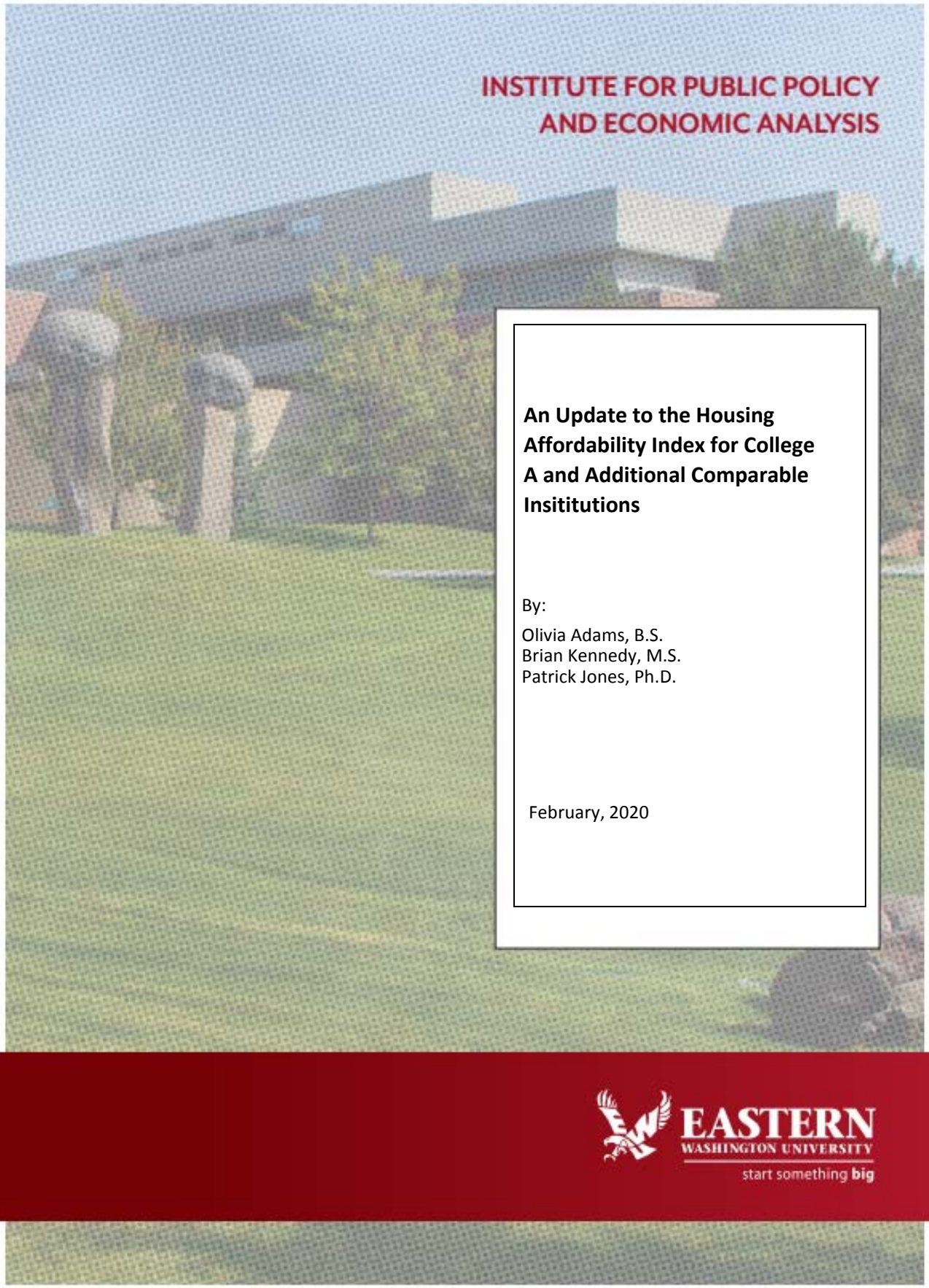

INSTITUTE FOR PUBLIC POLICY AND ECONOMIC ANALYSIS

An Update to the Housing Affordability Index for College A and Additional Comparable Insititutions

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EASTERN WASHINGTON UNIVERSITY
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I. Introduction

The Institute of Public Policy & Economic Analysis (the Institute) at Eastern Washington University was tasked by a Washington College (College A) to update prior research on the ability of the college's faculty to afford local housing. This inquiry required the Institute to evaluate the relationship between the median home price in the college's county and the average salaries of professors, associate professors, and assistant professors at the college. These ratios were then compared to several of College A's peer institutions. The name of the college's, and the counties in which they are located, have been redacted due to proprietary data; the colleges will thus be named College A – G, with accompanying counties A - G. In addition to the peer institutions chosen in the last study (College B, College C, and College D), this study expanded the list to include College E, College F, and College G as well. In this study, a housing affordability index was created for each level of faculty- professor, associate professor, and assistant professor- and at each institution to be able to compare directly with one another. By looking at the three tiers of faculty individually, College A will be able to clearly determine how affordable local housing is for each level of faculty.

II. Salaries

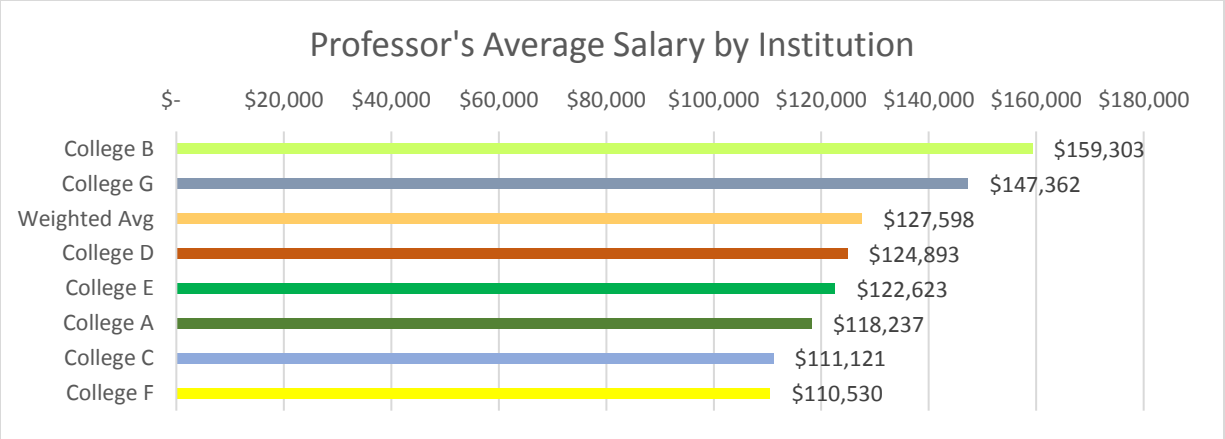
a. Data

For this report, the salary information covers the 2018-2019 academic school year: September, 2018 through August, 2019. The salary data were provided directly from the Institutional Research Office at College A, giving the average salary for professors, assistant professors, and associate professors, along with how many employees of each tier are at each institution. A weighted average of salaries from the seven institutions covered in this report was also included to serve as a benchmark. This was weighted off of the number of faculty in each tier, where we multiplied the average salary by the total number of faculty in each tier for each institution, summed the totals of all seven institutions, and then divided that total by the total number of faculty in that tier for all institutions.

b. Results

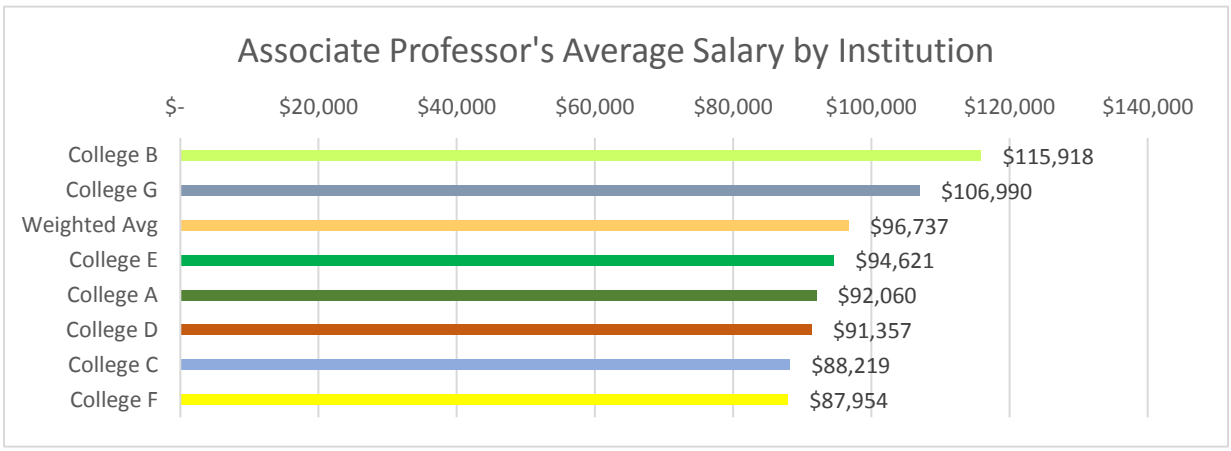
The salary data were broken down into three tiers: professor, associate professor, and assistant professor. At all three levels, College B pays the highest. Figure 1 reveals that the salary differential for professors from the highest (College B) to lowest ranked (College F) institution is substantial, at just under $50,000. College B pays its professors 8% higher than the next highest, College G, 30% higher than College A, and 36% higher than the lowest, College F. Looking at the set of institutions, College A ranks fifth out of the seven, falling about $9,000 lower than the weighted average.

Figure 1



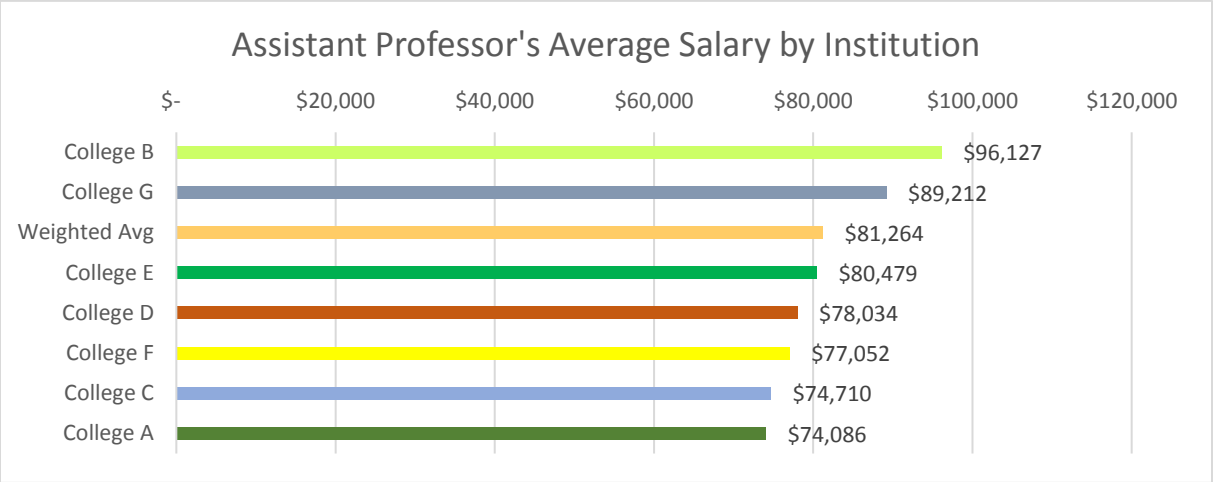
As for associate professors' salary, found in figure 2, the differential is less significant at around $28,000 between College B (highest) and College F (lowest). College B is paying 23% more than College A, and 27% more than the assistant professors at College F. College A's rank increased slightly to fourth of the seven, putting them in the middle of the pack in terms of associate professor's average salary.

Figure 2



For assistant professors, College B again ranked as the highest paying of the seven institutions, depicted in figure 3. It pays almost 26% more than College A, which is ranked as the lowest paying for assistant professors. The salary gap between top ranked College B, and College A is just over $22,000. When compared to the weighted average for assistant professors, College A is paying $7,178 less.

Figure 3



III. Median Housing Price

a. Data

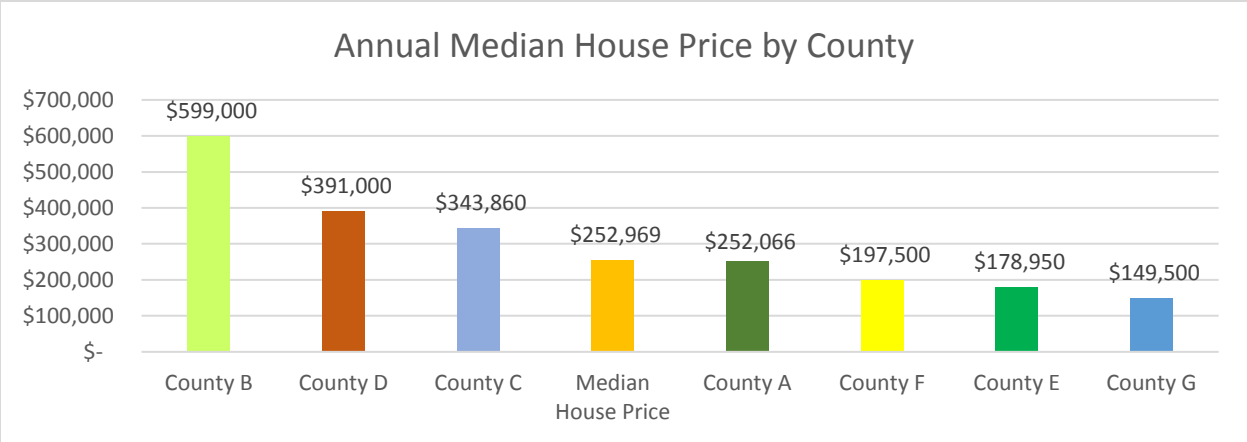
The median home price data came from two different real estate databases, Zillow.com and Trulia.com, where monthly median house prices were provided from September, 2018 through August, 2019. The monthly housing prices listed from the two sites were not identical, so a simple median was taken from each source and then a median was taken of the two sets to find a final median house price. A median is the middle value, with 50% of prices higher than the value, and 50% of prices lower than the value.

Differentiating from the prior study, this research used median house price within the *county* the college is based as opposed to the city in which it is located. This choice was to encapsulate any faculty that may live outside of the city but in the county. Additionally, a simple median was taken from the median house prices of the seven different counties in order to create a standard benchmark to compare counties in this report. Due to the data being private, the counties for which the college's reside in will be labeled County A – G.

b. Results

The ranking of the median house prices for all locations can be found in figure 4, where County B (College B) ranked as having the highest median home price by a significant margin. Compared to County A (College A), County B's median home price is 82% more expensive. The range from lowest to highest median home price is $449,500. As seen in the graph below, County A falls below the median by $903.

Figure 4



IV. Housing Affordability Index

a. Data & Methodology

The housing affordability index (HAI) created is indicative of how affordable housing is in the selected counties based on income. To create a housing affordability index, many factors needed to be calculated and included, such as median house price, income, and mortgage rates. The methodology for calculating the housing affordability index came from the National Association of Realtors (NAR). This is the same calculation used to produce indexes on the national level. In order to discover whether College A's faculty's salaries are adequate to afford local housing, a determination of a monthly payment on a median priced home in County A needed to be made. Generally, a HAI is the ratio of income to housing costs, and to calculate such a few formulas were needed and were pulled directly from the NAR site.

Median Price of Existing-Single Family Home (**MEDPRICE**)
- Provided by real estate databases Zillow and Trulia

Monthly Mortgage Rates (**IR**)
- Provided by FreddieMac

Principle & Interest Payment – Monthly payment (**PMT**) (This is the exact formula Excel uses to find a payment amount)
- Formula: MEDPRICE*0.8*(IR/12)/(1-(1/(1+IR/12)^360))

Median Family Income (**MEDINC**)
- Faculty salaries provided by College A

Median as percentage of Income – Necessary monthly income (This assumes a 20% down payment)
- Formula: ((PMT*12)/MEDINC)*100

Qualifying Income – Income necessary to qualify for a loan (**QINC**)
- Formula: PMT*4*12

Housing Affordability Index (**HAI**)
- Formula: (MEDINC/QINC)*100

To calculate the HAI, the median income and qualifying income that is necessary to be eligible for a loan are needed. The difference between the Institute's HAI calculations and those of the NAR comes from the income term. The NAR uses median household income for that market, and this report uses average faculty salary. Ideally, more than just faculty salary would be included to determine median household income, such as additional income from spouses or partners, but as that information was not given, faculty salary qualified as median household income. While this doesn't allow for a direct comparison to NAR numbers, it does allow one to compare the HAI for faculty at the seven selected institutions. As for qualifying income, the monthly payment is multiplied by 12 to create the annual amount necessary, and then multiplied by 4 to indicate the rule of not paying more than 25% of your income on housing.

Another component needed to calculate a housing affordability index is mortgage rates, which is necessary in order to calculate the monthly payment required to afford a median priced home. The mortgage rate data were provided by FreddieMac and are national averages. In a highly competitive credit market, it was safe to assume that there was minimal variation among the various markets. A perusal of historical metro-level data from the Federal Housing Finance Agency, confirms this assumption. This allowed us to apply the same monthly mortgage rate to all the markets.

An average was included to serve as a benchmark for the seven institutions to compare to. It was calculated by taking the weighted average of each tier of faculty's salary that was found above (section II), and using the median county house price found above (section III) to calculate the HAI.

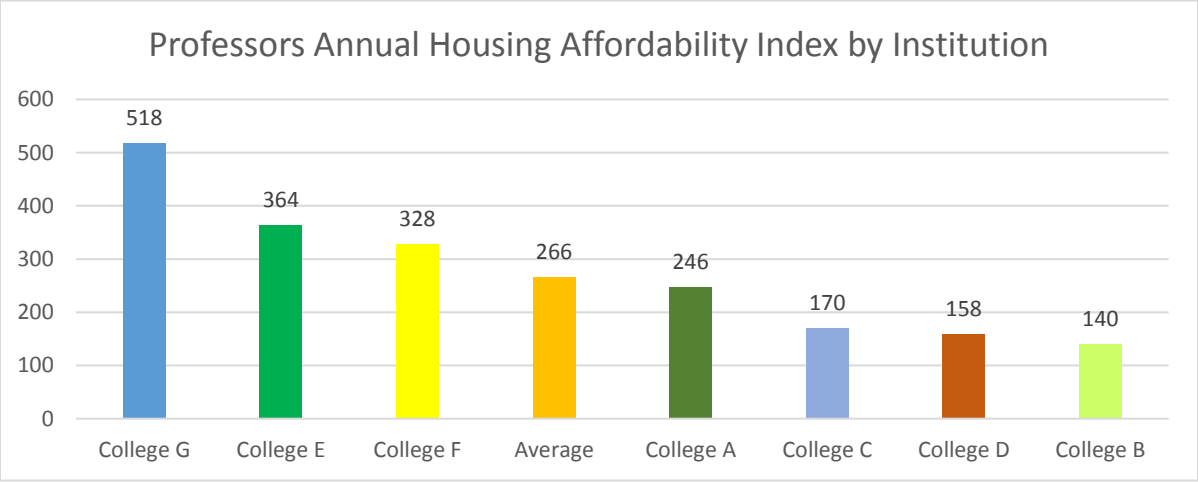
To interpret a HAI, an index of 100 means that a household's median income is exactly enough to qualify for a mortgage on a median-priced home in a particular market. An index above 100 signifies that a household's median income is more than enough to qualify for a mortgage on a median-priced home, always assuming a 20% down payment. Thus, an index below 100 represents that a household's median income is not enough to qualify for a mortgage on a median-priced home.

The HAI indices reported in this study are not directly comparable to the prior study as the median home price was calculated for the counties that colleges are based in rather than for the city.

b. Results

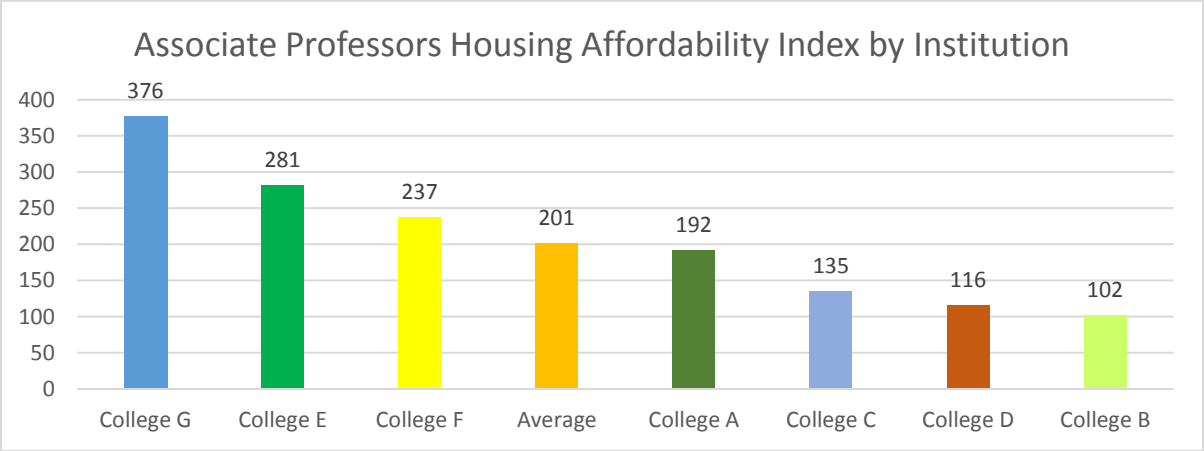
An analysis of all three faculty tiers for all seven institutions shows, in almost every case, that salaries are adequate to cover a mortgage on a median-priced home in their county. Figure 5 shows the housing affordability index for all seven institutions at the professor level, and the HAI is greater than 100 for every institution. This signifies that professors at all institutions have high enough salaries to afford a mortgage payment on a median-priced home in their county, without exceeding the 25% affordability threshold. College A's HAI is 272 points less than College G (highest), 106 points higher than College B (lowest), and 20 points lower than the weighted average, putting it right in the middle of the peer institutions.

Figure 5



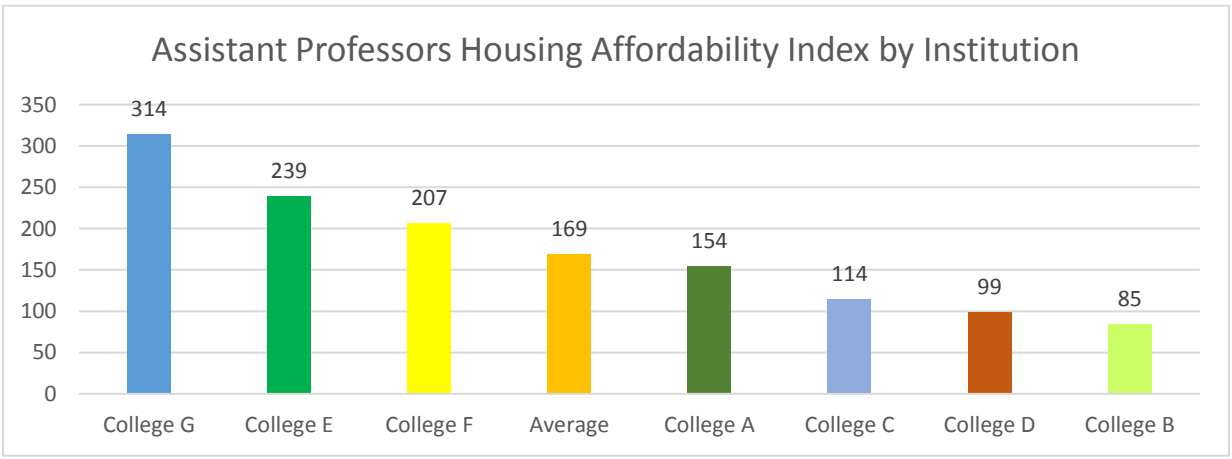
The analysis in Figure 6, displaying HAI values for associate professors, shows the same rank as professors (Figure 5), but with each institution's index falling with their salaries. Despite the index decreasing for associate over full professors, all values are still above 100, with College B on the cusp of having just enough income to afford local housing. College A's HAI is still high at 192, making it almost two times more affordable than College B, and is 9 points lower than the average.

Figure 6



Depicted in figure 7, the assistant professor tier is the only one where not all institutions have a HAI above 100. Both College D and College B's HAI falls below 100, signifying that their average assistant professor salaries aren't sufficient in affording a mortgage on a median-priced home in the county of their college. The rank remains the same for assistant professors, and shows College A's HAI lower than the other faculty tiers, but still well above 100, at 154.

Figure 7



V. Key Findings & Conclusion

With the help from the Institutional Research Office at College A, the Institute calculated the housing affordability index (HAI) values using the same methodology as the National Association of Realtors. This study differed only slightly from the prior study in that it expanded the location of median home price to be the county where the college in located

as opposed to the city. Due to this change, the results are not directly comparable to the prior study. The institutions compared in this study were College A, College B, College C, College D, College C, College D, College E, College F, and College G. For each institution, three levels of faculty were analyzed: professor, associate professor, and assistant professor. At all three tiers of faculty, College B paid their employees significantly more than the other institutions, but consistently ranked lowest for their HAI. This is largely due to the substantially higher median house price in County B compared to the other counties. College A pays their professors and associate professors roughly in the middle of the seven colleges and universities, but pays their assistant professors the lowest of all peer institutions. County A's median home price also falls within the middle, thus putting their HAI in the middle of the pack as well. Despite being in the middle for HAI, at all levels of faculty, College A's HAI is well above 100. This indicates that salaries are more than adequate to afford a mortgage on a median priced home in the area, even in the case of assistant professors who are the lowest paid of their peer institutions.