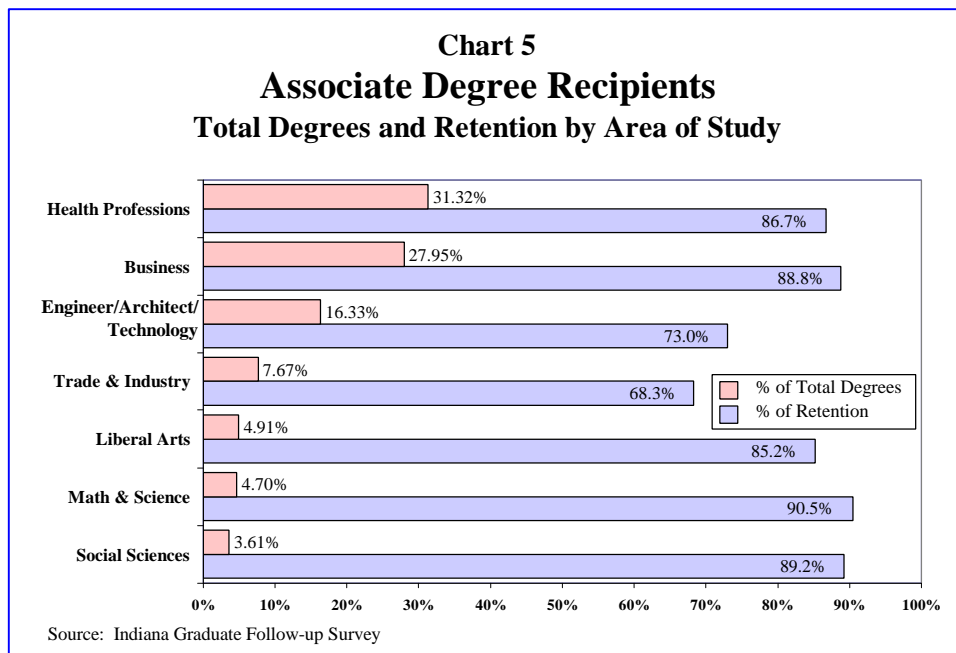
Associate Degree Graduates

Associate degree recipients represented 22.2 percent of the total for the three cohort years. They are overwhelmingly Hoosiers at enrollment [96.3 percent] and the majority stay in the State after graduation, [84.5 percent]. Associate degree winners are more likely to be employed full-time as a student, 27.4 percent, than baccalaureate students, 8.7 percent. The

Associate degree recipients . . . are overwhelmingly Hoosiers at enrollment and the majority stay in the State after graduation.

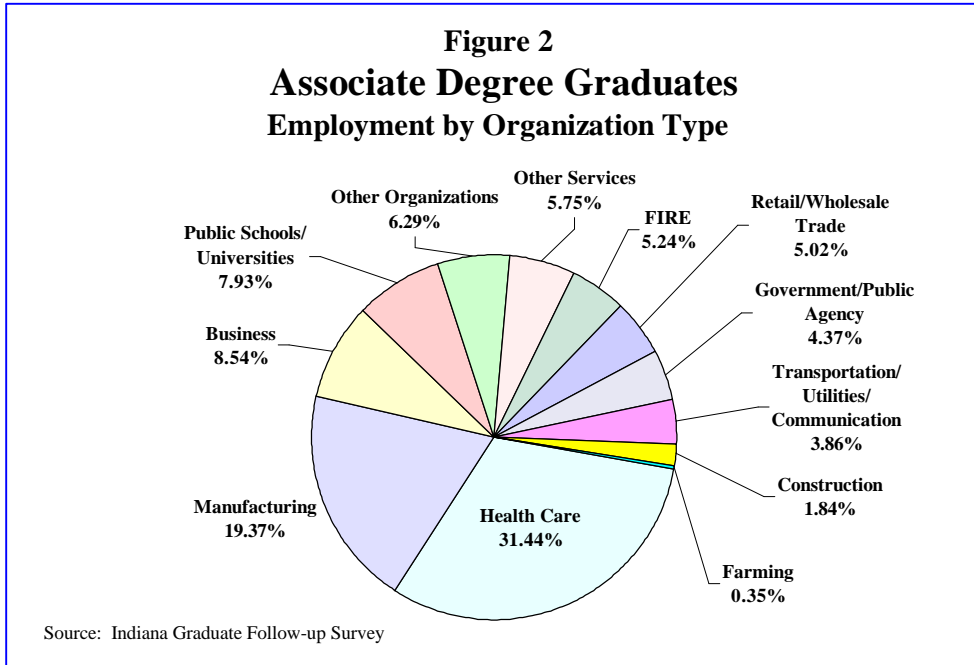
majority of associate degree winners are female, 58.7 percent, however, this is consistent across all degree levels. Females comprise 59.6 percent of master's degree and 58.8 percent of baccalaureate degree recipients.

The top choice for major by these graduates is a health-related program of study, followed by business and technology. Better than three out of every four graduates followed one of these courses of study. Of these, the business majors had the highest rate of retention, 88.8 percent. Graduates in technology had the lowest retention among the major three disciplines, 73 percent. The only lower retention rate found among associate degree recipients by major was for Trade and Industrial, an area of study which encompasses training for many manufacturing-related occupations [e.g., Precision Production]. If the manufacturing and technology-related majors are grouped together, 28.7 percent of the associate degrees are awarded in technology-related areas, and the average retention across graduates from these disciplines is 74.6 percent.



Survey respondents were asked to indicate the type of organization in which they were currently working, the responses corresponding to the major Standard Industrial Code categories. Of the total graduates at the associate level, the highest number were employed in health care; nearly the same percentage, 31 percent, as majored in health professions. The second most popular employer category was manufacturing. Nearly one out of every five associate degree graduates found work in a manufacturing setting.

... the highest number were employed in health care ... The second most popular employer category was manufacturing.



Over the next decade, Indiana faces a unique challenge in the training of those workers entering the manufacturing sector. According to the Indiana Department of Workforce Development, a disproportionate number of manufacturing employees are scheduled to retire soon. Out of a manufacturing workforce of approximately 676,000 the estimate is for 166,000 or 24.6 percent to retire before the year 2006. Although most of these workers do not hold college degrees, they have the benefit of years of on-the-job training and experience. Because the training requirements have escalated within the manufacturing sector in the decades that the current workers have been employed, many of their replacements will require postsecondary training at the associate degree level. Indiana is a state, compared to national averages, that is currently under-producing at the associate degree level, as Chart 1 illustrates. A challenge of the next decade will be to expand the capacity and increase the flexibility of Indiana's sub-baccalaureate educational system to meet the demands of the next generation of manufacturing workers.

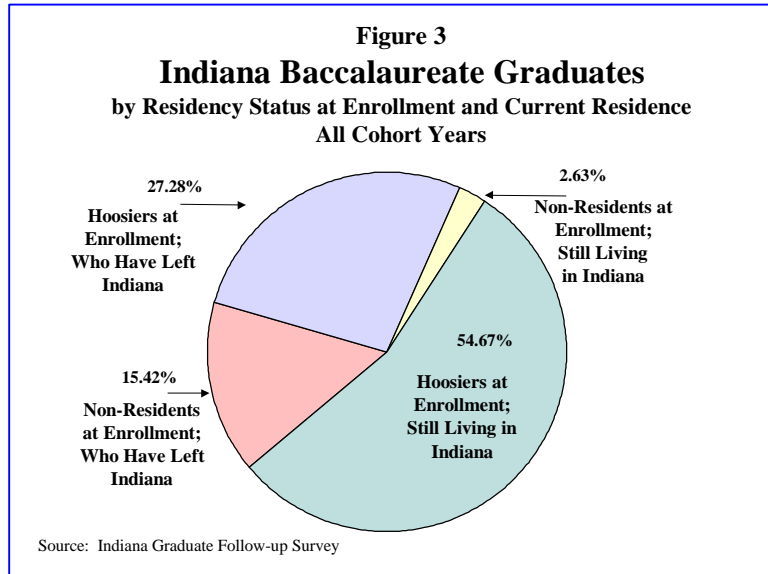
... a disproportionate number of manufacturing employees are scheduled to retire soon ... the estimate is for 166,000 or 24.6 percent to retire before the year 2006 ... many of their replacements will require postsecondary training at the associate degree level.

Bachelor's Degree Graduates

Indiana's public postsecondary institutions have a strong national reputation at the baccalaureate degree level. The State's public colleges and universities produce twice as many baccalaureate graduates as master's and associate degrees combined, and 18 percent of these individuals come from beyond the States' borders to enroll.

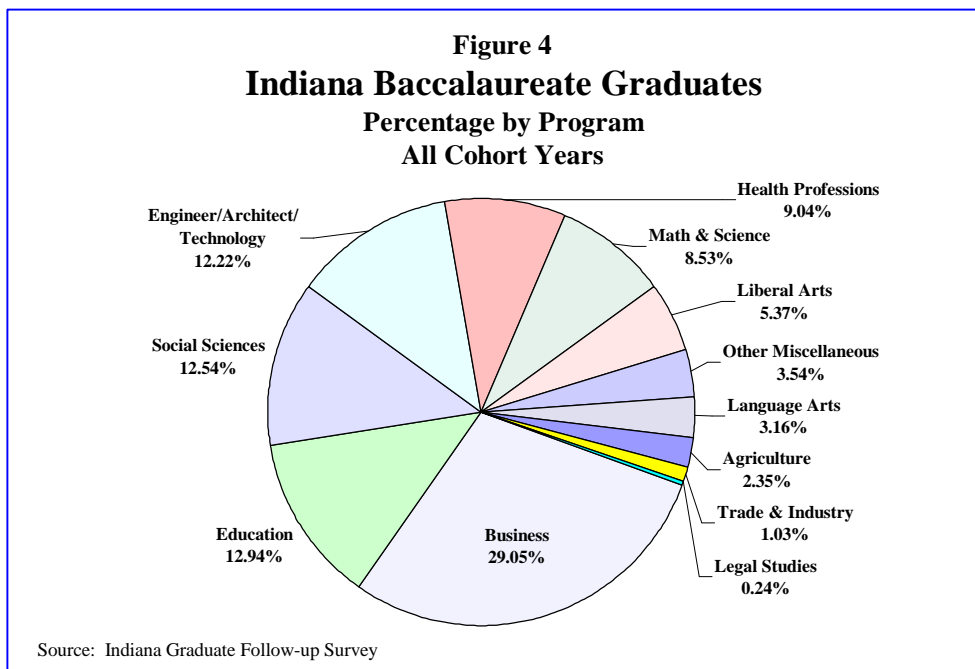
Forty-two percent of the State's bachelor's degree recipients leave the State. This group of "leavers" is made up of about one-third non-residents and two-thirds Hoosiers. Overall, one-third of the Hoosiers who earn baccalaureate degrees leave the State.

Baccalaureate degrees in business account for 29.0 percent of the total, with education, the social sciences and



Forty-two percent of the State's bachelor's degree recipients leave the State.

Engineering, Architecture and Technology following in fourth place in popularity. The highest retention levels, among the most popular programs, are in education [71.5 percent] and health professions [65.9 percent]. The lowest retention is in Engineering, Architecture, and Technology [36.8 percent].

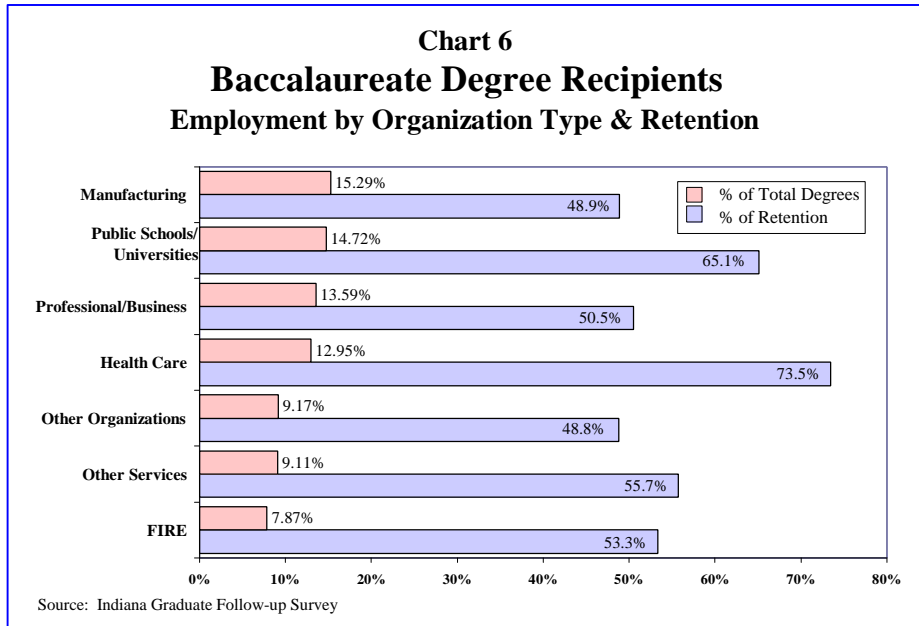


Retention of bachelor's degree graduates is differentiated by type of institution as well as by program of study. Even within a given discipline, business for example, Indiana's major research institutions attract students who are much more likely to leave the State upon graduation. Looking at the overall population of business graduates, one from a Four-year Residential campus is 86 percent more likely to remain in-state after graduation than the business graduate from a major research institution, [retention rates of 76.3 percent vs. 41.0 percent respectively]. When a student's residency prior to enrollment is taken into account, significant differences remain. The retention rate for baccalaureate business graduates who enrolled as Indiana residents at Four-year Residential and at regional campuses is 78 percent, while the retention rate for in-state business graduates at major research campuses is 58 percent.

Students who enroll at these institutions . . . do so with at least some thought of preparing themselves for a career that will take them beyond the State's borders.

This outcome, however, is not unreasonable. Indiana's Four-year Residential and regional institutions attract a much greater percentage of in-state students, as Chart 4 illustrated. Major research universities undertake a mission to prepare graduates for national and international labor markets. Students who enroll at these institutions, whether from outside Indiana or within, do so with at least some thought of preparing themselves for a career that will take them beyond the State's borders. Many parents choose to send their children to these institutions with the objective of enabling precisely this kind of mobility.

This finding applies across graduates from other disciplines as well. Technically trained majors, engineering/technology and math/science, who graduate from major research campuses have the lowest rates of retention, 32.1 percent overall and 44.9 percent for prior residents of Indiana. Graduates from the same program areas at Four-year Residential campuses stay at a 76.4 percent rate overall, while 80.7 percent of Hoosiers remain. The highest rates of retention are found among education and agriculture majors, at each type of institution.



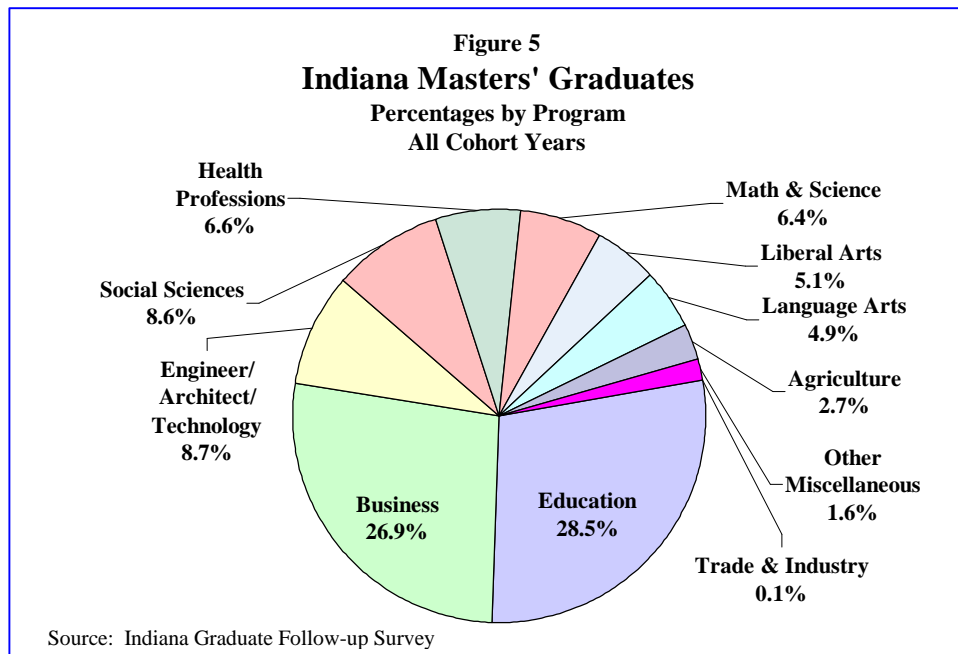
For all baccalaureate graduates, regardless of type of institution, 54.3 percent described themselves as employed part-time while going to school. For students at major research and at residential institutions the next largest grouping found was those not employed, 36.7 percent and 24.5 percent respectively. The fourth largest category, 8.7 percent of graduates, are working full-time while going to school. These students, as one might expect, are found in much greater numbers at regional institutions. Those graduates working full-time tended to stay in the State after graduation with some greater frequency than others, but employment was only significant as a factor on rates of retention within types of institutions.

Many master's degree students are employed in their career field while pursuing a program of study. They consequently do not automatically think of finding a new job, possibly out-of-state, after graduation.

At major research institutions, 44 percent of those employed part-time stayed in-state compared to 37.6 percent of those not employed at all. However, at four-year campuses, 74 percent of the graduates employed part-time remained after graduation, while retention for those who didn't work as a student was 73 percent.

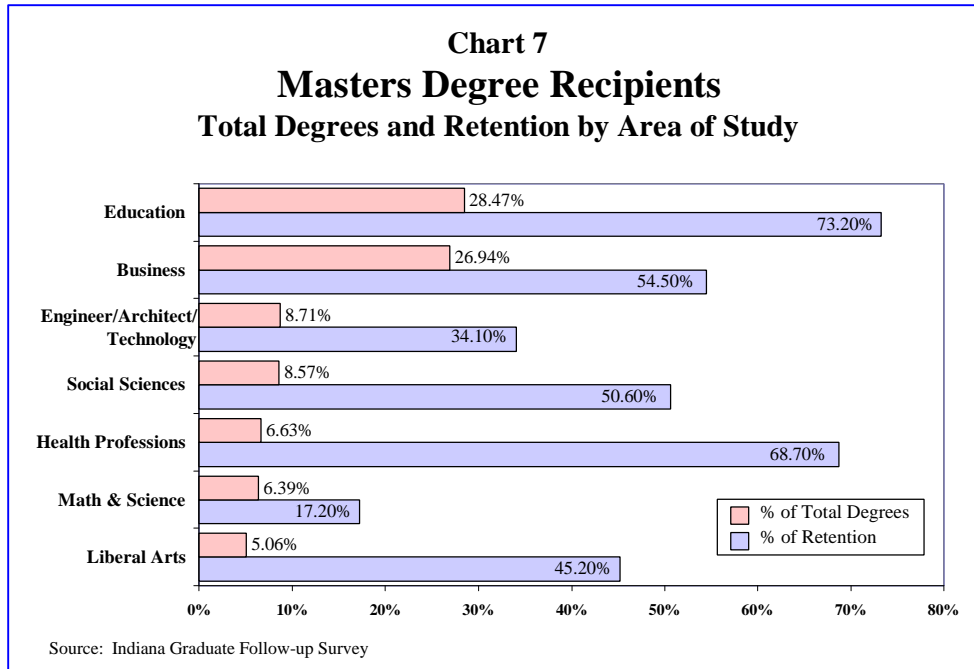
Master's Degree Graduates

Master's degree recipients from Indiana's public universities are concentrated in two programs, business and education. Fifty-five percent of the graduates are in these two disciplines, with the next most popular program, engineering and technology, at 8.7 percent.



A significant percentage of master's degree students are working full-time while pursuing their degrees [36.3 percent], compared to baccalaureate degree winners [8.7 percent]. A greater number of master's degree winners come from outside Indiana, 30.7 percent, compared to 18.1 percent of baccalaureate recipients. Many master's degree students are employed in their career field while pursuing a program of study. They consequently may not automatically think of finding a new job, possibly out-of-state, after graduation.

This finding is demonstrated in the two majors exhibiting the highest retention rates, education [73.2 percent] and the health professions [68.7 percent].



The established pattern in the education field is for a teacher to find a teaching position, begin to work, and then start on a master's degree [working toward a life license] on a part-time basis. In many cases the teacher is already tied to a job and a place before receiving the degree. This raises the retention rate for education degree recipients to very high levels and overcomes the higher mobility normally associated with higher levels of human capital investment.

Other degree programs show far lower retention rates. The second most popular degree program, business, has a retention rate of 54.5 percent, while the engineering and technology discipline keeps only 34.1 percent of its master's graduates.

In many cases the teacher is already tied to a job and a place, before receiving the degree. This raises the retention rate for education degree recipients to very high levels . . .

The greatest percentage of master's recipients, 37.9 percent, identified themselves as working in a public school or university setting, and 70.2 percent of those stay in Indiana after graduation. The second most frequently found employment setting is manufacturing, 13.8 percent; only 41.6 percent of these graduates remain in the State.

Some popular master's degree programs have experienced significant shifts in enrollment during the past 15 years. In 1985-86, almost 58.5 percent of the master's degrees in business administration were awarded at Indiana's major research universities. By 1995-96, the number of MBAs awarded had grown by 46 percent, and 56.8 percent of all Master's in Business Administration were awarded at the State's residential institutions, with another 10.3 percent produced at the State's four-year regional campuses.

These changes in enrollment and program choices have affected retention rates for MBAs. Business master's graduates at the major research institutions have exhibited an approximate 30 percent retention rate throughout the study period. MBA graduates from Four-year Residential universities stayed in-state at a 75 percent rate, while regional campus master's recipients remained in Indiana 79.3 percent of the time.

... many more individuals are earning MBA's but are doing so in a way that allows them to continue in their careers.

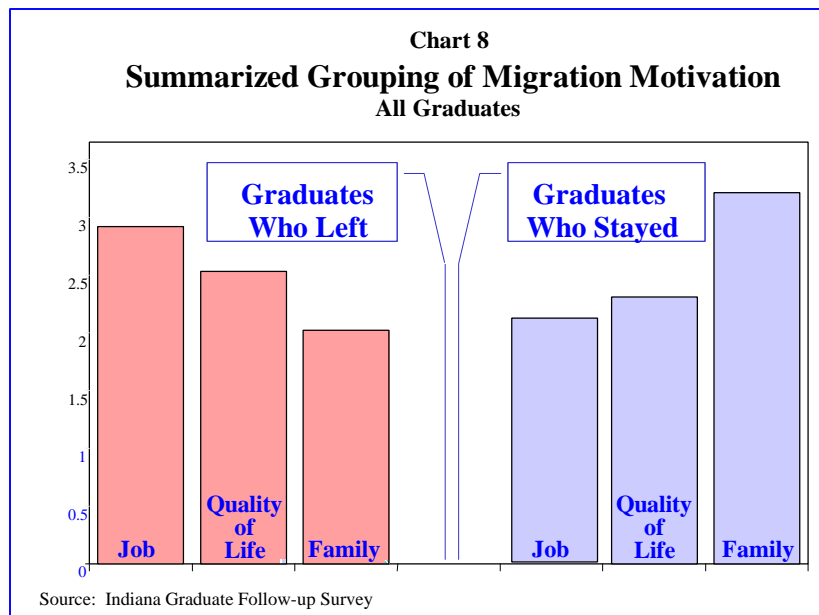
With the shift in enrollment, the overall retention rate applying to MBAs is now at 66.8 percent.

The shift in enrollment and the resulting higher (overall) retention rates for MBAs is a function of multiple factors.

MBAs have become a high demand degree which many individuals find important to their career advancement potential. The costs of taking two years away from working to pursue a master's degree as a full-time student are great. For many these costs have presented a barrier to obtaining additional education. As part-time and evening programs have become more accessible at regional campuses and other sites, the cost barrier has been removed or minimized. As a result, many more individuals are earning MBA's but are doing so in a way that allows them to continue in their careers. This portion of the graduate population has significant ties to job and place at graduation and, therefore, exhibits higher retention rates. The effect is that human capital investment has been expanded within a portion of the population already committed to the State.

Migration Choices on the IGFS

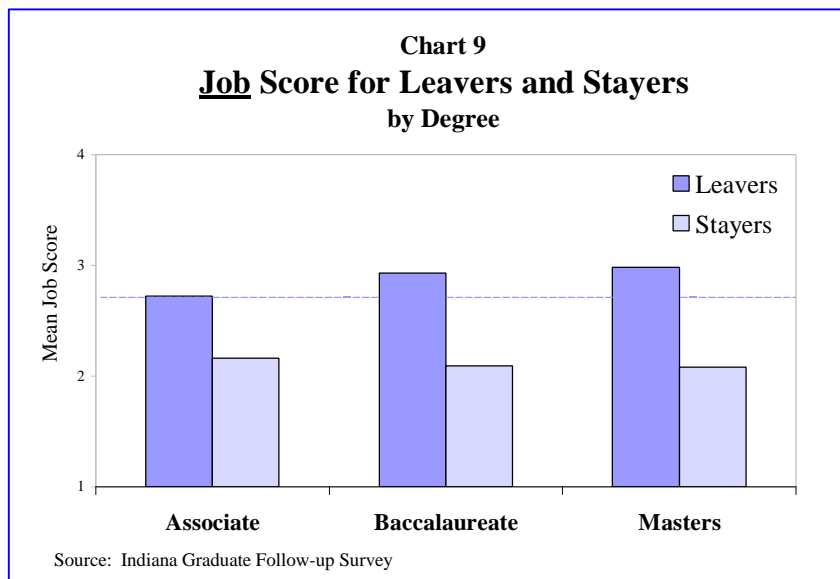
An investigation into where graduates go without attempting to discern the motivations behind those decisions would be incomplete. The IGFS asked those graduates who had left Indiana why they chose to leave, and those who didn't why they stayed. The respondents were given a list of factors divided into employment or education related and other. Descriptive statistics were computed for each factor by various respondent groupings.



To assist in understanding the relative weights of respondents' motivations, those factors primarily concerned with job choices were grouped to compute a mean job score, likewise for quality of life factors, and family-related motivations.

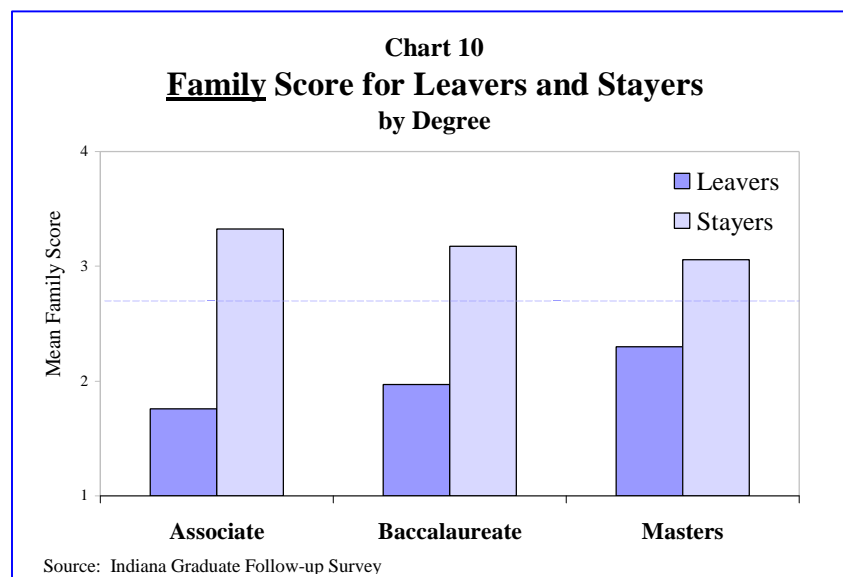
When motivations are grouped in this way and separated for those graduates who left and those who stayed, the leavers show stronger career motivations and the stayers show greater family affiliations. This pattern is strongly confirmed throughout the survey results. No significant differences among the three cohort years are demonstrated, either by the leavers or by the stayers.

Motivation Factors Identified by Graduates	
<i>Leaving</i>	<i>Staying</i>
Job-Related	
<ul style="list-style-type: none"> ▪ The job I got outside Indiana was better than any job I was able to get in Indiana. ▪ The pay/benefits seemed better in positions outside Indiana. ▪ Career opportunities seemed better outside Indiana. 	<ul style="list-style-type: none"> ▪ The pay/benefits seemed better in positions in Indiana. ▪ Career advancement opportunities seemed better in Indiana.
Quality of Life-Related	
<ul style="list-style-type: none"> ▪ I like the climate in the state to which I moved better than the climate in Indiana . ▪ I like the cultural opportunities and social life in the state to which I moved better than those in Indiana. ▪ I like the recreational activities in the state to which I moved better than those in Indiana 	<ul style="list-style-type: none"> ▪ I preferred the climate in Indiana. ▪ I preferred the cultural and social life in Indiana. ▪ I preferred the recreational activities in Indiana.
Family-Related	
<ul style="list-style-type: none"> ▪ I wanted to live closer to family and/or friends. ▪ When I left Indiana, I returned to a location in which I had lived before. 	<ul style="list-style-type: none"> ▪ I wanted to live closer to family and/or friends. ▪ I always planned to live in Indiana. ▪ My spouse wanted to live in Indiana for nonemployment reasons.

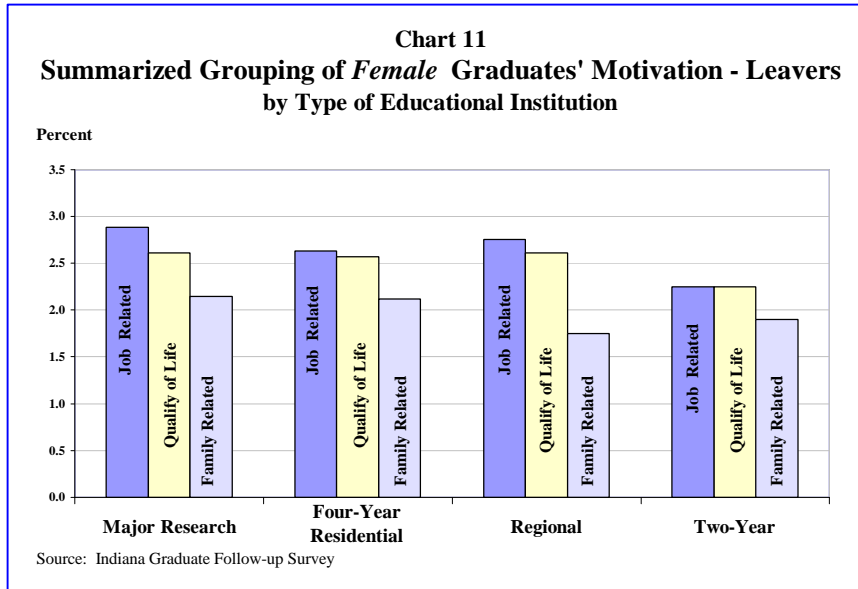


When graduates' motivational factors are analyzed by degree, more significant differences appear. Graduates who earned an associate degree attributed less importance to job and career as factors in their migration decisions than either baccalaureate or master's degree recipients. This outcome should not be surprising. Because the investment of time, money, and effort in the pursuit of the higher degrees is greater, it follows that the graduates would give greater weight to the career opportunities that follow as a consequence of that investment.

Those associate degree graduates who stayed in Indiana, likewise, attributed greater weight to the presence of family here in the State as an influence in their decisions not to migrate than did either baccalaureate or master's degree recipients.

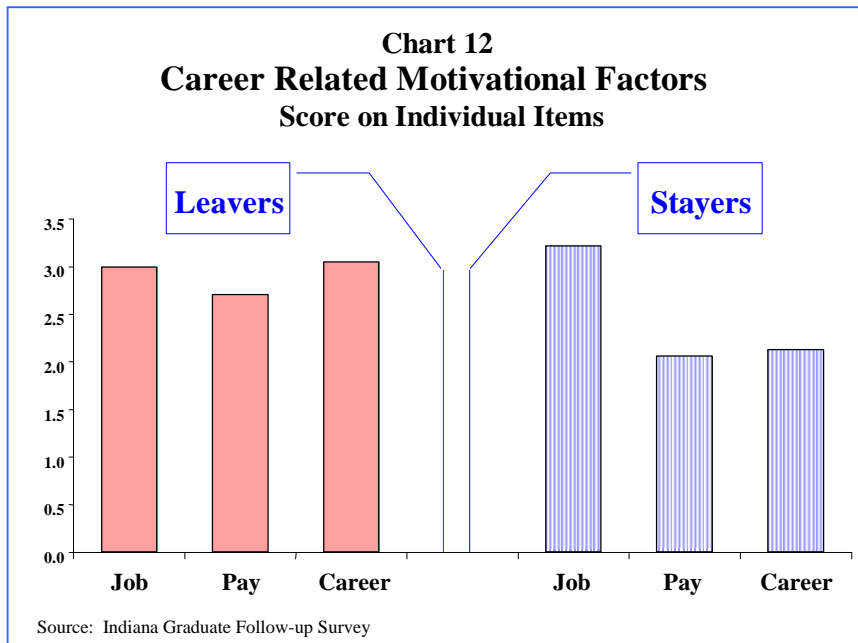


Again, this result conforms to the greater probability of migration demonstrated by those who have acquired a greater degree of human capital. The importance of career related motivations did not show a substantially different pattern based on gender differences.



Females and males at major research institutions who left the State showed the same motivational pattern with job factors the strongest influence, then quality of life, and finally family, and at roughly the same intensity levels. At Four-year Residential, Regional and Two-year campuses the males rated job factors as much more significant to the decision to leave than did females.

At Four-year Residential, Regional and Two-year campuses the males rated job factors as much more significant to the decision to leave than did females.



As demonstrated above, the graduates who left the State rated career issues as more important in the decision whether or not to migrate than did those who stayed. However, aggregating the three factors—job, pay/benefits, and career advancement—together obscures several significant details. Chart 12 takes the career motivation apart, showing the three factors for both leavers and stayers.

. . . the graduates who left the State rated career issues as more important in the decision whether or not to migrate than did those who stayed.

The leavers rated all three career factors as highly important, with a somewhat lower weight to pay. The stayers gave very low weights to pay and career advancement, but rated the job category as very high, [a mean score of 3.22 versus a mean job score of 3.00 for the leavers]. There are several explanations for this variance. First, for

those who leave the focus seems to be on finding satisfactory career choices for a longer-term period. This focus realistically must encompass several jobs with possibly several organizations. The stayers on the other hand are focused on family which they are only able to satisfy here in Indiana. The job becomes very important to the stayers precisely because it allows them to stay close to their preferred environment.

Graduates were asked to rank three quality of life factors—climate, cultural/social life, and recreational activities—as to their importance in the migration decision. Quality of life was the second most important set of factors for both those who left and those who stayed. Cultural/social and recreational aspects of the quality of life in Indiana were a stronger negative factor for those who left the State than drawing card for the stayers who remained.

Interestingly, other states are addressing the quality of life issue in the context of retaining a well-equipped workforce. Iowa recently passed legislation that will enable the State to issue bonds to finance a series of cultural and recreational projects. Although final decisions have not been made, the proposals include museums, sports arenas, and a NASCAR speedway.

Many Midwestern states believe that part of the workforce/graduate retention problems they face relate to a real or perceived lack of opportunities to pursue leisure activities, particularly by younger persons.⁸

A vital part of understanding Indiana's human capital situation requires a comparison of migration patterns of graduates from Indiana's postsecondary institutions with those of other states.

Indiana Migration in a National Context

A vital part of understanding Indiana's human capital situation requires a comparison of migration patterns of graduates from Indiana's postsecondary institutions with those of other states. The most complete data covering national graduate migration behaviors are

gathered by the National Center for Educational Statistics at the U.S. Department of Education. This report utilized a sample of baccalaureate degree graduates from 1992-93, a sub-sample of the National Postsecondary Student Aid Study sample. This sub-sample was used for a longitudinal study of baccalaureate graduates and the career choices they made known as Baccalaureate and Beyond.

⁸ "If You Sell Them, They May Stay: Iowan's Plan Anti-Boredom Bonds," The Bond Buyer, February 26, 1999, Vol. 327, No. 30587.

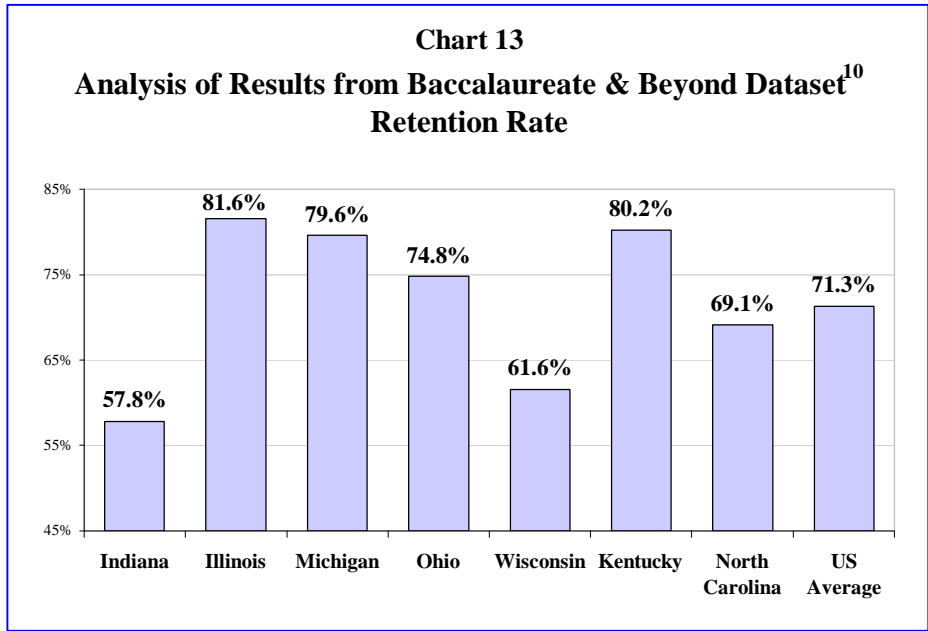
The B&B:93/94 sample contained 12,478 graduates from both public and private postsecondary institutions nationwide awarding baccalaureate degrees. The research objectives of the B&B study include developing a greater understanding of educational attainment, access to graduate and professional schools; the rate of return on educational investment; and patterns of preparation and engagement in teaching.”⁹ Although the study was not intended to focus on graduate migration behavior, the presence of locator information necessary to continue to do follow-up reports on the graduates made the exercise possible.

The National Opinion Research Center [NORC] performed several analyses on the data to determine comparative rates of retention and net migration among the states. The statistical comparisons are for each state and the U.S. average. These formulas are shown below.

Retention rate [baccalaureate] = $\frac{\text{\# of graduates from state } i \text{ residing in state } i}{\text{\# of graduates from state } i \text{ residing in any state}}$

Net migration rate [baccalaureate] = $\frac{\text{\# of graduates from any state residing in state } i}{\text{\# of graduates from state } i \text{ residing in any state}}$

Differences between the IGFS survey data and B&B:93/94 limit the comparability between the two surveys. Notably the B&B data were gathered 12 to 18 months after the graduate left school. It is not possible, therefore, with the current B&B dataset to observe graduates as they make second and third career moves. All graduates in B&B, as the name suggests, are bachelor’s recipients, therefore, comparisons between degree levels are impossible.



⁹ U.S. Department of Education. National Center for Education Statistics. Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report, NCES 96-149, by Patricia J. Green, Sharon L. Meyers, Pamela Giese, Joan Law, Howard M. Speizer, and Vicki Staebler Tardino. Project Officer, Paula Knepper. Washington, DC: 1996.

¹⁰ Baccalaureate and Beyond Longitudinal Study: (B&B:93/94), First Follow-up. Estimate of Retention Rate calculated by National Opinion Research Center.

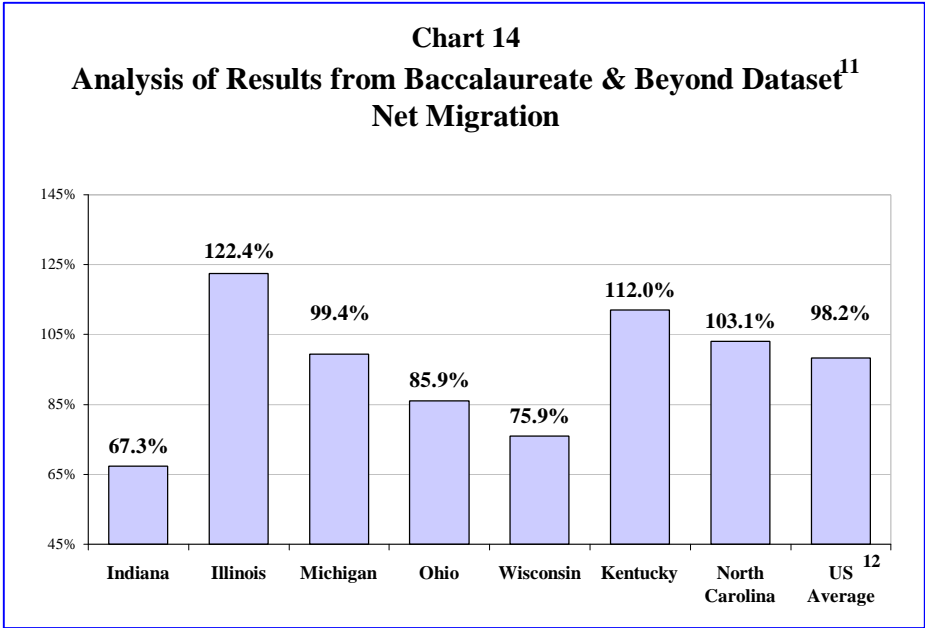
Chart 13 shows Indiana's retention rate of 57.8 percent calculated from B&B compared to the benchmark states. Indiana's B&B rate is remarkably close to the one calculated above from the IGFS data [at the bachelor's level] of 57.3 percent. Significantly, Indiana's retention rate is below all the comparison states and at only 81 percent of the U.S. average.

Significantly, Indiana's retention rate is below all the comparison states and at only 81 percent of the U.S. average.

Retention is influenced by geographic as well as economic factors. A state with relatively impermeable borders [e.g., Hawaii] will be helped in retaining graduates. Clearly to the extent that a state's economy is growing comparatively rapidly and demanding greater numbers of college trained workers, that state's rate will be higher.

Net migration, illustrated in Chart 14, is an indicator of a state's importing of college educated workers versus its exporting of workers receiving degrees in its own institutions. A state with a rate of "1.00" is balanced, it is importing [or retaining] about as many educated workers as it exports in graduates. Indiana is the lowest of the comparison states in this statistic and ranks 40th out of the 47 states in the dataset. It is exporting a third more graduates than it imports or retains.

The results from the migration analysis of the national Baccalaureate and Beyond survey should not be surprising. In fact the findings, although limited in extent because the data were not collected for the purpose of comparing state migration patterns, confirm the results of the Indiana Graduate Follow-up Survey. Indiana ranks very low in rates of graduate retention and even lower in the attractiveness of the state's economy to college graduates [measured by net migration].



¹¹ Baccalaureate and Beyond Longitudinal Study: (B&B:93/94), First Follow-up. Estimate of Net Migration calculated by National Opinion Research Center.

¹² The U.S. average is slightly below 1 because of missing values.

V. Conclusions

Both the national survey data analyzed for this report and the Indiana Graduate Follow-up Survey show this State to be an exporter of college graduates. This finding is not in itself alarming, as the body of demographic research demonstrates that as individuals become more highly educated, mobility increases. What should be the focus of policymakers in Indiana is the extent of the State's human capital migration and its motivation. The Indiana Graduate Follow-up Survey addressed these questions—where do graduates go, in what numbers, and why do they leave or stay.

Indiana's graduates leave, by their own admission, because of jobs. The factors that count most in the decision to leave are career-related, and those who leave believe their career will be pursued with greater reward outside the State.

This of course does not mean that those who stay are unable to pursue their vocations. At the baccalaureate level the most frequently found job placement was in manufacturing, which is the backbone of the Indiana economy.

The factors that count most in the decision to leave are career related, and those who leave believe their career will be pursued with greater reward outside the State.

The disciplines that dominate the career preparation choices of Indiana graduates are the same as those found throughout the nation, business, education, the social sciences and engineering. There is no evidence that program selection or preparation has a significant effect on the extent of graduate out-migration. This does not mean that the match between program of study and the needs of Indiana employers is perfect. The report shows that Indiana's postsecondary institutions are producing graduates in roughly the same proportions as the State's employment base, but in greater numbers than are needed.

The rate of graduates leaving the State is clearly related to the graduates' original state of residence, the type of institution in which enrolled, and the program chosen. Students who come to Indiana from another state to enroll leave 90 percent of the time. Those who enroll as Indiana residents stay two-thirds of the time. Clearly, one might conclude that giving more Indiana residents the opportunity to be successful at postsecondary training would increase the level of human capital within the State.

Graduate migration behavior also seems to be related to the type of school which the graduate attends. However, it is not clear whether, or to what extent, students select a school based on the effect that their enrollment choice will eventually have on mobility. Even when prior residency is not a factor, the differences in migration behavior between graduates at types of institutions is striking. Those bachelor's graduates who began college as Indiana residents, but go to major research institutions, leave the State at a 40 percent greater rate than Hoosiers who enroll in Four-year Residential institutions. The disparity is quite consistent across program choices. It seems likely from these results that a significant number of enrollees at major research institutions make their college choice because they want the possibility of migrating out of the State to be part of the post graduation set of career options.

Those graduates who stay in the State do so for reasons of family and relationships rather than career. Indiana is known anecdotally as a State with an environment friendly to families and the raising of children. Graduates who stayed ranked quality of life issues important, after family, as reasons to remain in the State. Although little can be done to improve Indiana's weather [and some might not wish to make a change], policymakers would be well advised to strengthen the reputation of the State as a place where the quality of life is first rate.

If the presence of higher levels of human capital are important to the long-term health of the Indiana economy and the quality of life enjoyed by Indiana's citizens, then arguably strong measures are necessary.

The motivations behind a decision as multi-dimensional as moving across the country are certainly complex. However, when measured against national data, graduates from Indiana's postsecondary institutions leave in greater numbers than from most other states and do so for reasons that are largely economic. If the presence of higher levels of human capital are important to the long-term health of the Indiana

economy and the quality of life enjoyed by Indiana's citizens, then arguably strong measures are necessary. This report leads to the conclusion that more of the jobs that require or attract college-educated persons are needed within the Indiana economy. It also follows that a policy of expanding postsecondary educational opportunity to encompass more of those Hoosiers who have not been willing or able to invest in their own human capital must be pursued.

Appendix A

Indiana Graduates Survey

The Indiana Graduates Survey is studying the post-graduation job and location changes of recent graduates from colleges in the State of Indiana. When answering this questionnaire, please refer to the period of time from «fill_year» when you received your «degree» degree from «univ» to the present.

Please read the instructions carefully for each section. Your responses to this survey will be kept completely confidential. If you have any questions or require assistance in completing this questionnaire, please call **1-800-798-7288**.

First, we have a few questions about the last year of your college program.

1. While you were earning your «degree» degree in «fill_year», did you consider Indiana to be your “home” state? (Please circle **one** response.)
 - 1 Yes
 - 2 No
 - 3 Don't know

2. During the last year you were earning your «degree» degree, would you classify your employment status **generally** as:
(Please circle **one** response.)
 - 1 Employed part-time (30 hours or less a week)
 - 2 Employed full-time in a temporary position (a position you did not intend to keep after graduating)
 - 3 Employed full-time in a permanent position
 - 4 Not employed
 - 5 Employed through a university-sponsored Cooperative Education Program
 - 6 Other: _____

Now, we have a few questions about any out-of-state moves you have made since you graduated.

3. Have you moved from the State of Indiana, for any reason, since graduating from «univ» in «fill_year»? (Please circle **one** response.)
 - 1 Yes (Please continue with question 4 on page 2.)
 - 2 No (Please continue with question 7 on page 3.)

4. Please indicate how important each of the following factors was in contributing to your decision to move out of Indiana. *If you have moved out of Indiana more than once since graduating in <fill_year>, please consider only your most recent move when answering these questions.*

(Please circle **one** response for **each** factor listed.)

1 = Not at All Important **4** = Very Important **N** = Not Applicable

Employment/Education Factors	<u>Not at All</u>			<u>Very</u>	<u>NA</u>
a. The job I got outside Indiana was better than any job I was able to get in Indiana	1	2	3	4	N
b. The pay/benefits seemed better in positions outside Indiana	1	2	3	4	N
c. Career opportunities seemed better outside Indiana	1	2	3	4	N
d. I could not find a job that I wanted in Indiana	1	2	3	4	N
e. I was transferred out of Indiana by my employer	1	2	3	4	N
f. I wanted to work for a specific employer that did not have an Indiana facility	1	2	3	4	N
g. I had to live in a specific area of the country other than Indiana because of my career field	1	2	3	4	N
h. I decided to attend school outside of Indiana	1	2	3	4	N
i. My spouse or partner found employment outside Indiana	1	2	3	4	N
j. My spouse or partner decided to attend school outside of Indiana	1	2	3	4	N
Other Factors					
k. I liked the climate in the state to which I moved better than the climate in Indiana	1	2	3	4	N
l. I liked the cultural opportunities and social life in the state to which I moved better than those in Indiana	1	2	3	4	N
m. I liked the recreational activities in the state to which I moved better than those in Indiana	1	2	3	4	N
n. I liked the cost of living in the state to which I moved better than in Indiana	1	2	3	4	N
o. I wanted to live closer to family and/or friends	1	2	3	4	N
p. When I left Indiana, I was returning to a location in which I had lived before	1	2	3	4	N
q. My spouse or partner wanted to live outside Indiana for nonemployment reasons	1	2	3	4	N
r. Some other factor was more appealing outside Indiana	1	2	3	4	N

(Please describe the factor):

5. When answering the following questions, please consider only your most **recent** move, *if you have moved out of Indiana more than once since graduating from «univ»*.

a. I sought employment **in Indiana** prior to moving from Indiana. (Please circle **one** response.)

1 Yes 2 No

b. I always intended to move outside Indiana after earning my «degree» degree. (Please circle **one** response.)

1 Yes 2 No

If you currently **live outside Indiana**, please answer items c and d.
Indiana residents continue with question 6 below.

c. I would like/have liked to live in Indiana, but I am/was unable to find the type of job I want/wanted. (Please circle **one** response.)

1 Yes 2 No

d. I would like to live in Indiana again someday. (Please circle **one** response.)

1 Yes 2 No

Please continue with question 6 below.

6. Have you **moved back** to the State of Indiana from another state, at any time and for any reason, since graduating from «univ» in «fill_year»? (Please circle **one** response.)

- 1 **Yes**, I currently reside in Indiana
 - 2 **Yes**, but I currently reside in another state
 - 3 **No** (Please continue with question 9.)
- } (Please continue with question 7.)

7. Please indicate how much you agree or disagree with each of the following statements. (Please circle **one** response for **each** statement.)

1 = Strongly Disagree 4 = Strongly Agree N = Not Applicable

	<u>Strongly Disagree</u>		<u>Strongly Agree</u>		<u>NA</u>
a. I wanted to live in a state other than Indiana, but I was unable to find the type of job I wanted elsewhere	1	2	3	4	N
b. I intended to live in Indiana after graduating in «fill_year»	1	2	3	4	N

8. Please indicate how important each of the following factors was in contributing to your decision to **remain in** or **move back to** Indiana. *If you have moved back to Indiana more than once since earning your «degree» degree in «fill_year», please consider only your most recent return when answering these questions. (Please mark **one** response for **each** factor listed.)*

1 = Not at All Important 4 = Very Important N = Not Applicable

Employment/Education Factors	<u>Not at All</u>			<u>Very</u>	<u>NA</u>
a. The pay/benefits seemed better in positions in Indiana	1	2	3	4	N
b. Career advancement opportunities seemed better in Indiana	1	2	3	4	N
c. I found a job that I wanted in Indiana	1	2	3	4	N
d. I was transferred to Indiana by my employer	1	2	3	4	N
e. I wanted to work for a specific employer located in Indiana	1	2	3	4	N
f. I decided to attend school in Indiana	1	2	3	4	N
g. My spouse or partner found employment in Indiana	1	2	3	4	N
h. My spouse or partner decided to attend school in Indiana	1	2	3	4	N
Other Factors					
i. I preferred the climate in Indiana	1	2	3	4	N
j. I preferred the cultural and social life in Indiana	1	2	3	4	N
k. I preferred the recreational activities in Indiana	1	2	3	4	N
l. I preferred the cost of living in Indiana	1	2	3	4	N
m. I wanted to live closer to family and/or friends	1	2	3	4	N
n. I always planned to live in Indiana	1	2	3	4	N
o. My spouse wanted to live in Indiana for nonemployment reasons	1	2	3	4	N
p. Some other factor was more appealing in Indiana	1	2	3	4	N

(Please describe the factor):

9. If you have enrolled in or completed a degree-oriented program at any time since graduating in «fill_year», please provide the following information regarding your most **recent** program:

Name of School: _____

Location (city and state): _____

Field of Study: _____

Degree (e.g., MA, BA, Ph.D.): _____

Actual or expected date of graduation: _____

10. In the chart below, please list your work and educational history (including your current employment position or educational activity) since earning your «degree» degree from «univ» in «fill_year». Try to be as thorough as possible when completing the chart. Please account for any periods of unemployment by writing “not employed” in the section provided for job title/name of degree pursued.

If you were participating in more than one activity at any given time, please list **only** the activity that you considered to be your **principal** activity. If you need additional space, please write on a sheet of paper and attach it to this survey.

Instructions:

- ◆ **Position/Activity:** Begin with your **current** employment position or educational activity and list each position or activity since graduating from «univ» in «fill_year».
- ◆ **Job Title/Name of degree pursued:** List your job title for each position or the name of the degree you were pursuing. Note periods of unemployment in this box by writing “not employed.”
- ◆ **Start Date and End Date:** Please list the month and year you began and left each position or activity. If you cannot remember the exact dates, please estimate. If necessary, list only years.
- ◆ **Location:** Please list the location (city, state, and country) of each position or activity listed.
- ◆ **Main reason for accepting a position/Degree completed and main reason for pursuing:** Please describe the **MAIN** reason you accepted each position. Examples of reasons for accepting a position might include “pay,” “benefits,” “advancement opportunities,” or “location.”

If your main activity was attending school, please list the type of degree you completed and the main reason you pursued the degree. If no degree was completed, please indicate by writing “none.” Reasons for pursuing a degree might include “promotion,” “advancement opportunities,” or “personal goal.”

Position/ Activity	Job Title/ Name of degree pursued	Start Date	End Date	Location City, State, Country	Main reason for accepting a position/ Degree completed and main reason for pursuing
Current			Present		
2					
3					
4					
5					
6					
7					
8					

11. Are you currently employed? (Please circle **one** response.)
- 1 Yes (Please continue with question 13.)
 - 2 No (Please continue with question 12.)
12. If you are **currently not employed**, which of the following best describes the main reason you are not employed? (Please circle **one** response.)
- 1 I have chosen not to work so I can spend time with my family (I have not looked for employment)
 - 2 I am unable to find employment in the geographical location in which I want to live
 - 3 I am unable to find employment in my career field
 - 4 I am a full-time student
 - 5 I am unable to work due to a disability
 - 6 Some other reason (please describe): _____
13. Which of the following categories **best** describes the **type** of organization for which you **currently** work? (Please circle the **one** response that **best** describes the organization type.)
- | | |
|--|---|
| 1 Manufacturing Company | 7 Finance/Insurance/Real Estate |
| 2 Farming | 8 Public School/University |
| 3 Construction Company | 9 Government/Public Agency |
| 4 Health Care Service Provider | 10 Retailer/Wholesaler |
| 5 Professional/Business Service Provider | 11 Transportation/Public Utilities Communications |
| 6 Other Service Provider: _____ | |
| 12 Other type of organization (please describe): _____ | |
| _____ | |

Thank You!

Indiana Fiscal Policy Institute
PO Box 44121
Indianapolis, Indiana 46244

Appendix B

Scope and Methodology of this Study

The Indiana Graduate Follow-up Survey was designed to reveal the migration pattern of graduates from postsecondary institutions around the State. Samples were not constructed in a way that would yield results on an institution by institution basis. However, the State's public postsecondary institutions were grouped into four categories which conform to descriptive classes established by the Indiana Commission for Higher Education, [the list of institutional groupings is shown in on page 7]. The survey instrument included questions on job history and employment data [SIC] in order to better tie graduate migration behavior to employment.

The development of a national context to Indiana's graduate migration was undertaken through research by the National Opinion Research Center [NORC] at the University of Chicago. NORC staff analyzed the residency and employment status of graduates included in the Baccalaureate and Beyond Longitudinal Study [B&B], a subset of the sample of graduates included in the National Postsecondary Student Aid Study. Graduates in the B&B sample received or expected to receive a baccalaureate degree between July 1, 1992, and June 30, 1993. Indiana's graduates were compared to those from other states and to national averages.

In any analysis of human capital it becomes necessary to find ways to measure the quantity of human capital invested. Some studies use years of school, some tie in years of experience on the job as well. The measure used here is the type of degree obtained at the postsecondary level, because the objective of the larger analysis is to better understand Indiana's educational attainment deficiency—a degree dependent calculation—when compared across states. The focus on degrees in this study is not intended to discount the value of other measures of human capital.

IGFS Sampling Process

The Indiana Graduate Follow-up Survey began by drawing a sample of associate, baccalaureate and master's degree public postsecondary graduates from each of three cohorts, 1985-86, 1990-91, and 1995-96. The initial sample was selected from the Indiana Commission for Higher Education's Student Information System database [SIS]. A second sampling process was undertaken to provide information on private institutions' graduates, which account for approximately 22 percent of the three degree types sampled statewide. Because the sampling process for the 32 private institutions was started later, these respondents are not included in this study's results. A subsequent report will describe findings from both the public and private samples.

The sampling process and the survey instrument were developed collaboratively with the Center for Survey Research [CSR] at Indiana University in Bloomington, Indiana, and NORC. The survey process was carried out by CSR under the direction of Dr. John Kennedy. Because the current residency of the graduates was not available in the SIS database, a double sampling design was used. First, a sample of graduates from each year and each degree type was selected from SIS. Then after current addresses for those graduates had been supplied by each school's alumni office, a subsample was selected for receipt of the questionnaires.

A total of 8,172 public postsecondary graduates were surveyed during the spring and summer of 1998. The sample included those currently residing outside the State as well as current Indiana residents. The graduates were asked questions regarding their migration choices and the motives for those decisions. For the initial phase of the study, 3,202 completed questionnaires were returned for a 39.2 percent response rate. CSR then conduct a telephone survey to follow-up and confirm the mailed survey results.

To support the analytical needs of the study, certain subgroups of this population were selected at a higher rate to ensure sufficient numbers. To produce unbiased estimates using the ultimate respondent data, the analysis presented in this report takes into account the unequal probabilities of selection by incorporating sampling weights.

Bibliography

- “Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report,”* U.S. Department of Education, National Center for Education Statistics, NCES 96-149, by Patricia J. Green, Sharon L. Meyers, Pamela Giese, Joan Law, Howard M. Speizer, and Vicki Staebler Tardino. Project Officer, Paula Knepper. Washington, DC: 1996.
- Barkey, Patrick M., *“The Evolution of Indiana’s Labor Force 1968-1997, A Comparative Analysis,”* Human Capital Retention Project, Indiana Fiscal Policy Institute, December 1998.
- Barkume, Megan, *“The Class of 1993: One Year After Graduation,”* *Occupational Outlook Quarterly*, Summer 1998, pp. 11-21.
- Borsch-Supan, A., *“The Role of Education: Mobility Increasing or Mobility Impeding,”* National Bureau of Economic Research, Working Paper No. 2329, July 1987.
- Digest of Education Statistics, 1997*, U.S. Department of Education, National Center for Education Statistics, NCES 98-015, Washington, D.C., 1997.
- “If You Sell Them, They May Stay: Iowan’s Plan Anti-Boredom Bonds,”* *The Bond Buyer*, February 26, 1999, Vol. 327, No. 30587.
- Kelinson, Jonathan W., *“Trends in College Degrees,”* *Occupational Outlook Quarterly*, Summer 1998, pp. 23-27.
- Leslie, Larry L. and Brinkman, Paul T., *“The Economic Value of Higher Education,”* American Council on Education, Series on Higher Education, Oryx Press, Phoenix, Arizona: 1993.
- “Mobility of Graduates from Indiana Public Postsecondary Education: Working Paper and Technical Report,”* Indiana Commission for Higher Education, November 10, 1995.
- Rollefson, Mary R., Project Manager, *“Education and the Economy: An Indicators Report,”* U.S. Department of Education, Office Educational Research and Improvement, NCES 97-269, April 1997.
- Selowsky, M., *“On the Measurement of Education’s Contribution to Growth,”* *Quarterly Journal of Economics*, 83, pp. 449-463.
- Tornatzky, Louis G.; Gray, Denis; Tarant, Stephanie A.; Howe, Julie E.; *“Where Have All the Students Gone? Interstate Migration of Recent Science and Engineering Graduates,”* Southern Technology Council, Research Triangle Park, NC, February 1998.
- “Work Force Developments: Issues for the Midwest Economy,”* Assessing the Midwest Economy Number 4, Federal Reserve Bank of Chicago, May 15, 1996.

Notes

Notes

BOARD OF GOVERNORS

Ian M. Rolland, Chair
Lincoln National Corporation

Michael J. Alley
Fifth Third Bank of Central IN

Hugh A. Barker
Cinergy/PSI Energy

Joseph D. Barnette
Bank One Indiana Corporation

Coulter R. Boyle
American Electric Power

Michael G. Browning
Browning Investments, Inc.

Arthur L. Bryant
State Life Insurance Company

James M. Cornelius
Guidant Corporation

Robert J. Darnall
Inland Steel Industries, Inc.

Hon. Sarah Evans Barker
United States District Court

Lawrence Feger
Indiana Energy, Inc.

Michael A. Flexsenhar
Caterpillar, Inc.

H. John Gilbertson, Jr.
Goldman Sachs & Company

Charles E. Golden
Eli Lilly & Company

Robert Gramelspacher
Gramelspacher Farms

John Hagaman
DowElanco

Jess Helsel
Helsel, Inc.

Donald E. Henderson
United Farm Bureau Family
Life Insurance Company

Stephen C. Hilbert
Conseco, Inc.

John Hodowal
Indianapolis Power & Light

J. B. King
Guidant Corporation

Kent A. Lebherz
Ameritech Indiana

L. Ben Lytle
Anthem, Inc.

Don E. Marsh
Marsh Supermarkets, Inc.

James Morris
Indianapolis Water Company

John Mutz
Cinergy/PSI Energy

Gary Neale
NIPSCO Industries, Inc.

Andrew J. Paine
NBD Bank

Ronald G. Reheman
SIGECO

Van P. Smith
Ontario Corporation

John A. Templeton
Templeton Coal Company

Robert Whitsel
Lafayette Life Insurance
Company

BOARD OF DIRECTORS

Allan Rachles, Chair
Crowe Chizek & Company

Charles C. Arthur
Arthur Andersen & Company

A. Gerald Backstrom
Central Soya Company, Inc.

Jean S. Blackwell
Cummins Engine Co., Inc.

Daniel Clark
ISTA

Donald E. Coovert
Venture Management Intl., LTD

Francina Dlouhy
Baker & Daniels

Niel C. Ellerbrook
Indiana Gas Company

Mark Florian
Goldman Sachs & Company

Stephen E. Rahn, Vice Chair
Lincoln National Corporation

Robert D. Kraft
Indiana Farm Bureau

F. Michael Kyle
Charles Schwab Co., Inc.

Martha D. Lamkin
USA Group

Gregg McManus
SIGECO

Terry A. M. Mumford
Ice Miller Donadio & Ryan

William W. Mundell
Inland Steel Industries, Inc.

Joseph A. O'Connell
KPMG Peat Marwick, LLP

David A. Kelly, Treasurer
IWC Resources/NIPSCO

Judith G. Palmer
Indiana University

James T. Parker
Anthem, Inc.

Jerry Payne
Indiana State AFL-CIO

I. Donald Penson
General Motors Corporation

Michael R. Rhodes
Economic Development Group, Inc.

Steve Robertson
Conseco, Inc.

E. Mitchell Roob, Jr.
IWC Resources, Inc.

D. William Moreau, Jr., Secretary
Bingham Summers Welsh & Spilman

Charles E. Schalliol
Eli Lilly & Company

Gregory Schenkel
Pearson Schenkel Public Affairs

Thomas A. Schilling
American Electric Power

Daniel B. Seitz
Bose McKinney & Evans

Larry J. Stroble
Barnes & Thornburg

Gary T. Taylor
AUL Insurance Co.

Charles J. Winger
Cinergy Corporation

IFPI STAFF

William J. Sheldrake
President

Jeannie Hellmann
Administrative Assistant

Graduate Migration
from
Indiana's Postsecondary Institutions

March 1999

**Indiana Fiscal Policy Institute
Capital Center, North Tower
251 North Illinois Street, Suite 980
Indianapolis, Indiana 46204
(317) 237-2890
FAX (317) 237-2893**

The Indiana Fiscal Policy Institute (IFPI), formed in 1987, is a private non-profit governmental research organization. It is the only independent statewide source of continuing research into the impact of state taxing and spending policies in Indiana. The IFPI is privately supported by a variety of organizations, corporations, associations, and individuals in Indiana and surrounding states. Contributions to the IFPI are fully deductible under section 501 (c)(3) of the Internal Revenue Code.

Copyrighted © 1999
by the
Indiana Fiscal Policy Institute, Inc.

Permission is granted to make copies of this report
providing copies are not sold and the source is identified.

Foreword

The Indiana Human Capital Retention Project Series

Physical capital was dominant in the economic life of the nineteenth and early twentieth centuries. Machines “made things” and the economy of the United States became the largest and most successful precisely because of its ability to manufacture the products that could be sold around the world. In the last 40 years, economists have increasingly understood that human capital is important to the growth of a country’s economy. The education and experience of the labor force being utilized within a region’s economy makes a very significant difference in the rates of return on business investment and on the quality of life within the region. Human capital, therefore, represents a strategic advantage in the increasingly competitive international economy in which we all participate.

One measure of human capital is the educational attainment of a region, state or nation, defined as the percentage of the adult population with a certain level of schooling. Indiana is a state with historically low educational attainment at the collegiate level. In 1970 Indiana ranked 44th among the 50 states in terms of population with four years or more of college; by 1997 the State’s ranking had fallen to 48th. This statistic is even more troubling in a state like Indiana with higher education institutions that are generally regarded as excellent.

The stock of human capital within a state is difficult to affect. The level of education of a region’s labor force becomes a consideration when new business investment decisions are being made. The Indiana Human Capital Retention Project was formulated as a research response to Indiana’s perceived human capital problem. It consists of several research initiatives, each of which looks at a different part of the human capital issue.

The Indiana Human Capital Retention Project is funded by a grant from the Lilly Endowment, Inc., and receives additional funding from the Indiana Commission for Higher Education and the Indiana State Chamber of Commerce. The research for the project is being carried out by the Indiana Fiscal Policy Institute in collaboration with a number of experienced academic and independent researchers.

Graduate Migration from Indiana's Postsecondary Institutions is the second in a series of reports to be published. It is a report of the findings from the Indiana Graduate Follow-up Survey which was undertaken by the Indiana Fiscal Policy Institute with the assistance of the Center for Survey Research at Indiana University and the National Opinion Research Center at the University of Chicago. Elected officials, public policymakers, and private sector leaders often complain about the flight of human capital or “brain drain” from whatever geographical area for which they feel responsible. This report maps the dimensions of the flight of human capital from the State of Indiana in one segment of the population, recent college graduates. It adds reliable information to an already interesting policy debate.

This study does not exhaust the analysis that should be done with regard to graduate migration in Indiana. This rich data source will be supplemented by survey results from graduates of private colleges and universities in the State. The Indiana Fiscal Policy Institute has a continuing interest in exploiting this survey data to reveal all that it can tell us about human capital development and retention in the Hoosier State.

Executive Summary

Graduate Migration Study

A well-stocked supply of human capital is recognized as a vital part of maintaining a strong economy. States across the U.S. are paying more attention to both the development of human capital through their educational systems and the retention of that capital for future growth. Indiana is a state long thought challenged in the area of human capital because of its low educational attainment at the postsecondary level, ranked 48th compared to the 50 states.

As part of the assessment of Indiana's human capital position, this report presents the results of an analysis of the migration of graduates from Indiana's public two and four-year colleges and universities. The study surveyed public postsecondary graduates, both those who entered from outside the State to attend college and those who enrolled as Indiana residents. The sample included more than 8,000 graduates in total from the associate, baccalaureate and master's levels. In addition, a national sampling of graduates held by the U.S. Department of Education was analyzed to reveal Indiana's ranking on the retention of graduates compared to other states.

The most significant findings of the study include:

- ? *1 - Indiana is a significant exporter of graduates with postsecondary degrees.* For all degree levels, 36.2 percent of Hoosiers leave the State after graduation and 89.2 percent of non-residents leave. The State is a significant importer of high school graduates pursuing a college education, but clearly both sets of graduates contribute to a "brain drain" or flight of human capital from Indiana.
- ? *2 - Indiana's graduates leave the State, overwhelmingly, for employment-related reasons.* Of those graduates who left, both those from outside the State and those who were Hoosiers, the strongest factor in leaving was the search for the right kind of job, the best pay/benefit mix, or the brightest prospects for career advancement.
- ? *3 - Quality of life is a factor in the failure to keep highly educated persons in Indiana.* Those graduates who left the State cited quality of life as the second most important set of reasons to leave, [behind jobs]. However, this is a two-pronged finding. Those graduates who stayed also ranked Indiana's quality of life as a secondary set of factors influencing them to remain in-state. The reasons behind each group's ranking are not clear, but the importance of improving the perception of the quality of life for both career-motivated and family-motivated recent graduates shouldn't be missed.

? 4 - *Indiana's public postsecondary institutions appear to produce baccalaureate level graduates in the subject area disciplines most likely to be needed in a manufacturing-oriented economy.* Business degrees ranked first and engineering and technology ranked fourth in the choices of majors among survey respondents.

However, only 58.8 percent of the business majors stayed in Indiana, and fewer, 36.7 percent, of the engineering and technology majors stayed in the State to pursue their careers.

? 5 - *The State retains higher percentages of its master's degreed persons [Indiana residents] than it does bachelor's students,* since master's graduates are more likely to be employed in a career-related job when pursuing a master's education.

? 6 - *While Indiana's major research universities serve a higher percentage of out-of-state enrollees, the program offerings at these schools are not driven by the choices of non-Indiana students.* Degree program selections by Hoosiers are not significantly different than non-residents.

? 7 - *Program level shifts in enrollment impact overall retention percentages.* In 1985-86, the majority of the State's master's degrees in business administration were awarded at Indiana's major research campuses, [58.5 percent]. By 1995-96 the number of MBA's produced had grown by almost 50 percent. However, by that year only one-third of the MBA's came from the State's major research campuses and the statewide retention rate for master's degrees in business had increased from 46.4 percent in 1985-86 to 66.8 percent.

This report on migration in Indiana's postsecondary graduates highlights earlier findings on human capital in Indiana. The demand for the graduates of Indiana's colleges and universities is not sufficient, from the viewpoint of the graduates themselves, to retain them within the Indiana economy, and national data analyzed for the purpose of this study confirms the importance of economic factors in the migration decision.

However, the findings do provide reasons for optimism with regard to affecting Indiana's human capital position. Extending access to postsecondary education appears to significantly expand the human capital retained within the State. Designing policies which operate to accomplish this within the higher education delivery system in Indiana is part of solving Indiana's human capital dilemma.