

# High School Graduation and Brain Drain; Survey Results and Insights from the Toledo Metropolitan Area



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## Executive Summary

- As a group, respondents who expect to attend college outside of Ohio, are better students, come from more affluent families, are disproportionately male, and are more interested in institutional prestige and curricular rigor. Many of them are not interested in attending college in Ohio, in returning to Ohio after graduation, and express a distain for their hometown.
- As a group, respondents who expect to attend college inside of Ohio, are less interested in reputation and rigor of their chosen school; their selection of institutional location is more motivated by a desire to be close to family and friends. They come from affluent families and have strong test scores, but are not as affluent or as strong as those expecting to leave Ohio. They are a majority female group. They state more concern (actually the most concerned among the three groups) about the cost of college as a motivating factor in their decisions on college attendance.
- As a group, respondents who expect to attend college in our region, are the least academically distinguished and least interested in academic prestige or curricular rigor of the three groups examined<sup>1</sup>. They have the least distain for their hometown and intend to stay in-state after graduation. They are concerned about the cost of college, but not as much as those going in-state in general. They are the most disproportionately female, and middle (rather than upper) class.
- Culture, urbanity, diversity, and climate attributes influence a small number of respondents, but seem to have little sway on the decision-making of most our respondents.
- Retaining local high-school honors students is part of an over-all strategy to improve the intellectual capacity of the region and local firms. However, if the goal is to create a more dynamic economy with innovative, entrepreneurial, well-

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<sup>1</sup> It must be stressed that these relative rankings are not a reflection on the students or institutions; these are still honors students with strong academic resumes.

educated individuals who can synthesize or integrate new ideas, cultures, insights, and applications, then retaining regional students yields minimal benefits and can even be counterproductive.

## Introduction

We need to get clear up some common misunderstandings. Public officials, economic developers, and community leaders all worry about the future of their region and the financial health of their citizens. As the pace and complexity of economic life has increased in the last two decades, traditional sources of local influence and control have waned, leaving leaders flummoxed. Many have grasped onto the rhetoric of “brain drain” as a source of their problem and—often with little information about and flawed understandings of the concept—they have issued statements and even formulated policies to address their area’s perceived brain drain problem(s).

Brain Drain is a specific concept,<sup>2</sup> **defined as the migration of academically talented students and well-educated college graduates—especially in the science and technology fields—from where they were born and/or educated to a few sites where they congregate with many other like-minded and/or like-cultured individuals to form innovative hubs of economic activity especially valuable in this transnational economy.** The study of brain drain is an analysis of the factors influencing migration and concentration of intellectual and social capital. This study adheres to that definition.

Brain drain is not concerned with population or resident retention—often a major focus of politicians using the phrase—nor is it focused on high school and community college graduates or those with “some college.” By definition these are not brains; they are average workers easily replaced by other nominally trained average workers.<sup>3</sup> This distinction does not come from academic or elitist pretension: It is fundamental and essential. To participate in today’s economy, one must hire individuals whose intellectual capital can create new economic products and activity. One-hundred years ago one could field a professional sports team with area talent, but to compete today, teams search the world for competitive, full-time, well-trained professionals. We should work to retain those local citizens who can meet contemporary standards of excellence. The reason to study brain drain is to find future stars who will power a regional economy, not to create an intramural league of local talent. Understanding why brains stay, why they leave, and how we might affect that process motivated this study.

The confusion among Toledo-area politicians over the concept, significance, and impact of brain drain/ brain gain is a reflection and perpetuation of a debilitating condition several recent studies of the area economy have found.<sup>4</sup> Local firms have settled for

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<sup>2</sup> The British Royal Society first coined the expression “brain drain” to describe the outflow of scientists and technologists to the United States and Canada in the 1950s and early 1960s. *OECD Observer*. 5/7/02.

<sup>3</sup> Many analysts even argue that baccalaureate graduates in general are only tangential to the brain drain/concentrated intellectual capital issues.

<sup>4</sup> Cf. Paul Fritz and Patrick McGuire. 2005. “A Descriptive Study of Information Technology Needs in

less educated/trained people who'd responded to local ads. They have consistently hired low-cost, locally-based individuals to meet vaguely understood business needs, rather than seeking out better trained, generally more intelligent, and better prepared experts to introduce new practices and innovations for firms. To be blunt, all "brains" are not created equally, and among the strong ones, not all are equally trained or innovative.

In and of itself, the congregation of talented individuals in one area is not an essential stimulus to job creation and may actually discourage investment in traditional firms and industries as they absorb available local investment capital. In fact, when brain hot spots (concentrated high-tech firms) emerge, the general population may decline and existing local firms may see little or no increase in business or in total employment.<sup>5</sup> Thus concentrating brains can improve the regional economy, but in ways that only tangentially help the majority of existing citizens or businesses. Economic developers and politicians who seek and promote high tech firms and focus on brain drain/brain gain by simply seeking higher paid workers and taxpayers may be oblivious to its full impact.<sup>6</sup> Or they may focus on it as a viable option in a competitive but otherwise dismal global environment. Most developers/politicians recognize that as the economy transitions to a knowledge-based economy, they need smart people if their communities are to participate in any meaningful way.

## Brief Literature Review

The academic literature suggests that there are three major periods of brain drain: after graduation from high school, after graduation from college, and during the first three years after completion of college. Most of the literature focuses on the latter two, including all the United States census-based reports<sup>7</sup> and studies on Ohio. This author and the University of Toledo Urban Affairs Center have already conducted an analysis of the post-baccalaureate dynamics in northwest Ohio —*Brain Drain in Ohio; Observations and Summaries with Particular Reference to Northwest Ohio*.<sup>8</sup> Absent

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Toledo Area Businesses and Professions." The Urban Affairs Center, The University of Toledo. <http://uac.utoledo.edu/Publications/fritz-itano-2-25-05.pdf> , James Lesage, The Information Technology Industry in the State of Ohio and its Regions, Dayton: IT Alliance. Pgs. 83-92, <http://uac.utoledo.edu/Publications/ohitfinal.pdf> , Toledo Area Chamber of Commerce and Regional Growth Partnership. 2000. Workforce Needs Assessment, and McGuire, Hardy-Johnson, & Saevig 2006, *Brain Drain in Ohio; Observations and Summaries with Particular Reference to Northwest Ohio*, <http://uac.utoledo.edu/Publications/brain-drain-02-06-rev2.pdf>.

<sup>5</sup> Only 1 of the 25 growing "brain attracting" locales, were among the 10 fastest growing US cities in the late 1990s.

<sup>6</sup> US Census, 2002. *Big Payoff; Educational attainment and the synthetic estimates of work-life earnings*. People with doctorates on average earn \$3.4 million in a lifetime, professional degrees \$4.4 million, masters degrees \$2.5 million, bachelors \$2.1 million, associates \$1.6 million, some college \$1.5 million, and high school degree \$ 1.2 million, less than a high school degree < \$1 million. Having more large-wage earners produces larger tax revenues whether property- or sales-based.

<sup>7</sup> Cf.- *Educational Attainment in the United States, Special Report*, US Census 1999. .

<http://www.infoplease.com/ipa/A0774057.html>, or US Census 2000, *Migration of the Young, Single, and College Educated: 1995-2000. Special Report*, U.S. Dept. of Commerce, 11/ 2003, or US Census 2003. *Educational Attainment: 2000*.

<sup>8</sup> McGuire, Hardy-Johnson, & Saevig 2006 is available on the UAC website at

direct analysis of brains graduating from Ohio's and especially the region's high schools, discussion of any drain during that period is illusory, and attempts to formulate policy to address deficiencies are premature. This paper, therefore, attempts to supply basic data and analysis and to lay the groundwork for coherent policy proposals.

Few studies have examined the period after high-school graduation. A study by the Southern Technology Council (STC) that helped spark the national brain-drain debate, briefly examined the high-school-to-college transition period throughout the South, and found that in-state high-school graduates attending in-state public universities was an important factor in overall retention of such students.<sup>9</sup> A 2001 STC follow-up study estimated that **the odds of keeping a "stayer"** (in-state high-school graduate who attended in-state university) **were 10 times greater than a "leaver"** (in-state high school grad who attends college out of state) and **four times greater than an "arriver"** (an out-of-state high school graduate who attended college in the particular state).<sup>10</sup> A 2004 study of Alaskan students found the same pattern, and noted that about 80 percent of those who attended college out-of-state did not return. A North Dakota study found that 63.3 percent of high school students who attended college in-state, remained in-state to work. The study also noted that 21-29 percent of those who graduated from high school in nearby states and attended college in North Dakota stayed in North Dakota to work.<sup>11</sup>

Unlike Alaska, North Dakota, and the STC, which deduced patterns from aggregated data, Maine and Indiana surveyed students graduating from high schools. A 1999 small survey of central Indiana "blue-chip students" found a plurality planning to study outside the state, and relatively strong support for intending eventually to work in Indiana (42 percent).<sup>12</sup> A 2003 study from Maine included quantitative data as well as surveys of high school and college students.<sup>13</sup> The study found that about half of all Maine high-school graduates left the state for college; that local high-school graduates did not value Maine's colleges; and that many, especially the best students, received more financial aid from out-of-state colleges. The study also found that half of the brightest students who attended college outside of Maine did not return to Maine. Three-fourths of those who did return after attending out-of-state colleges left within two years due to lack of job opportunities. Both exit trends were more pronounced for students who attended private out-of-state colleges. Each of these studies emphasized that the lack of

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<http://uac.utoledo.edu/Publications/brain-drain-02-06-rev2.pdf>

<sup>9</sup> Southern Technology Council. 1998. *Where have all the students gone?*

<sup>10</sup> Tornatzky, L.G. et al. 2001. *Who Will Stay and Who Will Leave?* Southern Growth Policies Board, Triangle Research Park, NC. SGPB is the successor to STC.

<sup>11</sup> Stark Education Partnership. 2003. "Graduate Retention". Akron Ohio. Pg. 14, and Ronald Wirtz. 2003. "Plugging the Drain Drain," *Fedgazette* January 2003. <http://minneapolisfed.org/pubs/fedgaz/o3-01/cover.cfm>

<sup>12</sup> Americhieve 1999 in Stark Education Partnership. 2003. "College Graduate Retention." P. 99, Pg. 21-22. Significantly, the study is referred to as "one of the better sources on student attitudes."

<sup>13</sup> This Maine 2003 study is unusual and exemplary for several reasons. It draws upon data from high schools, colleges, and employers, including all public and private colleges granting AA and BA degrees, and has statistical and survey information from essentially every Maine student who received a student loan.

appropriate job opportunities and low pay for those jobs that did exist were central factors in the exit of these soon-to-be-former residents.

Despite this limited data on high-school student preferences and the implications of their migration decisions for local entrepreneurship and business/job creation, about a dozen states—led by Georgia and Indiana—have created (but did not always fund) special scholarships intended to keep their brightest students in their home states.<sup>14</sup> There have been proposals for funding scholarships at the state and regional level to address the brain drain in Ohio but actions have not yet been taken.

There has not been any systematic review of in- versus out-of-state decision-making among Ohio high school students transitioning to college.<sup>15</sup> Ohio has an above average high-school graduate rate but a significantly below average high-school-to-college matriculation rate—implying that one source of Ohio’s weak participation in high tech and innovation may be partly due to lack of success in developing a college-educated workforce from its own high school graduates.<sup>16</sup> <sup>17</sup> More students came to Ohio to attend college (11,960) than left to attend college in another state (10,424).<sup>18</sup> Sheehan suggests that Ohio’s best students leave the state to attend college elsewhere, but notes that there is no data to support or refute this assertion.

An on-line regional survey was conducted by the city of Toledo in 2006.<sup>19</sup> Seeking to ascertain attitudes and what could be done to increase retention, city officials mailed requests for participation to several classes of high-school graduates and a public plea was made for students to reply to the on-line survey. The questions asked were generally open-ended.<sup>20</sup> Respondents were mostly in their 20s (43 percent were 20-25 years old, 42 percent were 26-30 years old). Thus recent high-school graduates, baccalaureate graduates, and people more than three years past graduation, as well as

<sup>14</sup> [http://convention.allacademic.com/aera2004/AERA\\_papers/AERA\\_3048\\_15513a.pdf](http://convention.allacademic.com/aera2004/AERA_papers/AERA_3048_15513a.pdf) lists several states, and the Stark Educational Partnership. 2003. *College Student Retention*, pgs. 13-19 provides a more recent list of such programs.

<sup>15</sup> The UT-UAC is undertaking such a study of Lucas county honor society graduates.

<sup>16</sup> Three other studies came to the same conclusion. Gottlieb 2001. *The Problem of Brain Drain in Ohio and Northeastern Ohio*. 2001. Center for Regional Economic Issues. Case Western Reserve University. Cleveland. Knowledgeworks. 2002. *Ohio’s Education Matters: Knowledgeworks Foundation 2001-2002 Cincinnati*, and OBOR 2002. *A Policymaker’s guide to Higher Education in Ohio 2002*. Columbus.

<sup>17</sup> One contributing factor may be Ohio’s Average Tuition in public universities which in 2004 was \$6,690; fifth-highest among 50 states, and 144 percent of the national average. Only 9 states have a lower appropriation for higher education per \$1,000 of personal income and the tuition at public 4 year Ohio colleges, relative to the state average income, is the second worst in the nation. See [http://measuringup.highereducation.org/state\\_reports.cfm](http://measuringup.highereducation.org/state_reports.cfm)

<sup>18</sup> Mortensen, 2002 in Sheehan 2004. “Commentary on; Buying Ohioans Loyalty? How State Financial Aid Affects Brain Drain.” pg. 2, 3. Data from 1998.

<sup>19</sup> The City of Toledo Youth Commission. 2006. *The Best and Brightest: 2006 Survey Responses*. Toledo, Oh.: City of Toledo.

<sup>20</sup> Questions included: In what professional field are you trained? What was the highest level of education completed? List all schools attended since graduating high school. Are you currently attending a post-secondary institution in the Toledo-area. (Identify) if you would like information on furthering your education, starting a business, or finding employment in the Toledo area. And, share any additional comments with us.



those born here or born elsewhere and living here, were all collapsed into a single category. Almost half of the 441 respondents had full-time employment in their field, 16 percent in unrelated fields. Twenty-seven percent were full-time students with eight percent studying part-time at the time of the survey. While many respondents had or were working on baccalaureate and/or masters degrees or (several) doctorate degrees, many others had only community-college experience, some college courses, military training, certificates, high-school degrees, or course work. There is no indication that they were good students and some expressed anti-education and anti-intellectual comments. The report provided by the Youth Commission had a few frequency tables, no analytic section, and dozens of pages of transcribed, open-ended comments. The later might be made useful by thematic coding and/or in-vivo coding, and analysis. There is one summary table without comment in the Executive Summary. Seventy-seven percent identified job issues; 31 percent identified quality of life, and 22 percent noted that education issues were their central concern. Thus unfortunately, the City's report is in a form and format of minimal usefulness and where meaningful comparisons between the findings of this study and that one are impossible.

## Description of the Data and Sample

Our study sought to locate and identify the brains in various Toledo metropolitan regional high schools. The criteria of excellence are necessarily arbitrary and open to challenge. We decided to focus on students who were seniors and members of their school's honor society. We contacted principals and honor society faculty advisors of more than 30 area high schools, seeking permission to survey their honor society members. To encourage both advisors and students to participate, we offered \$50 to any society that agreed to participate, regardless of the number of completed surveys we received from that school.

Since some students were under 18, we created a protocol including permission forms to be signed by school administrators and parents, and one for the student/respondent. We submitted these forms, a copy of the survey and other information to, and received the permission to begin, from the University of Toledo's Human Subjects Committee or IRB.<sup>21</sup>

We then contacted the various principals, administrators, and advisors. Those who were interested in participating obtained their institutional permission, issued, and later collected the parental and student participation forms. This process often required several contacts as well as weeks and sometimes months to complete the processes. A time was then set aside in school and the surveys were completed by students. The surveys, along with signed forms from parents and themselves,<sup>22</sup> were returned to us.

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<sup>21</sup> The IRB is a federally-mandated committee that ensures ethical and legal treatment of research subjects by examining the plans and reviewing the performance of research projects. The charge and process of this committee are outlined at: <http://research.utoledo.edu/humansubj.htm>

<sup>22</sup> Copies of parent permission forms, the administrator permission forms, and the student participation forms are held by the UT Urban Affairs Center.

The study sample is best described as diverse. Comparing this sample to the Toledo area population of brains or even honor students is impossible since there is no way to determine the characteristics of that entire population. The sample includes 157 respondents, with respondents from the inner-city, suburbs, and exurbs; students from different “types” of schools (see Table 1), and a gender- and race-diverse population roughly approximating the norms of the MSA or Metropolitan Statistical Area.

**Table 1 — Attributes of Participating High Schools**

Name	Urbanity	Type of School	Affiliation
Otsego	Exurban	Public	Otsego Public Schools
Southview	Suburban	Public	Sylvania Public Schools
Waite	Urban	Public	Toledo Public Schools
Maumee	Suburban	Public	Maumee Public School
St. Ursula	Urban	Parochial – all girls	Roman Catholic
St. Francis	Urban	Parochial – all boys	Roman Catholic
Emanuel Baptist	Suburban	Religious-based	Baptist
Toledo Technology Academy	Urban	Charter/Community	State-sanctioned Charter school
Whitmer	Urban	Public	Washington Township Public School
Rossford	Suburban	Public	Rossford Public School

The gender distribution of respondents was 50.3 percent female and 49.4 percent male.<sup>23</sup> Family income data suggests that these students are disproportionately middle and upper class (67 percent of all respondents report family incomes over \$50,000/year, and 30 percent of respondents’ families earned \$100,000/year).<sup>24 25</sup> And the ethnic/race sample distributions<sup>26</sup> (see Table 2) are roughly similar to those of the Toledo MSA as a whole.<sup>27</sup> Thus, our respondent pool seems an appropriate representation of honor students, given local demographics and the attributes of honor students generally described in the literature.

**Table 2 — Comparative Ethnic/Race Attributes of the Sample and MSA**

	% of Respondents	% of MSA
Caucasian	87.9%	83.8%
African-American	2.5%	13.5%
Hispanic	3.2%	4.4%
Asian	0.6%	1.4%
Native American	0.6%	0.7%
Other	4.5%	2.6%

<sup>23</sup> Gender identification was offered by 156 of 157 respondents.

<sup>24</sup> Only 39 percent of households in the Toledo MSA in 2000 had incomes of over \$50,000 and only 9.5 percent had incomes of over \$100,000. US Census, 2000 Table DP3 Toledo MSA.

<http://uac.utoledo.edu/Links/census-demog/Toledo-MSA-00-DP3.htm>

<sup>25</sup> The influence of income as opportunity is reflected in the ACT scores. Thirty-nine of 42 respondents with scores of 28 or above were from families with incomes of more than \$50,000. Conversely, 9 of 15 ACT scores of 21 or less (60 percent) were from respondents with family incomes of less than \$50,000.

<sup>26</sup> A total of 155 respondents reported a race/ethnic category.

<sup>27</sup> Ethnic distribution for all ages for the Toledo MSA in 2000: <http://uac.utoledo.edu/Links/census-demog/Toledo-MSA-00-DP1.htm>

The fact that 92.4 percent of our respondents had taken the ACT college entrance exam indicates that they were preparing to enter college.<sup>28</sup> Ninety percent of respondents taking the ACT scored 22 or above (out of a possible top score of 36)—equal to or above 64 percent of all ACT test takers.<sup>29</sup> Thirty-six percent of respondents scored 27 or higher—ranking them above 90 percent of all ACT test takers. Many also had strong SAT scores.<sup>30</sup> Ninety-three percent of respondents report having a GPA (grade-point average) of 3.5 or above, and 59.9 percent of respondents have a GPA of 3.8 or above.<sup>31</sup> Our respondents are thus good students—brains—performing well in their local high schools and compared to their age-peers nationally.

## Analysis of Data

### *Who Will Stay In-state and Who Will Go Out-of-state?*

The most direct question relative to the potential exit of high school students after graduation is: If College A in Ohio and College B outside of Ohio each has all the factors important to you, would you go to College A? **Over three-quarters of our respondents (75.2 percent) replied that they ideally preferred to go to college in Ohio.**

Given this general orientation, where had our respondents actually applied?<sup>32</sup> We asked them to identify and rank their first three college preferences and locations and recoded their responses as in-state or out-of-state institutions. By roughly a 2:1 ratio, the **respondents as a group identified in-state institutions as their first, second, and third choices for college attendance** (See Table 3). Clearly, most of our local honor student respondents see Ohio-based universities as desirable choices.

**Table 3 — Ranked Selection of Post-Secondary Institution In- or Out-of-State**

	In-State	Out-of-State
First Preference <sup>33</sup>	69.3%	30.1%
Second Preference	68.8%	30.5%
Third Preference	63.3%	36.7%

<sup>28</sup> 145 respondents reported ACT scores, and SAT scores only were reported by 66 respondents or 42 percent of respondents.

<sup>29</sup> Scores are explained at <http://www.actstudent.org/scores/norms1.html>

<sup>30</sup> We will focus on the ACT scores since 92.4 percent of all respondents took that exam, and only 58 percent of respondents took the SAT exam. More than half scored 1290 or above on the SAT; distributions for this exam change each testing cycle, but 1300 is often a rough cut line for “major” colleges and universities.

<sup>31</sup> Different high schools offer different advanced courses which augment the 4-point scale, resulting in opportunities and scoring unique to each school and individual. Many students reported scores of 4.2 and even 4.6 on a 1-4 scale, because their cumulative score was increased by their advanced placement course grades. Since not all students had access to the same course options, and since we can’t obtain their GPAs before these additions, comparisons are inappropriate.

<sup>32</sup> Of the 157 respondents, 151 had already applied to college and 5 more were planning on applying. The other person reportedly planned to apply in the future.

<sup>33</sup> The response rates for preferences varied; 153 identified a first preference; 141, a second preference, but only 120 respondents identified a third preference.

There are several demographic differences between those who leave the state and those who stay. We see similar patterns in Table 4 whether the first and second choices of colleges are in- or out-of-state. For example, **men are more likely to leave the state than women by roughly a 3:2 ratio**. Yet, given that roughly three-quarters of all respondents favored in-state institutions, it should be noted that a majority of the men in the sample were staying in Ohio.

**Table 4 — In- /Out-of-state Attendance by Gender Composition**

	Men	Women
1st choice in-state	45.3%	54.7%
1st choice out of state	62.2%	37.8%
2nd choice in-state	44.8%	55.2%
2nd choice out-of-state	65%	34.9%

Initially, family income does not seem to be an important factor. Table 5 shows that a similar percentage of those applying to in- and out-of-state schools have a family income of more than \$50,000. **Forty-four percent of respondents choosing an out-of-state school first and 48.8 percent who listed out-of-state as second choice come from families with incomes of more than \$100,000, a rate more than 50 percent higher than in-state respondents**. Among those choosing to stay in-state, only 28 percent and 27.7 percent had family incomes of \$100,000 or greater. Thus students who choose to attend out-of-state colleges disproportionately come from high income families.<sup>34</sup>

**Table 5 — Income & In-/Out-of-State Preferences<sup>35</sup>**

	<\$50,000	<\$100,000
1st choice in-state	72%	28%
1st choice out of state	71%	44%
2nd choice in-state	73.2%	27.7%
2nd choice out-of-state	73.3%	48.8%

Another differing factor between these two options is ACT scores (Table 6). Among those whose first choice is out-of-state, none scored less than 22; 57 percent of all out-of-state applicants had scores greater than 26, twice as high as the rate in-state. Since almost three times as many are staying as leaving, we should note that roughly an equal number of the best students (with an ACT score of at least 27 or above) were staying and leaving (23 versus 25). When we examine those whose second-choice college was out-of-state, the same intent is present. Thus, despite Mortenson’s assertion that better students are leaving, our study suggests that **an equal number of the best students stay in-state, but that a greater percentage of students who are leaving are the best**. The rates are similar for those whose first and second choices were out-of-state institutions.

**Table 6 — ACT Scores & In- /Out-of-State Preferences**

<sup>34</sup> Yet since the size of the in-state applicant group is so much larger, the majority of the affluent responders were seeking entry into in-state colleges.

<sup>35</sup> A total of 147 (of 157) respondents reported family income by category.

	ACT < 22	ACT >26
1st choice in-state	4.7%	27.6%
1st choice out-of-state	27.6%	57%
2nd choice in-state	22%	37.7%
2nd choice out-of-state	2.5%	69.2%

Only about a quarter of out-of-state applicants intend to work in Ohio after they graduate, versus about two-thirds of those who attend college in-state. The intent (and ratio) is the same for applicants' first and second choices, as seen in Table 7. Whether students are uninterested in returning or if they believe Ohio doesn't offer the type of work or salary they expect, these students don't have the same level of interest in/expectation of employment in Ohio as those applying in-state. Their intention/expectation not to return for work has important implications for policy-makers who seek to bring back students who attended out-of-state colleges.

**Table 7 — Seek to Work in Ohio After Graduating**

	Will work in-state	Will not work in-state
1st choice in-state	67.5%	32.5%
1st choice out-of-state	25.6%	74.4%
2nd choice in-state	63.8%	34.1%
2nd choice out-of-state	22.5%	77.5%

We can also compare career aspirations relative to earning advanced (post-baccalaureate) degrees. Among all respondents, a large percentage of students plan on post-baccalaureate degrees. Interestingly, **90 percent of students identifying a desire to obtain a post-baccalaureate degree had fathers, and 85.4 percent had mothers with more than a baccalaureate degree.**<sup>36</sup> There appears to be a strong family/cultural element at play here. While the rate is a little higher among students whose second choice is an out-of-state institution, the rates in general seem relatively similar. The level of father's and mother's education (two separate variables examined) did not indicate any significant influence on in- or out-of-state attendance decisions.

**Table 8 — Seek Post Baccalaureate degree and In- /Out-of-State Preferences**

	Will seek post baccalaureate degree
1st choice in-state	75.2%
1st choice out-of-state	75.6%
2nd choice in-state	76.3%
2nd choice out-of-state	88.2%

In summary, those leaving Ohio for college elsewhere are disproportionately male, financially well-off, better students, and not expecting to return to Ohio for work after graduation.

<sup>36</sup> Father's education was reported by 154 respondents, while mother's education was reported by 156 respondents.

**Factors Affecting the Selection of a Preferred In- or Out-of-State Institution**

Students chose particular colleges for many reasons. Students have various career and personal goals and they apply these when picking a specific institution. With the factors influencing college preference and those motivating brain drain concentration in mind, we asked respondents to identify how important several factors were in their decision-making. The students used a standard five-part Likert scale ranging from Not Very Important to Very Important to identify their preferences. For purposes of clarity, we will focus on the combined scores in the Important and Very Important categories. There were other open-ended questions and still others that were categorical selections.

**Table 9 — Factors Affecting Selection of First and Second Preferred In-State and Out-Of-State Colleges (important/very important combined scores)<sup>37</sup>**

	% in-state as 1st choice	% out-state as 1st choice	% In-state as 2nd choice	% out-of-state as 2nd choice
<b>Emotional</b>				
Proximity to Family	40.4%	10.9%	31.6%	14%
Proximity to Friends	26.6%	6.5%	21.9%	11.6%
<b>Financial</b>				
Cost of Attendance	75.3%	56.5%	70.8%	55.8%
Job Near Campus	44.7%	34.8%	39.6%	48.8%
<b>Curricular</b>				
Challenging Curriculum	56.2%	74%	54.2%	81.4%
Appropriate program of Study	86.5%	91.3%	84.2%	93%
Institutional Prestige	55.2%	71.2%	55.8%	93%
Study Abroad Opportunity	26.6%	41.3%	24%	48.8%
Internship/Coop Opportunities	68.6%	78.3%	65.6%	81.4%
<b>Campus Attributes</b>				
Religious Factors	13.3%	13%	12.5%	11.6%
Extra-Curricular Activities	41.9%	47.8%	42.7%	53.5%
Diversity	35.2%	28.3%	27.1%	39.6%
Housing Availability	45.7%	45.6%	43.8%	51.2%
Size of Institution	49.%	91.3%	44.2%	45.2%
Urban or Rural Setting	22.9%	23.9%	14.6%	34.9%
Physical Climate	13.3%	28.3%	10.4%	32.6%
<b>Other</b>				
Avoid Menial Job	23.1%	20.5%	14.9%	35.7%
Escape from Hometown	33.3%	58.7%	40.6%	55.8%

Student responses included financial concerns, emotional ties, curricular matters, campus attributes, and other factors (see Table 9). Of major concern are those factors that motivate students to select in- versus out-of-state institutions. We will initially examine responses based on whether their first choice was an in-state or out-of-state college.<sup>38</sup>

**Students choosing in-state colleges were much more concerned with financial and emotional factors.** Those with an in-state, first-college choice identified emotional variables as important or very important almost four times greater than out-of-state applicants. The trends were the same for second-choice institutions, but the rate

<sup>37</sup> Response rates for these categories ranged from 152 to 156 of the 157 participants.

<sup>38</sup> The logical assumption is that all respondents are Ohio residents. At least one is a Michigan resident attending high school in Ohio, based on a comment in an open-ended question.

dropped to twice as frequently. **In-state respondents identified financial variables as important at a rate roughly 50 percent higher than out-of-state** for both first- and second-choice institutions.

**Students who chose out-of-state schools disproportionately identified curricular matters as important/very important, at rates significantly above those choosing in-state colleges.** The importance of institutional prestige in particular is strong—almost twice as high for respondents preferring out-of-state schools. Taken together, these scores suggest that those leaving Ohio may see a problem with the quality of Ohio universities relative to their first choices, many of which were elite, Ivy League schools.

Finally, the rate at which **out-of-state applicants desire to “escape their hometown”** was significantly higher than that of in-state applicants. Almost twice as many of those with an out-of-state, first-choice school felt it important to leave their hometown. A similar tendency (but lower rate) is present in those choosing an out-of-state school as their second preference. For these students, it is not simply a matter of preferring to be elsewhere. They don’t want to be near where they grew up. They also identified climate/weather as a very/important motivator at a rate two to three times higher than in-state applicants. This matters for policy-makers since there are factors that “push” as well as “pull” respondents to move out of state, with the push factors beyond the control or remediation of policy-makers. This makes retaining or re-attracting these people improbable.

If emotional and financial factors are motivations for attending an in-state institution, we should examine the extent to which either is the principal motivation for “staying” students, since the policy implications for each are quite different. The centrality of cost and emotional proximity was also evident when respondents were asked in an open-ended query, “If all were equal between an Ohio school and one in another state, would you select the Ohio university?” A total of 44 respondents, 38.9 percent who answered, cited tuition concerns; 16 (11.6 percent) cited both family and tuition; 37 (26.8 percent) cited home/family proximity (together roughly two-thirds of this respondent pool—the same proportion as the distribution of in- versus out-of-state oriented respondents).<sup>39</sup> Thus, about half of those explaining their choice to stay in-state were strongly influenced by their desire to be near family and friends. No policy to attract brains will significantly affect their selection.

Lower costs and in-state tuition in particular were major factors influencing the decision of the other half who chose an Ohio college. This is important for two reasons. It is probable that many were choosing Ohio universities principally for financial reasons. In fact, many specifically identified lower in-state tuition as an important factor, suggesting that they believe in-state tuition may result in a lower total or final cost compared to an out-of-state institution. This belief might have precluded them from examining out-of-state colleges. If they had done so, they may have found that the net cost of attending

<sup>39</sup> 16 (11.6 percent), wanted new experiences; 6 were anti-Ohio (4.3 percent); 6 wanted a new climate (4.3 percent); 3 (2.2 percent) sought the best education, and 10 cited other factors.

an out-of-state college, with scholarships and other financial aid, can often be a lower net cost than attending an Ohio college; the rate of those seeking out-of-state colleges might then have been higher.<sup>40</sup>

Since over 85 percent of respondents identified “appropriate curriculum” as an important variable for their first and second choices, we need to explore this insight more fully. Recognizing that entering college freshmen often have more than one potential career interest, we allowed respondents to identify more than one area of interest from a list of such areas. Many took advantage of that option. And as a group, the career aspirations are diverse. Almost one-third of respondents picked business, about one-third picked health care, and slightly less than one-third chose arts and humanities as areas of career interests. The rest picked education and law.

**Table 10 — Post-Secondary Career Interests**

	Frequency	percentage of all respondents <sup>41</sup>
Arts & Humanities	44	28.0%
Social Sciences	26	16.6%
Natural & Biological Science	29	18.5%
Health care	49	31.2%
Education	19	12.1%
Business	51	32.5%
Computer Science	11	7.0%
Engineering	28	17.8%
Law	16	10.2%

Do respondents with different career orientations view Ohio institutions as equally desirable? Examining the respondents’ first-choice colleges, we find that more technically-oriented respondents (engineering and computers) and future lawyers are less enthusiastic about Ohio colleges than respondents with other career interests. When we examine their second- choice colleges, that distinction disappears for the technology-oriented students (but not future lawyers). And individuals with social science and humanities interests seem less enamored with in-state schools. Thus evidence of a career-based preference is unclear (See Table 11). Education and health care do have an in-state preference as these are areas that generally require state licensure. Taking courses in the state where the specifics of that licensing process will be taught and internships are possible may be a factor with those groups.

**Table 11 — In-State Attendance Preference by Career Orientation**

	% Preferring an In-state college as 1st Choice	% Preferring In-state college as 2nd Choice
Arts & Humanities	65.9%	56.4%
Social Sciences	69.2%	50.0%
Natural & Biological Science	65.5%	71.4%
Health care	79.6%	78.0%
Education	84.2%	83.4%

<sup>40</sup> In southern Ohio this has already become a problem. Kentucky colleges have actively advertised that their out-of-state tuition is less than in-state tuition of Ohio public universities such as the University of Cincinnati and Miami University, attracting hundreds of additional students to their campuses.

<sup>41</sup> Percentages in the column add to more than 100 percent because respondents could and did select several areas.



Business	72.6%	73.9%
Computer Science	54.5%	72.7%
Engineering	46.4%	62.1%
Law	50%	56.3%

Students indicated that there are few differences in what they expect to experience in- or out-of-state (Table 12). There are only two categories where there is a large variance (10 percent or more) between the groups. A greater percentage of out-of-staters believe that their choice will prepare them for graduate school, an interesting finding since the percentage of each group who expects to complete a graduate degree is essentially (+/- 1 percent) the same. Also more out-of-staters expect that their selected college will allow them to demonstrate their academic talent.

**Table 12 — Expectation of College Experience In/Out-of-State**

	percentage/ Frequency	% Important to in- state 1st choice (of 106)	% Important to out- of-state 1st choice (of 46)
Prepare for a profession	98.7% (155)	99%	97.8%
Prepare for good income	83.4%(131)	83%	87%
Prepare for graduate school	68.8% (108)	65.1%	80%
Create professional networks	65% (102)	67%	65.2%
Demonstrate academic talent	76.4% (120)	73.6%	87%
Promote intellectual curiosity	79% (124)	77.4%	84.8%
Create well-rounded person	86% (135)	85.9%	84.8%
Exposure to different cultures	71.1% (111)	69.8%	78.3%
Meet people w/ similar interests	91% (142)	91.5%	95.7%
Find a mate	43.3% (68)	43.4%	45.7%
Try new things	85.4% (134)	84.9%	89.1%
Exercise independence	79.6% (125)	79.2%	80.4%
Develop sense of self/identity	59.2% (93)	60.4%	58.7%
Use skills for greater good	76.4% (120)	78.3%	71.7%

We also note that out-of-staters expect their college to promote their intellectual curiosity. While this has only a seven percent higher rate of support than among in-staters, it is consistent with the perceived difference in academic rigor noted earlier by students (Table 9), suggesting they believe out-of-state schools provided greater academic rigor.

Finally, a notably greater percentage (seven percent) of out-of-staters expect their college experience to expose them to people of different cultures—fairly obvious when we consider that many out-of-state colleges are in other parts of the country and draw from a more diverse national and international pool of applicants. Students generally share the same level of expectation for other variables.

In sum, students seeking to attend in-state colleges are motivated more by a desire to be near their families and friends and by concerns about college costs. Students choosing out-of-state schools cite curricular concerns and a desire to leave their hometown. Concerns about the particulars of curricula are not obvious in the responses. Most likely, the lure of programs particular to an applicant’s college is the curricular

draw or it is the overall reputation of their intended out-of-state institution. The expectations of in-state respondents suggest slightly less concern over scholarly rigor.

**A Regional Focus**

One major concern of local policy-makers is the desire to retain and/or attract bright, creative individuals who can create devices, concepts, and firms and therein drive the future economy. Local politicians lament the loss of those who grew up here and “were forced” to go elsewhere to find work. When we examined the local population of college graduates in a separate study, we learned that local and state-wide tendencies differed.<sup>42</sup> The rate at which local-institution graduates remained in Ohio was high, but that was not the case for graduates remaining in the immediate regional area. The majority of local graduates did stay in Ohio—often Ohio cities—while those who left Ohio often moved to larger cities in adjacent states—Detroit, Indianapolis, Pittsburg, and Chicago. College graduates stayed surprisingly close to home—even those who left the state. Given the interest of a significant number of local high-school graduates to remain in proximity to their parents and friends combined with the strong relationship between attending a college and remaining in that area after graduation, it makes sense to look at the interest of local honor students in attending local colleges.

Because Toledo borders on Michigan, several Michigan townships are part of our regional economy. Since several Ohio and Michigan colleges have reciprocity programs, we wanted to examine regional attendance, and not just in-/out-of-state. We identified a one-hour driving distance from Toledo as the Toledo region; the first, second, and third college choices of each respondent were recoded “in-region” or “out-of-region.” Over one-third of respondents chose a regional institution as their first choice, roughly one-third identified regional institutions as their second choice, and just under one-third identified them as a third choice. Many honor students see regional institutions as desirable (Table 13). Thus, **respondents not only prefer to attend college in Ohio, over one-third identified local universities as their preferred educational choice.**

**Table 13 — Distribution of Post-Secondary Institution Selection In- or Out-of-Region**

	In-Region	Out-of-Region
First Preference	37.9%	61.4%
Second Preference	33.1%	62.4%
Third Preference	30.0%	70.0%

When reviewing respondents’ preferences, we noted a few, mostly regional institutions, were preferred. Over half (51.6 percent) of respondents identified one of seven institutions as their first choice; over a quarter (28.7 percent) identified one of four (UT, Bowling Green State University, the University of Michigan, and Owens Community College) regional institutions as their first choice. The remaining institutions other than those in Table 14 were chosen by few respondents, were geographically disbursed

<sup>42</sup> “Brain Drain in Ohio; Observations and Summaries with Particular Reference to Northwest Ohio” – McGuire, Hardy-Johnson, & Saevig 2006

throughout the nation, and were of varying reputation levels from the relatively obscure to many Ivy League institutions.<sup>43</sup>

**Table 14 — Most-preferred Institutions by percentage in each Choice Category**

	1st Choice	2nd Choice	3rd Choice
Ohio State University	14.0%	4.5%	9.6%
University of Toledo	13.4%	12.1%	8.3%
Bowling Green St. U.	8.9%	12.7%	3.8%
Miami of Ohio	5.7%	7.0%	4.5%
U. Michigan	3.2%	* <sup>44</sup>	3.2%
U. Dayton	3.2%	*	*
Owens CC	3.2%	*	*

First and foremost, **almost 40 percent of all students chose a local/regional institution as their first preference.** Those planning to attend a regional college said they preferred to attend an in-state college if all variables were equal (91.2 percent versus 68.1 percent). They disproportionately intend to stay in Ohio after graduation (70.9 percent versus 45.5 percent), and they have lower ACT scores.<sup>45</sup> They are more often women (regional preference sample is 58.6 percent women and 41.4 percent men),<sup>46</sup> and have a lower family income<sup>47</sup> than respondents who sought to attend out-of-region colleges.<sup>48</sup>

Examining what affects the decisions to attend a regional college raises as many questions as it answers. Table 15 shows that **those staying in-region are more emotionally motivated than those leaving. Yet this in/out ratio is not as high as it was for in- versus out-of-state selections.** Emotional variables were two to four times more frequently identified as important and very important by those staying in-state versus those going out-of-state (See comparison to in- and out-of-state in Table 9).

**Table 15 — Factors Affecting Selection Regional College (important & very important combined)**

	percent In-Region as 1st choice	percent Out-Of-Region as 1st choice
Emotional		
Proximity to Family	41.4%	25%
Proximity to Friends	27.6%	18.3%
Financial		
Cost of Attendance	72.4%	64.5%

<sup>43</sup> 110 universities were identified among the 414 choices reported as one of three choices.

<sup>44</sup> \* - Indicates fewer than 3 percent chose the school in this category

<sup>45</sup> 13.5 percent of in-region applicants scored < 22 on their ACT versus only 6.2 percent of those applying out-of-region. Similarly, only 35.6 percent of regional applicants scored more than 26 versus 53.4 percent of out-of-region applicants.

<sup>46</sup> 55.9 percent of out-of-region applicants were male; only 44.1 percent were women.

<sup>47</sup> 58 percent of regional applicants had family incomes of greater than \$50,000 versus 69 percent of out-of-region applicants. Similarly, only 21.8 percent of regional applicants had family incomes of greater than \$100,000 while 40.2 percent of out of region applicants did.

<sup>48</sup> Their mothers' and fathers' educational achievement levels and the respondents' desire to obtain post-baccalaureate degrees were similar in both groups.

Job Near Campus	34.4%	44.6%
Curricular		
Challenging Curriculum	48.3%	72%
Appropriate program of Study	78.9%	91.4%
Institutional Prestige	50%	68.8%
Study Abroad Opportunity	17.2%	39.8%
Internship/Coop Opportunities	63.8%	75.3%
Campus Attributes		
Religious Factors	13.7%	12.9%
Extra-Curricular Opportunities	36.2%	48.4%
Diversity	24.1%	36.6%
Housing Availability	32.8%	53.7%
Size of Institution	37.5%	51.6%
Urban or Rural Setting	15.5%	28%
Physical Climate	8.6%	23.7%
Other		
Avoid Menial Job	24.6%	20.1%
Escape from Hometown	22.4%	52.7%

**Financial concerns were relatively similar between the in- and out-of-region respondents** and much smaller than the differences between in- and out-of-state responses in Table 9. One might have expected otherwise, since being within an hour of home might mean that some students planned to commute from home, reducing attendance costs. On the other hand, living at home reduces the total cost of college substantially. That fact may be why the in-region attendees' concerns about cost are not stronger.

The lesser emphasis on curricular issues by in-region respondents is important. Regional respondents are less interested in having a challenging curriculum, less interested in institutional prestige, and less interested in even an appropriate program of study. **In-region respondents do not seem as concerned with the quality or rigor of education as individuals leaving the region.** Their collective responses are also less robust than those groups who seek to attend in- and out-of-state institutions.

Campus attributes do not seem to be a strong motivator for regional applicants, and their responses are similar to the in- versus out-of-state respondents. **In-region respondents' desire to leave their hometown is less strong** than those who are going out of the region, and less than those of the in- and out-of-state groups. This is to be expected.

Expected outcomes for students remaining in-region are remarkably similar those going out-of-region, but are generally a few percentage points lower in each category. Two exceptions are seen in the professionally oriented expectations—preparing for graduate school and creating professional networks. More out-of-region respondents indicated that they intended to complete a graduate degree (In = 71.9 percent; out = 76.3 percent). But the gap in expected preparation for graduate school is much greater, suggesting a perception that regional colleges may not do a strong job at preparing students for graduate school. Two other exceptions are self-oriented expectations—developing a sense of identity and creating a well-rounded person.

**Table 16 — Expectation of College Experience In/Out of State**

	percentage/Frequency	Important to in-region 1st choice (of 58)	Important to out-of-region 1st choice (of 94)
Prepare for a profession	98.7% (155)	96.6%	100%
Prepare for good income	83.4% (131)	82.8%	85.1%
Prepare for graduate school	68.8% (108)	58.6%	76.6%
Create professional networks	65% (102)	58.6%	70.2%
Demonstrate academic talent	76.4% (120)	74.1%	79.8%
Promote intellectual curiosity	79% (124)	75.8%	81.9%
Create well-rounded person	86% (135)	79.3%	89.4%
Exposure to different cultures	71.1% (111)	72.4%	72.3%
Meet people w/ similar interests	93% (146)	89.7%	94.7%
Find a mate	43.3% (68)	41.4%	45.7%
Try new things	85.4% (134)	82.8%	88.3%
Exercise independence	79.6% (125)	77.6%	80.9%
Develop sense of self/identity	59.2% (93)	51.7%	64.9%
Use skills for greater good	76.4% (120)	79.3%	74.5%

Interestingly, both the state- and regional-level respondents expected less graduate preparation if they stayed close to home. But three of the four meaningful differences in expectations in the regional and state samples identified different variables from the other sample. One might expect responses from one level to be an amplification of the other, but this is not the case. While the in-/out-of-state expectations differed primarily on scholarly factors, the in-/out-of-region differences focused instead on individual development issues.

In sum, students planning to attend regional institutions are more comfortable with local conditions. They are less interested in the quality of their education, a factor consistent with their less-robust ACT scores. Otherwise, those staying in-region are quite similar to respondents who are staying in-state in general. This may indicate that while proximity to family, friends, and familiar surroundings are important, the ability to be within a half-day drive may be sufficiently close to meet those concerns. Students don't need to be within an hour of home and hearth.

## Conclusions

There are three different, but not mutually exclusive, sub-groups of the best and brightest honor students examined in this study. They include respondents who expect to attend college out-of-state, those who expect to attend in-state, and a group that expects to attend in the region (including schools in both Ohio and Michigan).

*As a group*, students who are leaving the state are better students, come from more affluent families, are disproportionately male, and are more interested in institutional prestige and curricular rigor. Many are not interested in an Ohio college or in returning to Ohio after graduation; they express a dislike or disdain for their hometown.

Students staying in Ohio, *as a group*, are less interested in the reputation and rigor of their chosen school, and more motivated by family and friends. They come from affluent families and have strong test scores, but as a group, are not as affluent or as strong as those leaving. They are disproportionately female. They express more concern (the most concern among the three groups) about the cost of college as a factor motivating their decisions on attendance.

People staying in the region, *as a group*, are the least strong academically, and the least interested in academic prestige and curricular rigor. They have little antipathy toward their hometown and generally intend to work in-state after graduation. They are concerned about the cost of their education, but not as much as the in-state applicants as a group. They are disproportionately female and middle class. Their lesser interest in academic rigor and curricular integrity implies that they may be the least desirable of the three groups, if the goal is to create a well-educated workforce that will be innovative, entrepreneurial, and focused on knowledge industries.

We need to emphasize that honor students who stay in the region are very good students, if a little less academically talented than those leaving. The same applies to in-state students who do not appear to be as strong as those leaving Ohio. Further, in-state schools, and in-region schools receive students from elsewhere who are the more adventuresome and best students. The relative rankings should not be a negative reflection on the students who stay in-state or in-region or those institutions.

Much is made of Richard Florida's thesis<sup>49</sup> on the importance of culture, climate, urbanity, environmental, and social life as factors motivating "brain drain and brain concentrations." For this study's respondents, the variables suggesting the accuracy of his thesis were not influential. In fairness, Florida focuses on brain drain and concentrations of post-baccalaureate graduates. The importance of these factors to individuals who have led sheltered lives in their parents' homes, often in a single location and culture, would have been surprising.

It seems, consistent with Mortenson's assertion, that we are disproportionately losing our best and most rigorous students to out-of-state institutions. As he notes, this is probably the case in most states and locales. Ohio does not have a significant number of elite or "Ivy League" type institutions; it is lucky, therefore that it has roughly as many out-of-state residents in Ohio universities as Ohio students in other states' universities.<sup>50</sup>

The implications of our study suggest that attempts to lure back former local students may not be highly successful. Many of those leaving also identified a "push" getting away from their hometown and from weakly supported Ohio academic institutions. While it would be folly to assume that the attitudes of high-school students are etched in stone and not affected by their subsequent educational experiences, the literature also

<sup>49</sup> Richard Florida, 2005. *Cities and the Creative Class*. New York: Routledge Press.

<sup>50</sup> Mortenson 2002 in Sheehan 2004:3 notes that 10,424 Ohioans attended out-of-state colleges and 11,960 students from other states attended Ohio colleges.

suggests that luring back these students is often temporary and that their permanent return to the state or region is a daunting proposition.

The literature also indicates that while it is important to retain locally trained graduates, it is crucial to note that as a group, they are not the best of the best local students. There are fewer best students among the honor students in this in-region group. **There is a serious need to attract and retain college graduates from other states, especially after their graduation from regional colleges.** Thus, while politicians can garner votes and support by working to retain residents, their actions may not result in the best educated or most talented workforce pool. When we note the concentration of local/regional respondents in two institutions, we also have to worry about the impact of intellectual incest. These students were trained in the same environment, often by the same few professors, and with the same limited resources as the generation of similar locally-educated and locally-hired workers that came before them. While students have many professors, there may be only one or two teachers in a particular sub-speciality. Thus a firm with four workers all graduating from the same university may have four employees who took the same two or three specialized courses, and were exposed to the strategies, insights, priorities, and biases of a single professor. The impact of new experiences, ideas, cultures, customs, technologies, and analytic frameworks are probably not present in a group with such overlapping common interests and limited exposure. In the knowledge economy, intellectual incest may be a danger second only to being un-educated. “Group think” is the antithesis of innovation, and as such, a potentially serious drag on local economic development.

The 2003 US Census American Community Survey ranks Ohio fortieth among the 50 states in percentage of citizens over 25 that have completed a bachelor’s degree.<sup>51</sup> As Table 17 shows, the Toledo Metropolitan Statistical Area does not compare strongly with the state or national average. In 2003, Lucas County ranked 175th (among 233 major metropolitan counties) in number of baccalaureate graduates per thousand. Nationally 26.5 percent of urban residents have bachelor degrees or more, while only 24.1 percent of Lucas County had such degrees.<sup>52</sup> And we have insufficient numbers of individuals with advanced degrees. Our respondents disproportionately indicated that they were interested in completing advanced degrees. But as the UAC study of regional baccalaureate college graduates showed, this group is especially prone to migration out from this region.

**Table 17 — College Graduate Rate for People Age 25+**

	Baccalaureate	Advanced Degrees	Baccalaureate & more
USA	15.5%	8.9%	26% <sup>53</sup>
Ohio <sup>54</sup>	13.7%	7.4%	21.1%
Toledo MSA	13.9%	7.7%	21.6%

<sup>51</sup> [http://factfinder.census.gov/servlet/GRTTable?\\_bm=y&-geo\\_id=D&-\\_box\\_head\\_nbr=R02&-ds\\_name=ACS\\_2003\\_EST\\_G00\\_&-\\_lang=en](http://factfinder.census.gov/servlet/GRTTable?_bm=y&-geo_id=D&-_box_head_nbr=R02&-ds_name=ACS_2003_EST_G00_&-_lang=en)

<sup>52</sup> [http://factfinder.census.gov/servlet/GRTSelectServlet?\\_lang=en&-ts=123694154731](http://factfinder.census.gov/servlet/GRTSelectServlet?_lang=en&-ts=123694154731)

<sup>53</sup> <http://www.census.gov/prod/2002pubs/p23-210.pdf>

<sup>54</sup> State and local data from <http://uac.utoledo.edu/Links/census-demog/census-demogs.htm>

The best outcome would be to create a culture and setting that draws individuals from various backgrounds, cultures, etc., and one which celebrates and promotes advanced knowledge, ideas, innovation, and entrepreneurship. We really need **brain gain**—substantial numbers of people with advanced and technical degrees, flocking to the region—a condition which the US Census reports is a distinct weakness for this area.

The principal factor influencing a new baccalaureate graduate to move is starting salary. Toledo has not been known for offering high pay levels for entry-level employees. Overcoming insufficient brain gain would probably require high salary levels and/or other factors that such individuals found attractive. This also would probably result in fewer jobs available for existing regional grads—the antithesis of the goal local politicians want to combat brain drain.

Retaining existing residents as well as attracting bright, technically-oriented graduates with advanced degrees from other states and nations in order to promote new economic growth are not distinct goals. They can be self-defeating, however, if one goal is emphasized at the expense of the other. We must understand that brain drain is a discussion about economic development, innovation, and entrepreneurship in emerging economic sectors, not about reassuring voters that their adult children will stay close to home.

## **Postscript: Reflections on Two Scholarly Studies of Brain Drain in Northwest Ohio and Potential Policy Opportunities**

Brain drain is about the concentration of intellectual capital, not resident retention. It focuses on state and regional economy. It is interested only in people with baccalaureate or higher degrees and more, especially those in science and technology. There are three main periods when brain drain is a factor in the lives of those potentially engaged in such activity: when graduating from high school, graduating from baccalaureate college, and the three years immediately following baccalaureate graduation. *Brain Drain in Ohio; Observations and Summaries with Particular Reference to Northwest Ohio, and High School Graduation and Brain Drain; Survey Results and Insights from the Toledo MSA* examine those three periods. Analysis of the findings of these studies spotlighted some specific conditions and problems. Understanding what is happening beyond the political hoopla and posturing can allow us to reflect on our conditions and offer a few policy proposals that build specifically on existing conditions. Opportunities to advance the region's economy exist at several policy levels and there are roles for various area groups. We will identify and briefly outline ideas relative to those levels and the opportunities for these groups to promote specific policy-based changes.

### **Local/Regional Opportunities**

Several pertinent conditions must be acknowledged.



- The level of education in the region is below the national and state metropolitan average because many workers have been able to get good manufacturing sector jobs without a college degree.
- By treating a college education as a private good rather than a public benefit, the Ohio legislature has discouraged college attendance. The cost of tuition in Ohio public universities is the second highest in the nation, adjusting for average family income.
- Many regional firms were second- or third-tier suppliers to the auto industry. They did not invent, only sub-contracted. They lack research and development experience and staff, as well as a culture of innovation.
- Finally, most local firms view labor as an expense rather than an investment. Their response, consistent with their sub-contractor history, is to cost minimize—hire the least expensive person to do the job. They do not recognize that new workers offer an opportunity to bring new skills and the capacity to improve products, expand to new markets, contact new suppliers, and redefine and expand the business. Local businesspeople fail to consider the impact of human capital in the information/innovation economy. They under-value knowledge in what is increasingly a knowledge-based economy.

Against this background the following are suggested.

1. We may be under-producing brains by creating structural impediments to personal advancement in local schools. Several studies of “detracking” have argued that many more students are capable of taking advanced or honors high-school courses, but are impeded by not having pre-requisite courses and encouragement in lower grades. An emphasis on **cultivating opportunities for a greater number of potentially bright students, beginning earlier in the K-12 curriculum, could increase the number of brains** and thus increase the chance that a greater number might stay in the area. This also requires skilled teachers who can connect curriculum and instruction to the backgrounds, needs, and interests of students, especially those historically thought to be low- or under-achievers. We need appropriate investments in space, resources, and programs to recognize and encourage the development of more brains within our educational institutions.

*Potential Collaborators—local school boards, administrators, teachers, and students.*

2. **More student financial support at local state baccalaureate universities is necessary.** States with low-tuition levels “tend to retain a higher percentage of their own students.”<sup>55</sup> About one-quarter of the best local high-school students

<sup>55</sup> James Mak and James Moncur. “*Interstate Migration of College Freshmen; An Economic Analysis.* Working Paper 01-5 2001. University of Hawaii at Manoa, p.10.

leave Ohio after high school. About one-third to one-half of this group are very sensitive to tuition/degree costs. Those considering in-state colleges but out-of-region (above 40 percent) are even more concerned with price. Luring these people back after graduation, while desirable, is improbable once they initially leave. Their cultural expectations have changed (or they would have transferred back) and they seek employment in the national and Midwest market, not in the region as local baccalaureate graduates initially tend to do. To retain the brightest local students from high school through college, strong tuition assistance could be an important factor.

*Potential Collaborators—local university officials, economic developers, and public officials as advocates*

3. **Area universities can do more and attract and retain the best students.** The UT Presidential Scholarships of the 1990s are a good example of what is needed. The scholarships paid tuition, fees, a stipend, summer research expenses, and travel opportunities. Such a program could be expanded to include an initial year of graduate study, augmenting their TA/GA tuition and stipend support at local universities. New York's Regents Scholarships provide similar undergraduate/graduate scholarship assistance. UT's recent attempt to reach out to students in southeast Michigan is a fine initial example of trying to attract the best students from the region.<sup>56</sup>

*Potential Collaborators—local university officials, economic developers, and public officials as advocates. Mobilize state officials as a second avenue of funding.*

4. **Reward talented in-state and/or in-region students actively seeking a baccalaureate degree, starting in their third year.** Absent sufficient resources, a second type of scholarship to encourage baccalaureate degree completion could focus on junior- and senior-year students with a B or better GPA—similar to a new section of the Michigan Merit Scholarships. Ohio has spent a fortune building up its community college system, but studies show that among students planning on a four-year degree, those who attend community college fail disproportionately to complete the four-year program. Whether that failure is due to finances, rigor, or culture of those institutions, the existence of additional scholarship assistance could motivate those individuals as well as reward students in four-year colleges who were progressing satisfactorily.

*Potential Collaborators—local university officials, economic developers, and public officials as advocates. Mobilize state officials as a second avenue of funding.*

5. There is a need to **create strong, systematic, and recurring contacts between local firms and university students.** The UT Engineering College

<sup>56</sup> The Blade, 12/9/06.

effort to create co-op experiences has been a great first step toward addressing this problem. The new Savage Program for local firm/UT College of Business collaboration<sup>57</sup> is another important first step. Yet, most students have no ideas about which local firms and industries hire students as workers. The firms also have few ideas about what some students might offer in terms of intellectual capital.

There is a need to systematically expose students and firms to each other. Firms need to sponsor get-togethers with their newer employees, talented students, and senior executives. In a social-hour setting, people could talk about their jobs and ideas informally, and perhaps even post formal research ideas and outlines for input and exchange. Employees would get to know students and size them up as potential employees, measuring their “intellectual capital” and sharing ideas. This need not be limited to high-tech firms and if fact, the broader the group, the more interesting and potentially innovative the conversations. Firms can even have indirect input into research projects by mentioning their interests and helping fund student projects. The University of Akron-Kent State-Stark campus is looking at such a program with local alumni and alumni organizations as coordinators.

Equally as important, BGSU students have almost NO connection to Toledo. Many never travel here for any reason; others come only for shopping, dining, or a baseball game. Toledo needs to bring BGSU students here for culture, nightlife, and to meet local firms and institutions. The same could be said for Defiance, Northern Ohio, Tiffin, Bluffton, Heidelberg, Adrian, Michigan, Eastern Michigan, Concordia, Siena Heights, and Findlay colleges. Mayor Carty Finkbeiner’s recent event for respondents to the best and brightest survey might serve as an example of such outreach.

*Potential Collaborators—local politicians, local firms, universities,*

6. **More students need to come to UT and BG for engineering and natural-science degrees**, especially from outside the region and/or nation. Providing additional assistance for undergrads might encourage students to pursue such degrees. Funding might come from university donations and endowments, or from specific programs enacted by the state legislature.

*Potential Collaborators—local university officials and public officials as advocates. Mobilization of state legislators.*

7. Area colleges need to **actively recruit more students from other states**. We need to attract more of the adventurous students who move away from home, in order to find more entrepreneurial-oriented students. Out-of-state and foreign students also have a much greater immediate impact on the existing economy. Since their personal financial support comes from outside the region, their

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<sup>57</sup> The Blade, 11/2/0/06.

expenditures have a greater “multiplier effect.” Local student expenditures at area colleges are part of the circulation of existing resources, not additional capital brought into the region.

*Potential Collaborators—Local university officials, and public officials and economic developers as advocates.*

8. Locally, we need to work to **repeal the limits on tuition assistance to foreign graduate students at UT’s College of Engineering, imposed by the Ohio Board of Regents** about eight years ago. Foreign students have been a central element in transferring engineering innovations into local economies. Funding more bright technology students and introducing them into the local culture can enliven the regional economy.

*Potential Collaborators—local university officials and public officials and state legislators as advocates.*

9. **UT and BG need to consider creation of a combined graduate college.** The two institutions have built complementary programs in many disciplines. It might make sense to create a combined graduate college, organizationally distinct from their respective undergraduate schools. The University of Dayton, Wright State, and Wright Patterson’s Air Force graduate program have been working to create such a combined graduate institution. Such a merger can be a cost-effective means of increasing intellectual capacity, attracting more research-active faculty and higher quality students, creating the potential for additional research collaborations, and increased technical transfer to regional firms.

*Potential Collaborators—local university officials, public officials and state officials.*

10. **Embed the best and brightest in the local economy.** The biggest opportunity to prevent post-baccalaureate-degree brain drain occurs during those three years after college graduation. If graduates (locally born or attracted from elsewhere) stay somewhere for three-plus years, they generally don’t leave that locale as they become enmeshed in the social network—family ties, neighborhoods, kids’ schools, churches, etc. A large number of local baccalaureate-degree graduates and many lesser-trained, less-credentialed, and less-smart individuals convince local employers they can do the same job for less money. Firms therefore hire cheap and our starting pay is very low for most post-baccalaureate positions. Our firms generally do not hire the best and brightest; they hire the potentially adequate, the least expensive, and those who are around and available. The Greater Toledo Area Chamber of Commerce, Toledo Regional Growth Project, and other economic developers need to create a forum to study the increased importance of intellectual capital, the low levels of local pay, and the importance of firm innovation to business success and regional development.

*Potential Collaborators—local economic development agencies, firms, and universities.*

11. **Promote the UT high tech corridor.** This project will attract more high-tech firms, create more sustained university/business collaborations, create job opportunities for post-baccalaureate graduates, and initiate a culture of intellectual innovation. There is a need to create a critical mass of firms and business people to promote a new culture and create inter-firm synergy, advancing their invention and innovation efforts. The recently announced Third Frontier support for UT's alternative energy program and incubator in the proposed corridor is an important first step in this effort.

*Potential Collaborators—local university, public officials, firm, and state legislators.*

12. **Encourage local firms to advertise jobs in newspapers of cities where students from regional universities are known to congregate.** Many of these people may have local social networks and/or affinity for local institutions and culture and could be lured back to the area.

*Potential Collaborators—regional development agencies, chamber of commerce, local officials, local firms*

### **State Level Opportunities**

1. **Roll back the out-of-state tuition fees.** The out-of-state tuition fees, mandated by the legislature, made sense when Ohio taxpayers were paying 65 percent of each student's tuition, but taxpayers now pay only about 30 percent. It doesn't cost more to educate people from elsewhere and a lower tuition will bring disproportionately better students with different cultural experiences.

*Potential Collaborators—local university officials, public officials, and state officials to change state-required tuition schedules.*

2. We need **more and larger graduate programs in the region**, not fewer. The state's attempt to centralize graduate-degree programs in Cleveland, Columbus, and Cincinnati does not help our region's economy. Ohio politicians' retrograde attitude toward graduate education was summed up years ago when then Governor George Voinovich stated that since so many people who get Ohio graduate degrees leave, and so many current residents with those degrees received them outside the state, Ohio should save money by shutting down its programs and letting other state's taxpayers pay to train those Ohio firms then hire. Creating and supporting graduate-degree programs and advanced post-baccalaureate training are crucial to increasing the talent pool and the culture of innovation in the state and region, even though we will lose a greater percentage of these graduates than the baccalaureate graduates.

*Potential Collaborators—local university officials and regional state legislators.*

- 3. Ohio needs to encourage in-state college attendance by offering in-state, merit-based scholarships.** Georgia's Hope scholarships, begun in 1993, are for all high-school graduates with a B average. The scholarships continue as long as students maintain a B average in college. By 2000, Georgia saw an increase to 75,000 in-state undergraduates—96 percent of all in-state freshmen. More importantly, the number who scored 1500-plus on the SAT and stayed in-state jumped from 23 percent to over 75 percent of all 1500 scorers. Merit scholarships exist in Louisiana, Florida, New Mexico, South Carolina, Mississippi, Alabama, and Washington.<sup>58</sup> General merit scholarships lowered migration rates by only about 3.5-5 percent.<sup>59</sup> Most are in the \$1,000 to \$3,000 range, but tuition in these states is also MUCH lower than Ohio.

*Potential Collaborators—State legislators, local regional development agencies.*

### ***One Additional Strategic Approach to Cultivating Brain Gain in the Region***

**Create a unique regional strategy for attracting and retaining bright, innovative employees and/or entrepreneurs.** Women move less frequently than men, even professional women. Professional women, especially single women, generally limit their job searches to urban areas and are more interested in social amenities found in urban settings. There is a body of literature in which women identify their ideal environment. They value concentrated population, security, easy transportation, significant numbers of elected women officials, good daycare services, and access to cultural events. We have several of these factors already. And we noted that a disproportionate number of the bright students staying in the region are women. We can't change our civic culture to be "cool" in the sense of Richard Florida's "cool cities" thesis. But, we can build on a culture that is strongly supportive of women and encourage them to create firms and innovations. Other businesses will be attracted once a strategic nucleus of such firms is established.

*Potential Collaborators—local politicians, economic development agencies, firms, state legislators.*

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<sup>58</sup> Mak and Moneur, 2001. Pg. 7

<sup>59</sup> Ibid p.10