TO: Governor Terry Branstad
Lt. Governor Kim Reynolds
Linda Fandel, the Governor’s Special Assistant for Education

FROM: SUI Graduate and Professional Student Government
ISU Government of the Study Body
University of Northern Iowa Student Government

CC: The State of Iowa’s 86th General Assembly
Board of Regents, State of Iowa
Jean Robillard, Interim President, University of Iowa
J. Bruce Harreld, President-Elect, University of Iowa
Steven Leath, President, Iowa State University
William Ruud, President, University of Northern Iowa
Gary Steinke, President, IAICU
This report has been prepared in collaboration by:

**Joshua D. Schoenfeld**  
President, Graduate and Professional Student Government  
M.D./Ph.D. Candidate, Free Radical and Radiation Biology  
University of Iowa  
Joshua-Schoenfeld@uiowa.edu

**Nicole Jardine**  
President, Graduate Student Senate  
Ph.D. Candidate, Psychological and Brain Sciences  
University of Iowa

**Neil P. Vezaeu**  
Director of Graduate and Professional Student Outreach  
ISU Government of the Student Body  
B.S. Candidate, Animal Sciences/Pre-Veterinary  
Iowa State University

**Renae M. Beard**  
Vice President, Northern Iowa Student Government  
M.A. Candidate, Women’s and Gender Studies  
University of Northern Iowa

**Acknowledgements**

We also would like to thank the following for their help in gathering and analyzing data and in preparing this proposal:

Brandon Gerleman  
SUI Carver College of Medicine Administration and Staff

Hannah Walsh  
SUI College of Law Administration and Staff

Dexter Golinghorst  
SUI College of Pharmacy Administration and Staff

Michael Appel, J.D.  
SUI College of Dentistry Administration and Staff

Benjamin Gillig  
SUI Graduate College Administration and Staff

Lyndsay Harshman, M.D.  
SUI Tippie College of Business Administration and Staff

Alyssa Billmeyer  
ISU Graduate College Administration and Staff

Kristin Moser, Ph.D.  
UNI Graduate College Administration and Staff

Kavita Dhanwada, Ph.D.  
UNI Institutional Research & Effectiveness Office Staff

Bill Nelson, Ph.D.  
SUI Center for Student Involvement and Leadership
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgements</td>
<td>2</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>3</td>
</tr>
<tr>
<td>Policy Recommendation</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Objectives for graduate and professional students</td>
<td>4</td>
</tr>
<tr>
<td>Objectives for the State of Iowa</td>
<td>4</td>
</tr>
<tr>
<td>Approach</td>
<td>5</td>
</tr>
<tr>
<td>Historical Data Collection from Departments/Colleges</td>
<td>5</td>
</tr>
<tr>
<td>Statewide Graduate and Professional Student Survey</td>
<td>6</td>
</tr>
<tr>
<td>Current Shortcomings</td>
<td>7</td>
</tr>
<tr>
<td>Fiscal Costs of Graduate and Professional Education to Students</td>
<td>7</td>
</tr>
<tr>
<td>Current Graduate and Professional Student Retention Rates</td>
<td>9</td>
</tr>
<tr>
<td>Projections of Student’s Likelihood to Remain in Iowa</td>
<td>10</td>
</tr>
<tr>
<td>Iowa’s Stagnant Population Growth and High-Skilled Workforce Shortages</td>
<td>12</td>
</tr>
<tr>
<td>Proposal</td>
<td>13</td>
</tr>
<tr>
<td>Potential Impact of a Financial Incentive on Retention</td>
<td>13</td>
</tr>
<tr>
<td>Format of Financial Incentive</td>
<td>17</td>
</tr>
<tr>
<td>Eligibility</td>
<td>18</td>
</tr>
<tr>
<td>Estimated Cost Analysis</td>
<td>19</td>
</tr>
</tbody>
</table>
Executive Summary

Here we propose a financial retention incentive for Iowa-educated graduate and professional students who remain in the state for employment after completing their degree or terminal training.

Benefits for Graduate Students: The financial barrier to pursuing post-baccalaureate graduate or professional education is increasing rapidly. A financial retention incentive would increase the affordability, and therefore the accessibility, of graduate education to students across the State of Iowa. As Iowa is a relatively low wage state, a financial incentive could would bridge this gap.

Benefits for the State of Iowa: Despite impressive recent economic growth, Iowa currently faces many economic challenges to further sustain this growth. Many of these, highlighted in the Battelle Report (2014) would be, at least partially, addressed by retaining more graduate and professional students in the State. These challenges include high-skilled workforce shortages and stagnant population growth.

To determine the format, impact, and costs of a financial retention incentive we undertook a statewide survey to all graduate and professional students. The major findings of the survey are:

- Only 47.6% of students are likely or very likely to remain in Iowa after graduation
- Only 14.6% of students are likely or very likely to remain in Iowa outside the Iowa City/Cedar Rapids and Des Moines areas after graduation.
- Students rank “Employment Opportunities” as most important decision factor
- 88.4% of undecided students would remain in the State with an incentive
- 56.1% of unlikely or very unlikely to remain students would remain with an incentive

Policy Recommendation

Data supporting the format of the incentive are included in the provided report. We suggest:

- A 50% Income Tax Break for all Graduate, Professional, and Post-Doctoral Students and Healthcare Residents and Fellows for a duration of 5 years after completing training.

A preliminary cost analysis based on our limited dataset is provided below. We urge the Governor’s Office to request an official cost analysis by LSA or another State department.

For more information, please contact: Joshua D. Schoenfeld, Joshua-schoenfeld@uiowa.edu
Introduction

This proposal is the result of a collaborative effort of graduate and professional students from across the State of Iowa. It is important to note that the three Regent institutions alone educate over 16,000 graduate, professional, and post-doctoral students each year. These students come from all 99 counties within the State of Iowa, as well as from across the United States and throughout the world. Even with current retention rates, graduates of our three public universities profoundly impact the everyday lives of Iowans and their quality of life by living and working in all 99 counties. Examples include, but are not limited to:

- SUI College of Law educated lawyers in all 99 Iowa counties
- ISU and SUI educated engineers in all 99 Iowa counties
- ISU College of Veterinary Medicine educated veterinarians in all 99 Iowa counties
- SUI College of Pharmacy educated pharmacists in 95 Iowa counties
- SUI College of Dentistry educated dentists in 92 Iowa counties
- SUI Carver College of Medicine trained physicians in 88 Iowa counties
- SUI, UNI, and ISU educated teachers and educators in all 99 Iowa counties

Despite the number of our alumni serving Iowa, there remains a great need for these trained professionals and practitioners across our state. Here, we propose a financial incentive to retain Iowa-educated graduate and professional students in the State of Iowa for employment after graduation.

Objectives for graduate and professional students

Financial barriers for some graduate and professional programs are becoming more and more significant in the pursuit of a post-baccalaureate education. A financial retention incentive would help defray the financial liability of pursuing these programs and promote the accessibility of graduate and professional education to students throughout our state.

Objectives for the State of Iowa

Despite the impressive economic growth over the last several years, the State of Iowa faces many economic challenges in order to sustain this growth. Many of these have been highlighted in the recent Battelle Report (2014) led by the Iowa Partnership for Economic Progress (IPEP), an industry-led advisory board commissioned by Governor Branstad to study economic growth issues facing the State of Iowa. We believe these challenges can be, at least in part, addressed through the proposal as summarized below:

Iowa businesses continue to report workforce shortages for both middle-skilled and high-skilled jobs despite outpacing the rest of the country since 2004 in workforce growth in these areas. Unless direct actions are taken, these shortages will continue to increase. Governor Branstad’s
varied programs have increased the influx of middle-skilled and high-skilled jobs into Iowa (e.g., the High Quality Jobs Program). However, Iowa needs the human capital that our graduates provide to fill these positions in their respective communities and serve the needs of Iowans as a whole. With that in mind, the Battelle report suggests a “Proposed Tactic” of incentivizing these recent graduates to remain in Iowa for employment. Furthermore, many graduate and professional students are trained for careers that are more skilled than those defined as ‘high skill’ in the Battelle Report. Many of these, however, such as the healthcare fields, have large workforce shortages in Iowa and across the U.S.

Additionally, by retaining a young population of Iowa-educated graduate and professional students, the State will also aid in countering stagnant population growth (especially in the 20 to 30 year old age groups) and the specter of the “Brain Drain” problem. The term ‘Brain Drain’ was first used by the Royal Society of England to described the mass emigration of scientists from Europe to the United States after World War II. More recently, the term has been used ubiquitously in the U.S. to describe large-scale emigration of students or another highly educated population out of a state. Overall, the State of Iowa ranks 35th in the country for retaining residents born in the State.

This proposal complements the many programs already initiated in Iowa. With tax incentives and other programs bringing high-skill high-salary jobs to the State, this proposal would help to ensure that these jobs were filled with quality Iowa-educated graduate and professional students. Furthermore, this proposal could help strengthen some of the job pipeline programs already in place such as the Governor’s Future Iowa Ready initiative.

Approach

The preparation of this proposal is the result of a collaborative effort across the three Regent institutions (Iowa’s Independent Colleges and Universities (IAICU) members in progress, will be contained in final report later this year) and many students, staff, and administrators worked tirelessly throughout the process. In order to best formulate this proposal and determine the most effective parameters, we collected two complimentary pieces of data:

Historical Data Collection from Departments/Colleges

With the help of staff and administrators within the graduate and professional colleges across the Regent institutions, we collected historical data pertaining to students’ U.S./state residency, initial starting salaries, average student debt, and whether they remained in-state for their initial employment post-graduation from their final degree or training (e.g., medical residency) program. Although we attempted to collect as much data as possible, there was substantial variation on the types and quantity of information available. This is due to the tracking process, which is done at the college and/or departmental level across all institutions. As much as possible, these differences are specified throughout the proposal.
Statewide Graduate and Professional Student Survey

A statewide survey was released to approximately 20,000 graduate and professional students as well as postdoctoral researchers, healthcare residents, and medicine fellows. The purpose of the study was to help determine the potential impact of, an appropriate and impactful format and value for, and provide initial values for the fiscal and economic impact on the State of Iowa of a financial retention incentive.

The survey is outlined in a schematic diagram below (Figure 1). The results of the survey will be made available to the Governor’s office, the Iowa General Assembly, any institutions involved, and the general public at the conclusion of the study. SUI Graduate and Professional Student Government (GPSG), ISU Student Government, and UNI Student Government (NISG) disseminated the survey to their respective constituencies via email. We hope that the survey will also be distributed to IAICU member institutions soon. Eligible respondents included students enrolled in a graduate or professional post-baccalaureate program at a higher education institution within the State of Iowa. Students were incentivized to participate by offering entry into a raffle to receive a $5 gift card upon completion of the survey collection period.

At the time of this preliminary proposal, 1,657 surveys have been completed. This response rate represents approximately 10% of eligible participants across all of Iowa colleges and universities. Responses will be collected for the rest of the Fall 2015 semester with a final report to be released at the end of January 2016.

Figure 1. Schematic diagram of the graduate and professional student survey.
Current Shortcomings

This proposed financial incentive is aimed to be mutually beneficial to both Iowa-educated graduate and professional students and the State of Iowa. In order to better understand the benefits to either side, we must first discuss the shortcomings impacting both constituencies.

Fiscal Costs of Graduate and Professional Education to Students

According to a recent policy brief released by the New America Education Policy Program on graduate and professional student debt, based upon their analysis of federal data, debt among this group has “surged in recent years.” From our survey results, it is estimated that the current median student debt from graduate and professional students in Iowa is $43,000. However, only taking account graduate and professional students with student debt (≥ $1,000; 76.2% of respondents), the median student debt dramatically increases to $65,000. This is largely dependent on the degree program, and the estimated student debt broken down by degree is summarized in Figure 2.

![Debt by Degree Program](image)

**Figure 2.** Median student debt and percent of students with any student debt by program.

We utilized the data from the New America Education Policy Program policy report to compare the student debt of Iowa-educated graduate and professional students against their national peers (Figure 3). For comparison, we only included the degree programs utilized in their analysis based on the available federal data: Master's of Business Administration (M.B.A.), Master's of Education (M.Ed.), Master's of Science (M.S.), Master's of Arts (M.A.), all other Master's, Law (J.D.), and 'Medicine and Other Health Sciences' which included Medicine (M.D. or D.O.), Dentistry (D.D.S), Pharmacy (Pharm.D.), Veterinary Medicine (D.V.M), as well as several other programs not represented in our institutions (Optometry, Podiatry, Chiropractic). Of note, the study excluded all Ph.D. students, however many Ph.D. students (36% of Iowa PhD respondents) have no student debt due to institutional stipends and Teaching

---

Assistantships (TAs), and therefore were already not represented in the data set of student borrowers.

Our analysis demonstrates that, compared to their national peers, Iowa graduates have significantly higher median student debt (Figure 3). However, this may be due to differing distributions of students across degree programs between our data set and the New America Education Policy Program report. In their study, 88% of students included in their analysis were conferred Master’s degrees while only 12% were conferred J.D. or Med/Other Health Sciences degrees; in our study, only 38% of students included in these analyses are enrolled in Master’s programs while 62% are enrolled in J.D. or Health Science doctoral programs. As SUI has an extensive healthcare education campus, this may account for these differences compared to U.S. peers overall. Alternatively, it is possible that our data set is biased by self-selection for students in the health sciences, who tend to have much higher student debt, and therefore who may be much more likely to respond to the survey. However, when broken down by subgroup, Master’s and J.D. students have significantly less student debt versus national peers while health science students have increased student debt vs. national peers. In our final report later this year, with a significantly larger respondent pool, we can once again look at these trends.

In addition to the financial burden incurred by tuition costs, there are also many opportunity costs associated with pursuing graduate and professional education. Most graduate and professional students survive at less than double the poverty level well into their late twenties while their peers who have not pursued graduate or professional education are making significantly higher salaries. Indeed, many Ph.D. students with tuition and a stipend provided by federal grants or through Teaching Assistantships (TAs) must take out loans to cover living expenses.

Then, upon graduation, professional students have very significant student loans that can take over twenty years to fully pay off, especially with skyrocketing federal loan interest rates. This presents a significant financial burden, even in the context of a large earning potential (Figure 4), with loan payments averaging $1,365/month for Medical and Other
Healthcare Professionals. And although Ph.D. and Master’s students have little or no student debt, their opportunity costs are comparable to those of professional students because Ph.D. and Master’s students have significantly lower earning potential after graduation (Figure 4). For this analysis we used the projected starting salaries in place of objective salary data per careers from the U.S. Department of Labor Statistics because many Ph.D. students are pursuing a range of careers as an alternative to careers in academia due to the severe job and grant funding shortages in these fields across the country.

Overall, it is clear that there exists a large financial and economic barrier to pursuing graduate and professional education. As state education appropriations decrease and federal loan interest rates increase dramatically this barrier is only projected to grow. As the education of graduate and professional students is vital to the future of our State and beyond, it is essential that we continue to provide an environment where pursuing these degrees is financially accessible and fiscally responsible for all constituencies.

Current Graduate and Professional Student Retention Rates

As the education of graduate and professional students is vital to the future of our State, it is important to retain Iowa-educated graduate and professional students in the State as well as recruit out of State graduates into these fields. To better understand the degree to which graduate and professional students remain in the State for employment after graduation, we gathered historical data from all graduate and professional colleges and departments across the three Regent institutions (Figure 5).

There is significant variability in the degree and duration to which different degree programs have tracked their graduates, and much of the data we present here is based off of surveys taken at the time of graduation.

Interestingly, as one may predict, doctoral programs, in general, have historically lower retention rates as compared to Master’s programs. Furthermore, there is often the bias that student from SUI, more so than students from ISU or UNI leave the State after graduation. Although the average retention (%) of graduate students is higher at UNI (this may be partly due to the fact
that they only offer Master’s, and not doctorate, programs) compared to the other institutions, it is clear that retention rates at SUI and ISU are not significantly different.

It is obvious from this data that there is much room for improvement as far as retaining Iowa-educated graduate and professional students. However, to develop a successful retention plan we must first better understand why students choose to remain in or to leave the State of Iowa. To do this, we asked current students the likelihood they would remain in Iowa after graduation as well as which factors were most important in that decision.

**Projections of Student’s Likelihood to Remain in Iowa**

Consistent with the historical retention rates, UNI graduate and professional students are more likely to remain in Iowa after Iowa graduation; 73% of UNI respondents are likely or very likely to remain in Iowa after graduation compared to 43.4% at ISU and 44.9% at SUI. Conversely, 12.3% of current UNI graduate and professional students are unlikely or very unlikely to remain in rural Iowa as compared to 31.7% at ISU and 23.8% at SUI (the overall distribution of SUI and ISU responses were not statistically different). For this proposal, rural Iowa was defined as areas other than greater Iowa City/Cedar Rapids corridor area and the greater Des Moines area; this was due to the stagnant population growth outside these areas as reported in the Battelle report (2014).

This data is summarized in Figure 6 and Table 1. The overall trends demonstrate that the majority of students are considering remaining in Iowa after graduation; however, the reverse was true when asked about the likelihood to move to rural Iowa. Importantly, a large proportion of students at each campus were undecided in their decision (UNI = 14.7%, ISU = 24.9%, SUI = 31.3%; Total = 28.1%), suggesting that this population may remain if incentivized.

![Figure 6. Likelihood of remaining in Iowa/Rural Iowa after graduation by institution.](image)

Students were asked the likelihood they would remain in Iowa or rural Iowa after graduating or finishing their educational training. For these questions, rural Iowa was defined as non-Iowa City/Cedar Rapids area and the greater Des Moines area because of the near stagnant populations growth in these age groups outside these areas.
In order to better understand the factors underlying a student’s decision to remain in the State after graduation, we asked them to rank the following parameters: Employment Opportunities, Wage, Proximity to Family, and ‘Quality of Life.’ We then analyzed this data using two complementary methods: average rank and top ranked factor (Figure 7). By either method, employment opportunities was significantly more important than any other factor in determining the likelihood that a student will remain in Iowa after graduation. A significant portion of graduate students also ranked proximity to family as the most important factor to them, suggesting that if there are employment opportunities in Iowa they may be more likely to remain in the State to be near their family. Rather surprisingly, wage was ranked low by either method.

Table 1. Likelihood of remaining in Iowa/Rural Iowa after graduation by institution.

<table>
<thead>
<tr>
<th></th>
<th>Employment in Iowa After Graduation</th>
<th>Employment in Rural Iowa After Graduation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unlikely/Very Unlikely</td>
<td>Undecided</td>
</tr>
<tr>
<td><strong>ISU (22%)</strong></td>
<td>31.7%</td>
<td>24.9%</td>
</tr>
<tr>
<td><strong>SUI (67%)</strong></td>
<td>23.8%</td>
<td>31.3%</td>
</tr>
<tr>
<td><strong>UNI (11%)</strong></td>
<td>12.3%</td>
<td>14.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>24.3%</td>
<td>28.1%</td>
</tr>
</tbody>
</table>

In order to better understand the factors underlying a student’s decision to remain in the State after graduation, we asked them to rank the following parameters: Employment Opportunities, Wage, Proximity to Family, and ‘Quality of Life.’ We then analyzed this data using two complementary methods: average rank and top ranked factor (Figure 7). By either method, employment opportunities was significantly more important than any other factor in determining the likelihood that a student will remain in Iowa after graduation. A significant portion of graduate students also ranked proximity to family as the most important factor to them, suggesting that if there are employment opportunities in Iowa they may be more likely to remain in the State to be near their family. Rather surprisingly, wage was ranked low by either method.

Figure 7. Most important parameters underlying student’s decision of whether or not to remain in IA. Survey respondents were asked to rank the four factors above from 1 (most important) to 4 (least important). The two graphs represent the parameters that were ranked #1 most often (left) versus the overall average rank (right).
Iowa’s Stagnant Population Growth and High-Skilled Workforce Shortages

As summarized in the introduction above, despite the impressive economic growth over the last several years, the State of Iowa continues to face many economic challenges if this growth is to be sustained. Many of these challenges, which have been highlighted in the recent Battelle Report (2014), are pertinent to this proposal and can be directly improved on by retaining more Iowa-educated graduate and professional students in the State, including stagnant population growth and high-skilled workforce shortages.

Iowa falls far below the national average for overall population growth (5.1% vs. 11.5%), and this is particularly salient for the 24 and under age group in which population growth was only 0.5%. However, population growth in two particular regions of the State have outpaced the national average: The greater Iowa City/Cedar Rapids area and the greater Des Moines area; the results of our survey would suggest that these relatively urban areas offer more employment opportunities and a better ‘quality of life' than more rural regions of the State.

Although quality job growth in Iowa outpaced national averages in 9 of the 12 industry clusters (as defined by the Battelle report), employers continue to report workforce shortages for middle- and high-skill jobs. Indeed the Battelle report states “Combined with Iowa’s weak population growth this workforce problem is likely to plague Iowa for many years to come.” To aid in this, the Governor and Lt. Governor have implemented several pipeline programs to fill these shortages with Iowa-educated graduates, however there is much room for improvement, and if the State is unable to fill these workforce shortages, companies will not be incentivized to bring jobs to the State.

These workforce shortages can be especially impactful in certain industry clusters. An example of this is the increasing shortage of healthcare workers in Iowa and throughout the U.S. In 2008, the AAMC stated that “If physician supply and use patterns stay the same, the United States will experience a shortage of 124,000 full-time physicians by 2025.” With the aging population of Iowa physicians, shortages are only projected to increase. Furthermore, shortages are reported in most other healthcare fields. As illustrated in Figure 9, the U.S. Department of Health and
Human Services has designated 119 Primary Care Health Professional Shortage Areas (HPSAs), 116 Dental HPSAs, and 68 Mental Health HPSAs within the State of Iowa. The results of this are dramatic and have a large impact on the health of our State; indeed, 72 of the 99 Iowa counties have areas designated as medically underserved.

Proposal

As described above, pursuing graduate and professional education in Iowa (or elsewhere in the country) has long-term financial consequences. In addition, we have summarized some of the many economic growth challenges currently facing the State of Iowa, many of which hinge on maintaining a large medium-, high-, and ‘very-high’-skilled workforce within the State. As such, we propose a retention incentive, in which Iowa-educated graduate and professional students are financially incentivized to remain in Iowa for employment directly following the end of their education (be that graduation, or after subsequent training - i.e. healthcare residencies or fellowships, postdoctoral research training, etc.).

To determine the impact of such a program on Iowa-educated graduates and the State, we first needed to better understand how many students would take advantage of such a system.

Potential Impact of a Financial Incentive on Retention

The cumulative responses of the likelihood a student would be incentivized to remain in Iowa or rural Iowa after graduation are summarized in Figure 10. Student responses demonstrate that UNI students are more likely to respond to a financial incentive, however when normalized to their increased pre-incentive likelihood of remaining in Iowa, the impact of the incentive is decreased as compared to ISU and SUI. Furthermore, consistent with the population growth and student likelihood data presented above, current graduate and professional students are significantly less likely to be incentivized to remain in rural Iowa as compared to non-rural Iowa.
We next determined the potential impact of a financial incentive on retention rates. To do this, we needed the following assumptions:

1. Our respondent population is representative of the total population of graduate and professional students at the three Regent institutions.
2. All students who reported to be Likely or Very Likely to remain in the State will end up remaining in the State (although we know this to be a flawed assumption).
3. There are job placement opportunities for all who remain in the State.

We ran two models to obtain the extremes of a potential range of incentivized students:

**Model 1:** Students who were Undecided would remain in Iowa before incentive.
**Model 2:** Students who were Undecided would not remain in Iowa before incentive.

In each model, we determined the number of additional students who would stay if the financial incentive successfully motivated 25%, 50%, 75%, or 100% of the students who were not already planning to stay who stated that they could be motivated financially. This data is summarized in **Table 2.** It is clear from this data that this incentive could have a major impact on the number of students who remain in the State after graduation. Model 1 demonstrates that the incentive could increase overall retention by 327-1,309 graduates per year (+3.0-10.6%), while Model 2 provides a larger pool of potentially incentivizable students and demonstrates that a financial incentive could increase overall retention by 1,458-5,831 graduates per year (+18.6-74.3%). Although neither of these models is ideal, it is clear that historical retention rates are more
similar to Model 2 pre-incentive retention rates rather than Model 1 (Figure 5). This allows us to assume that the size of the population of incentivizable students is more similar to Model 2 and therefore the incentive has the potential for a dramatic increase in overall retention in the State.

Table 2. Potential Impact of Financial Incentive on Student Retention

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Additional Students Likely to Remain in Iowa with Incentive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enrolled</td>
<td>Remain in Iowa</td>
<td>25%</td>
</tr>
<tr>
<td>SUI</td>
<td>9,091</td>
<td>6,926 (76.2%)</td>
<td>147 (+2.1%)</td>
</tr>
<tr>
<td>ISU</td>
<td>5,680</td>
<td>3,881 (68.3%)</td>
<td>167 (+4.3%)</td>
</tr>
<tr>
<td>UNI</td>
<td>1,786</td>
<td>1,567 (87.7%)</td>
<td>14 (+0.9%)</td>
</tr>
<tr>
<td>Overall</td>
<td>16,557</td>
<td>12,374 (74.7%)</td>
<td>327 (+3%)</td>
</tr>
</tbody>
</table>

We can also undertake a similar analysis to determine the potential impact of a financial incentive on the retention of students in rural Iowa (Table 3). Again, historical retention rates suggest that Model 2 more accurately represents the size of the incentivizable pool. However, given the lack of employment opportunities and many ‘quality of life’ factors in many rural Iowa communities, the actual numbers of people who would take advantage of an incentive for rural Iowa are more likely to be on the lower end. Yet, even if only 25% of the potentially incentivizable pool remains in rural Iowa because of this financial incentive, that would increase the number of students by 1,164 per year, a 56.7% increase from those who would have moved to rural Iowa without the incentive.

Table 3. Potential Impact of Financial Incentive on Student Retention in Rural Iowa

<table>
<thead>
<tr>
<th></th>
<th>Model 2</th>
<th></th>
<th>Additional Students Likely to Remain in Rural Iowa with Incentive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enrolled</td>
<td>Remain in Iowa</td>
<td>25%</td>
</tr>
<tr>
<td>SUI</td>
<td>9091</td>
<td>4,083 (44.9%)</td>
<td>835 (+21.0%)</td>
</tr>
<tr>
<td>ISU</td>
<td>5680</td>
<td>2,465 (43.4%)</td>
<td>521 (+21.1%)</td>
</tr>
<tr>
<td>UNI</td>
<td>1786</td>
<td>1,304 (73.0%)</td>
<td>80 (+6.1%)</td>
</tr>
<tr>
<td>Overall</td>
<td>16,557</td>
<td>7,853 (47.4%)</td>
<td>1,458 (+18.6%)</td>
</tr>
<tr>
<td></td>
<td>Enrolled</td>
<td>Rural Iowa</td>
<td>25%</td>
</tr>
<tr>
<td>----------------</td>
<td>----------</td>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUI</td>
<td>9,091</td>
<td>3,684 (40.5%)</td>
<td>310 (+8.4%)</td>
</tr>
<tr>
<td>ISU</td>
<td>5,680</td>
<td>2,366 (41.7%)</td>
<td>212 (+9.0%)</td>
</tr>
<tr>
<td>UNI</td>
<td>1,786</td>
<td>876 (49.1%)</td>
<td>71 (+8.1%)</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>16,557</td>
<td>6,927 (41.8%)</td>
<td>593 (+8.6%)</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUI</td>
<td>9091</td>
<td>1,302 (14.3%)</td>
<td>905 (+69.5%)</td>
</tr>
<tr>
<td>ISU</td>
<td>5680</td>
<td>1,083 (19.1%)</td>
<td>533 (+49.2%)</td>
</tr>
<tr>
<td>UNI</td>
<td>1786</td>
<td>460 (25.8%)</td>
<td>175 (+38.1%)</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>16,557</td>
<td>2,845 (17.2%)</td>
<td>1,614 (+56.7%)</td>
</tr>
</tbody>
</table>

Overall, this program has the potential to be very successful and help increase retention rates among a critical Iowa subpopulation. However, to determine the feasibility of such a proposal the costs to the State associated with running such a program must be investigated.

Additionally, such a proposal can be very impactful younger students as well. A State retention initiative has the ability to encourage undergraduates and high school students to not only pursue a higher level of education, but to do so within Iowa. This could result in a ‘pipeline’ driving the retention of even more students and making this program more successful. This would also increase the revenue earned by the State for this initiative (see cost analysis below).
Format of Financial Incentive

In addition to determining the size of the population of students who would take advantage of a financial retention incentive, we also investigated the magnitude of the incentive required by these students in order to motivate them to remain in the State. To do this, we inquired about three different incentive models: 1) a tax-credit linked link to student debt loan payments, 2) a cash loan repayment program, and 3) a state income tax break.

Interestingly, the cumulative number of respondents incentivized by a loan repayment program that was distributed as a tax credit was identical to one distributed as a cash payment (Figure 11). However, 50% of those who would be incentivized by a tax credit loan repayment program required the tax credit be refundable. Many loan repayment tax credits in other states are non-refundable, most likely because of the political appearance of decreased revenue vs. increased expenditures. However, we provide strong evidence that such a structured credit would be far less efficacious in this population and may actually increase the cost of the program. Overall, for both data sets there is an inflection point in the data at 50% suggesting that this would be the most cost-effective value for loan repayment; much lower and you risk failing to incentivize a significant number of students and therefore increase the costs associated with such a program (see preliminary cost analysis below), much higher and although you will make gains in retention, they will be significantly smaller per dollar of revenue lost and will again increase the overall cost of such a program to the State.

However, as 23.8% of respondents have no student debt, an additional 14.1% of respondents have minimal student debt (< $20,000), and international students (11% of respondents) are not eligible for U.S. federal or private (unless they have a U.S. citizen cosigner) student loans, we propose that the format of a financial retention incentive be modeled as an income tax break. To again, understand the magnitude of a retention

Figure 11. Magnitude of monthly loan repayments necessary to incentivize students to remain in the State. Students were asked about models in which the loan repayment occurred as a tax credit or as a cash payment mechanism.
incentive of this model required to retain Iowa-educated students, we undertook a similar analysis to the loan repayment programs above. Students, based off of their projected starting salary range, were presented with a range of their yearly income tax values and asked how large of an income tax break would they require to be motivated to remain in the State.

Similar to the responses seen for the two loan-repayment programs, there is a strong inflection point in the data at 50%. Therefore, we suggest that the State offer Iowa-educated graduate and professional students a 50% income tax break to remain in the State for employment after completing their training. As expected, those who stated they were Unlikely to remain in Iowa require a larger proportion of money to remain in the State as compared to those who were likely or undecided.

Additionally, for many careers, Iowa salaries are lower than national averages and an income tax break would, in essence, help to bridge that divide. For example, the mean salary for a pharmacist in May 2014 was $100,750 in Iowa vs. $118,470 across the U.S.\(^2\) Given current state income tax rates, a pharmacist in Iowa would pay approximately $13,355 per year; a 50% income tax incentive would decrease the salary differential yearly from $17,720 to $11,043.

An income tax break in perpetuity is not fiscally sustainable for the State. Therefore, we propose that the incentive last for the first 5 years after training is complete. Incentivizing students to stay for 5 years allows them to increase their ‘roots’ in Iowa and are, therefore, much more likely to remain in the State after the incentive ends.

**Eligibility**

The above data, and the cost analysis below, is based off of a broad financial incentive for all Iowa-educated or Iowa-trained graduate students (Master’s and Doctorates), professional students, postdoctoral scholars, and healthcare residents and fellows. We believe that a broad retention initiative is necessary to retain a more holistic population of graduate and professional educated citizens in the State, to help fill the variety of workforce shortages, and to help bolster the stagnant population growth.

Understandably, one may suggest that this retention incentive be linked directly to specific workforce shortages, specific degrees with historically low retention rates, specific economic growth sector or healthcare initiatives, or specific geographic regions that are more unlikely to retain graduate and professional students. However, the value of retaining graduate and professional students is not always directly related to their degree, and there are many potential benefits of retaining all graduate and professional students. As an example, an increasing number of Ph.D. students are entering the private sector workforce outside of academia and bring with them a unique skillset rooted in research and critical thinking skills.

Estimated Cost Analysis

A cost analysis is necessary to determine the feasibility and potential fiscal impact of such a proposal for the State. To do this, we utilized our survey data to undertake a simple model based on a number of assumptions (listed below). We realize that this cost analysis is rudimentary and we urge the Governor to have the Legislative Services Agency (LSA) or other State department run a more complete cost analysis based on data that we do not have access to. The results of the survey will be made freely available to aid in this analysis if desired.

For our rudimentary cost analysis we modeled the potential costs by analyzing a single individual’s likelihood of staying in Iowa before and after a financial incentive and tied this information back to their individual projected starting salary. From the starting salary, we estimated state income taxes using the formulas summarized in Table 4.

In order to proceed with a cost analysis using our limited dataset, we had to make the following assumptions:

1. Our respondent population is representative of the total population of graduate and professional students at the three Regent institutions.
2. The total number of graduate and professional students remains constant over time.
3. For any given year, 30% of the total graduate and professional students are graduating and entering the workforce (Based off of degree program duration variability).
4. All of those ‘ Likely’ or ‘ Very Likely’ to remain in Iowa after graduation would remain in Iowa regardless of a financial incentive (this will represent our revenue lost).
5. There are job placement opportunities for all who remain in the State.
6. Starting salaries remain unchanged (2015 USD) and no one receives a salary increase.
7. If you are ‘retained’ in Iowa, you remain in Iowa for the entirety of the analysis.
8. The income tax incentive is not available retroactively.

### Table 4. Iowa Income Tax Formulas

<table>
<thead>
<tr>
<th>Salary Range</th>
<th>Marginal Tax Rate</th>
<th>Flat Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00 - $1,515</td>
<td>0.36%</td>
<td>$0.00</td>
</tr>
<tr>
<td>$1,515 - $3,030</td>
<td>0.72%</td>
<td>$5.45</td>
</tr>
<tr>
<td>$3,030 - $6,060</td>
<td>2.43%</td>
<td>$16.36</td>
</tr>
<tr>
<td>$6,060 - $13,635</td>
<td>4.50%</td>
<td>$89.99</td>
</tr>
<tr>
<td>$13,635 - $22,725</td>
<td>6.12%</td>
<td>$430.87</td>
</tr>
<tr>
<td>$22,725 - $30,300</td>
<td>6.48%</td>
<td>$987.17</td>
</tr>
<tr>
<td>$30,300 - $45,450</td>
<td>6.80%</td>
<td>$1,478.03</td>
</tr>
<tr>
<td>$45,450 - $68,175</td>
<td>7.92%</td>
<td>$2,508.23</td>
</tr>
<tr>
<td>$68,175+</td>
<td>8.98%</td>
<td>$4,308.05</td>
</tr>
</tbody>
</table>
Given those assumptions, we modeled the income tax revenue or losses generated by this population. In each of the graphs below (Figure 13), the income tax losses (red lines) represent 50% income tax of students who would remain in the State even without an incentive. Increased income tax revenues (green lines) represents a combination of 50% income tax rates for the incentivized students for the first 5 years after finishing their training and then 100% income tax rates after that. The models demonstrate that in any of these scenarios, the program would be generating annual income tax revenue within ten years after implementation; with this occurring earlier and to a larger magnitude the more students who are incentivized to remain.

However, the fiscal impact of a resident is not merely valued by an individual’s income taxes. To better model the overall economic impact of this proposal we included in our models non-income taxes as well as State expenditures per capita. This analysis required two further assumptions:

9. As approximately 43% of the total tax revenue in Iowa (FY2014) is from income taxes, this proportion is true for any given individual such that we can estimate their total tax contribution to the State. Additionally, this percentage will remain unchanged.

10. Iowa expenditures per capita will remain constant at $6,320 (FY2013).

From this, we can more accurately model the potential direct economic impact of this initiative. These models are illustrated in Figure 14 and pertinent data is summarized in Table 5.

Figure 13. Estimated income tax revenue and losses if 25%, 50%, or 100% of incentivizable students are retained in the State.

Figure 14. Estimated total state revenue and expenditures if 25%, 50%, or 100% of the incentivizable population is retained in the State.
Table 5. Key measures of overall revenue from the income tax break models

<table>
<thead>
<tr>
<th>Incentivizable Students Retained (%)</th>
<th>Maximum Annual Revenue Loss (Year)</th>
<th>Average Revenue Per Person Retained Per Year (Years 1-10)</th>
<th>Time Until Program Nets Annual Revenue</th>
<th>Time Until Program Nets Revenue Overall</th>
<th>Net Revenue (Year 10)</th>
<th>Net Revenue (Year 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>N/A</td>
<td>$2,529</td>
<td>Year 1</td>
<td>Year 1</td>
<td>$391.5M</td>
<td>$1,027M</td>
</tr>
<tr>
<td>50%</td>
<td>$5.9M (Year 5)</td>
<td>$172</td>
<td>Year 5/6</td>
<td>Year 7/8</td>
<td>$99.4M</td>
<td>$369M</td>
</tr>
<tr>
<td>25%</td>
<td>$15M (Year 5)</td>
<td>-$(4,543)</td>
<td>Year 8/9</td>
<td>Year 12/13</td>
<td>-$(46.6M)</td>
<td>$40M</td>
</tr>
</tbody>
</table>

These models demonstrate, within the limitations of the assumptions above, that even if as few as 25% of the incentivizable students are retained each year this program will eventually become revenue generating. The timing of this, and the extent of the revenue losses before the program reaches solvency, is, among other things, dependent on the ratio of the number incentivized students versus those who would have remained without an incentive. We must stress, that the assumption that all students who were Likely or Very Likely to remain in the State actually remain in the State is not consistent with historical retention rates, and as a result this artificially inflates the revenue loss in these models.

This data set gives us the unique perspective of understanding the motivations of current students to remain or leave the State. In the real world we are unable to distinguish these populations and overall retention rates will have to be tracked in order to infer impact of such an initiative. We must stress though that even this more complete model fails to accurately model the total economic and cultural impact of retaining a large population of young, highly educated residents. We urge LSA or Revenue Services to conduct a more complete economic impact study of this proposal. We are more than happy to make the data set available, to do further analyses of the data, or to provide any other information that would be helpful to move this proposal forward.