

Academic Tenure and Housing Choice

by

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Abstract

This study tests a model of housing choice to cross-sectional data from the faculty at Middle Tennessee State University. The faculty participants include tenured, tenure-track, and non-tenured professors. The study employs econometric regression, which conditions household decisions based on a variety of factors. The variable of interest in this study is academic tenure. Like past studies, my results indicate that demographic and economic differences largely explain the housing tenures choices that individuals and families make. The results show that being single or Latino decreases the chance of homeownership, and these results conform with past research. Moreover, the regression shows that faculty who have achieved academic tenure are significantly more likely to own a home than those who have not achieved academic tenure. With the results, there is enough evidence to reject the null hypothesis and accept the alternative hypothesis that academic tenure does quantitatively influences housing choice.

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1. Introduction

Tenure is a continuously debated topic among university professors worldwide. This form of job security provides the foundational freedom that protects professors from being disciplined, dismissed or silenced when their work risks offending powerful interests in business or government (“Tenure”). Upon achievement, professors are afforded a level of trust in the eyes of academia and a level of safety regarding the academic research they may choose to pursue. This indefinite appointment of a professor not only ensures academic freedom, but also provides financial stability for a rewarding career. Most professors who formally apply for tenure do receive tenure¹.

The purpose of this study is to determine the effects of academic tenure on the choice between renting and owning a home by using data from a survey and econometric regression. Recent studies show that numerous demographic and economic variables are key elements in determining housing choice (Green et al, 2010; Ioannides et al 1996; Painter et al, 2000). The approach in this study is designed to examine academic tenure by including the significant determinants of housing choice seen in these previous studies. Research shows that financial considerations do play an important role in housing choice decisions (Schwab, 1982; Henderson and Ioannides). This study was undertaken to contribute to the knowledge of determinants of housing choice, academic tenure and its effects on

¹ Ambrose and Cropanzano, 2003 reported 83 percent of faculty who apply for tenure are successful in obtaining it.

financial decisions, and predictability in local housing markets where a university is the epicenter of the municipality.

The relationship between academic tenure and housing tenure is an important economic topic because economic reasoning suggests that the relationship has a significant impact on the community and surrounding area where the university is located. This effect could be even stronger in small college towns where the university is the main driving force of jobs and economic activity. For example, in a town where the university is the significant economic component, then a large hiring spree by the university could lead to increases in demand for real estate in the future. This knowledge is important for local governments, because it could assist in providing city and local services such as road, police, and fire protection. Local governments rely primarily on property taxes, so they should take this spike in homeownership into consideration.

In instances where the university is the center of gravity for an entire town, the prosperity and growth of the municipality relies on the educational institution. The university is the main source of jobs, especially those of high pay, and is also what draws the clear majority of people, mostly students, into the area. When a population is drawn to an area for one major economic component, many other secondary industries spin off as well. In a college town, these would consist mostly of service industries and labor-related jobs tending to this influx of people. Some common examples we might think of are entertainment facilities, restaurants, and grocery stores. As previously mentioned, professors and high-ranking employees of the university are a large source of cashflow that will feed and trickle down

through these industries. By gaining more knowledge about the spending habits, investments, and expenditures, especially housing choice, of these high-paid individuals, a local government might have more control and insights over the local community and therefore more control and power to influence the success and growth of the area.

There are many determining factors that play an important role in housing choice. The key elements that drive the decision of renting or owning are generally economic and demographic variables. Although these variables have been studied extensively, the analysis of academic tenure as a housing choice determinant is virtually untouched. This study will extend past research and current evaluating techniques to investigate the importance of academic tenure in housing choice decisions.

The null hypothesis of this study is that academic tenure has no effect on housing choice. Failing to reject the null hypothesis would provide the grounds for some startling results. With no connection or effect between academic tenure and housing tenure, we would be left with the surprising conclusion that people do not necessarily respond to job security. This would also suggest that people do not respond to incentives. In addition, it could potentially say something about people's level of risk aversion. One would think that a person would be more apt to invest long term in the choice of buying a residence once long-term job security has been achieved, keeping in mind that owning a home sacrifices mobility for control and potential financial gains.

On the other hand, given that tenure is rewarded at such high rates, it is conceivable that the null hypothesis will not be rejected. The idea is that if tenure is viewed as relatively certain, non-tenured academics may purchase a home given that their expectation of tenure is high. In total, regardless of which hypothesis is validated, the ultimate results of this are of interest to the academic research community, academic practitioners, and policy makers as it will confirm or deny, previously held notions of tenure.

2. Literature Review

In recent studies, academic tenure has had effects on coping responses and attitudes toward policy and work culture in a university (Ponjuan et al, 2011). Research also finds connections between child birth and financial decisions (Finkel et al, 1994). Furthermore, *The Review of Economics and Statistics* published an article asking whether tenure track professors are better teachers (Figlio et al, 2015). Most recently, there has been research on the perception of tenure processes and personal relationships from pre-tenured professors and professors who have successfully achieved tenure (Prottas et al, 2017).

Recent studies have witnessed widespread academic research on housing tenure, particularly on the factors and determinants that lead an individual or household to either rent or own their personal residence. In a study examining the structural estimation of residential mobility and housing tenure choice, variables such as job change, number of kids, wealth, marital status, liquidity and household head age are all significant in affecting housing choice (Ioannides et al, 1995). Other research examines the tax advantages of owning a home. This research has found drastic differences in housing choice based on variables including race, household size, marital status, sex of household head, income, and use cost of owning vs. renting (Green et al, 2010). Furthermore, current research uses data to assess the determinants of housing tenure choice among racial and ethnic groups. Race, ethnicity and immigrant status have important impacts on housing tenure choice (Painter et al, 2000).

2.1 Academic Tenure

Recent literature shows that academic tenure has impacts on student learning and how likely a student is to continue taking classes in a subject (Figlio et al, 2015). The authors find consistent evidence that students learn relatively more from contingent faculty than they do from tenured or tenure track faculty. The samples used in that study contain all freshmen at Northwestern University who entered between 2001 and 2008. Findings show that contingent professors are more likely to induce first-term students to take more classes in each subject than do tenured professors. These results are driven by the fact that “the bottom quarter of tenure track/tenured faculty has a lower ‘value add’ than their contingent counterparts” (Figlio et al, 2015). This study shows that academic tenure is an important factor when it comes to student learning and success.

The perceptions and commitment of faculty in the process of obtaining tenure is important. A study titled “Relationships among faculty perceptions of their tenure process and their commitment and engagement” aims to examine this phenomenon (Prattas et al, 2016). The findings show that there is a lack of clarity regarding the criteria and procedures utilized during the tenure decision process. Motivation and relationships begin to deteriorate when professors don’t understand the process or perceived the process as unfair. The results of this study show that “perceived justice is positively related to both affective organizational commitment and work engagement” (Prattas et al, 2016). There is also well-documented research on career stage differences in pre-tenure track faculty perceptions of professional and personal relationships with colleagues (Ponjuan et al, 2011). One

can begin to see how perceptions of the academic tenure process and achievement have effects on housing choice too.

Other influential studies connect academic tenure with childbirth and financial decisions. When attempting to gain full representation on the faculty of colleges and universities, women have faced widespread and well-documented difficulties. Women at nearly every university are underrepresented in tenured faculty positions and senior ranks. A study done on childbirth, tenure and promotion for women faculty shows that faculty members are in favor of liberal childbirth and infant care leave policies. Many of the faculty respondents were also in favor of stopping the tenure clock for a full year for a faculty member who takes an infant leave, but there is much debate upon this subject (Finkel et al, 1994).

The relationship of childbirth and academic tenure is important. Previous research shows that as many as one-fourth of women who earn a Ph.D. drop out of their profession or career path either permanently or temporarily to raise and maintain a family (Jessie Bernard,1964). Many of the earliest women faculty members who were successful had no children, and those who did have children had to set their careers aside early on in their lives to tend to the family (Solomon 1985). To achieve tenure, many women have had to put aside the role of bearing children and purposefully mitigate the awareness and engagement of all feminine responsibilities.

This previous literature on childbirth and tenure is important because it shows the significance of academic tenure and its connection to important financial decisions. If academic tenure has a large effect on childbirth, it is also likely to

influence housing choice as well. The decision between renting or buying a home has a significant impact on the immediate and long-term future for families and aspiring tenure-track faculty members.

2.2 Housing Tenure

One recent research study examines the potential effects of tax policy on housing tenure by employing a regression that utilizes Public Use Microsample Data from the US Census (Green et al, 2010). Findings show that tax policy has significant impacts on the housing choices of Americans and an even larger impact on those of the African or Hispanic race. This study examines the choice between mortgage interest deduction and a refundable mortgage interest tax credit. Results explain that people choose the most advantageous option based on their current housing scenario. The result is a 10% increase in homeownership rates for households with an income below \$40,000.

Most homeownership is currently subsidized through mortgage interest deduction, but widespread research shows that this form of subsidy is inefficient and ineffective. Low-income households receive less of the advantages than do high-income households because the reduction is based on marginal tax rate. Economists claim that this tax system is hindering the growth of our national economy because it promotes people to have too many resources invested in housing and not enough invested in factories and machinery (Poterba, 1992).

The home ownership rate of non-Hispanic whites is much higher than that of Hispanics and African Americans. The mortgage interest tax credit would work

better because it would distribute a larger portion of the home subsidy to lower income households (Green et al, 2010). Homeownership is not always appropriate for all households. Tax policy is important because it has the power to increase or decrease homeownership. Benefits of Mortgage interest deduction are highly concentrated in high income households (Green et al, 2010; Poterba, 1992).

Other previous research examines household mobility and the decision to rent or own (Ioannides et al, 1996). This study accounts for individual heterogeneity and uses dynamic discrete choice models that condition households' decisions on their circumstances at every point in time during the length of the survey. The survey employs a panel data set, and the findings show the important variables that have major effects on mobility and housing tenure. Key demographic, economic, and endowment elements are significant factors that determine tenure choice and household mobility. Households adjust their household stock in response to housing market conditions, and house price appreciation does not encourage renters to buy. Housing market appreciation was also found to induce changes in housing consumption for those who own but not those who rent. The study also rejects a previously held conclusion that transaction costs might be fixed. Many influential variables play a role in housing choice (Ioannides et al, 1996)

In a recent study, housing tenure choice among ethnic and racial groups is explored in the Las Angeles metropolitan area (Painter et al, 2000). While aggregated homeownership rates of Americans have increased during the time of their study, the rates have lagged for Latinos and Blacks. Like previous research, this study finds that endowment differences such as income, education and

immigrant status are big factors that cause the gap in homeownership. The study also analyzes the endowment-adjusted homeownership choice differential and concludes that the gap between Whites and Blacks is still significant. It is unsure whether this is because of restriction of access to financial instruments or because of other unknown causes (Painter et al, 2000).

Two aspects of this study make it different from past studies. The first is that the sample is stratified by race and ethnicity. This allows for the examination of the demographic and economic variables across different subgroups. The second difference is that this study utilizes a sample of recent movers rather than existing households (Painter et al, 2000). This is different from other research on the topic. The reason for this difference is that tenure decisions of recent movers more closely reflect equilibrium conditions and avoid the lagged effect of the other method. The results show the large importance of race and immigrant status on housing choice decisions. Endowment differences are important, but some races are more sensitive to income changes than others. Asians are just as likely to be homeowners as Whites, and immigrant status did not cause lower homeownership rates for Asians. Homeownership differences between Whites and Latinos can be fully explained by the endowment factors of income, education, and immigration status (Painter et al, 2000).

3. The Survey and Data

3.1 Survey

The purpose of this survey is to test the hypothesis that academic tenure quantitatively influences housing choice. The minimum items necessary for the survey are questions regarding academic tenure and housing choice. The academic tenure survey section (block) includes questions about tenure status, hire date at MTSU, and college of association. Housing choice questions include rent vs. buy, number of moves, description of the move, and number of homes owned.

With these two sections laid out the direction of the study becomes evident. Academic tenure is the treatment of this research much like a new medicine would be the treatment in a medical research study. The response, or outcome, from the treatment is either rent or own. Housing choice becomes the dependent variable of academic tenure. Holding other factors constant, academic tenure does appear to influence the housing choice of university faculty.

To produce accurate and credible results, the survey cannot be limited to only academic tenure and housing tenure questions. Including variables that have been tested in the past will allow the results of this study to be compared with the results of past research papers. If the results are consistent, then it can be assumed that this model is internally consistent and that it will produce accurate results. Important variables from research done on structural estimation of residential mobility and housing tenure choice are: age of household head, annual income, marital status, age, and employment status. This study includes all these variables.

Past research explains that “a household makes the choice of whether to rent or own on the basis of comparing relative benefits and costs” (Ioannides et al, 1996).

To fully assess academic tenure, this survey drills down into numerous variables involving work experience and education. An issue was discovered after a preliminary survey of a few faculty members around the Jones College of Business at MTSU. The survey did not account for the story and past events that led to the arrival of each faculty member. Some graduated from their terminal degree and came straight to MTSU. Others worked and researched at previous universities before arriving at their current position. Information accounting for faculty members who worked in the industry before heading into academia must be captured as well. Academic literature has recognized the importance of education when it comes to financial decisions, and recent research shows that when non-White racial groups have the education and income level of whites, they show equal or higher homeownership rates (Painter et al, 2000). To capture the importance of education and work experience, questions regarding previous employment, previous tenure track positions, and year of terminal degree were included.

In a recent literature review, the variables of race, immigrant status, ethnicity, and number of working people in a household were all found to be important factors determining housing choice (Painter et al, 2000). These same endowment variables have also been recognized in recent housing literature regarding homeownership incentives and taxes (Green et al, 2010). Together, these research studies indicate that endowment differences largely explain the homeownership gap between various ethnicities and racial groups. Additional

significant variables include gender and number of kids in the household, but one last key component of the demographics section is a question regarding one's connection to the Middle Tennessee area. The survey asks whether the respondent or the respondent's family was originally from the region. If one has ties to the Middle Tennessee region, he or she might be more comfortable making the decision to own a home. The importance of each variable is recognized, and they have all been included in the survey.

Reverse causality poses a problem for our analysis. A detected correlation between academic tenure and housing tenure would not indicate the direction of causation. It would only indicate that a relationship exists. To deal with this problem, the survey asks questions that attempt to get at the root of this causation. There are many scenarios and various factors that play a part in housing choice, and they all need to be taken into consideration to obtain accurate results from the study. Number of publications is utilized for this purpose because it explains academic tenure but not housing choice. A tenure-track faculty must achieve a desired amount of publications to become eligible and accepted as a tenured faculty member. A large amount of quality publications would not explain a faculty member's decision to rent or own though. Including publications mitigates the risk of reverse causality.²

²The question used to record results for publications may not have been optimal for everyone. Tenured professors were asked "At time of tenure, how many published refereed journal articles, book chapters, and/or creative works did you have?" The question did not consider the number of full books one may or may not have written. Colleges and tenure boards do not always demand the same criteria for publications. In a future study, the question on publications would be created to accurately account for professors and faculty in each college and their possible requirements to have full book publications.

Other reverse causality signals arise from pre-tenure track faculty perceptions of the tenure process and of professional and personal relationships with colleagues around them. Previous literature found a lack of clarity regarding tenure and found that perceived justice of the tenure process and organization positively related to both engagement and commitment to the organization (Protta et al, 2107). We must examine the perception and confidence of achieving tenure to account for this possible issue. The survey asks self-evaluation questions regarding one's teaching abilities and accounts for the college with which each participant is affiliated. The survey needs to account for the possible reverse causality arising from the idea that owning a home might show and cause commitment and therefore lead to academic tenure.

Qualtrics Software was used to build, maintain, distribute, and record the survey and its results. *Qualtrics*, the creator of *Qualtrics Software*, is a privately held company that specializes in experience management. This software is the gold standard and state of the art when it comes to surveys, and it employs key metrics for the collections and analysis of data using an online platform. *Qualtrics* allowed us to distribute the survey anonymously through email while maintaining the confidentiality of the participants. To gain access to this software, I had to submit a request through the computer lab of the Jones College of Business and obtain permission and login credentials. The IRB consent form and a verbal instructions video were embedded on the first page of the survey.

The detailed survey for this study was built with questions from an array of topics and subjects were included to make sure the hypothesis was tested with a

model that is consistent with past studies and research. The *Qualtrics* distribution platform allowed the survey to be anonymously sent to over 900 faculty members throughout eight colleges on campus. Although many results could have been obtained through public record, the survey allowed us to simultaneously gather quantitative and qualitative data regarding academic tenure and housing tenure in an efficient manner.

The email addresses were gathered from the department faculty pages of each MTSU college on campus. We made sure to only include faculty members who were full time professors, associate professors, assistant professors, contingent professors, and lecturers; Some of these faculty members also had positions such as chair of the department or dean of the college. The laborious task of going through each faculty page to gain contact information was conducted to ensure that we did not include non-teaching faculty. We did not want secretaries, assistants, or other university staff.

Once all the email addresses were accumulated and submitted as a contact list in *Qualtrics*, the survey was officially distributed. The reply email was linked to my MTSU email, and the replies quickly mounded. The people who replied ranged from those excited about my work and results to those who respectfully decided not to participate. One respondent described her past as an administrator and explained that her response might be one of interest.

This five-minute survey asked the participants questions from one of four categories. The first category asks questions about standard demographics such as age, marital status, and race. The second category asks questions on work

experience such as how long they have been employed at MTSU. The third category asks questions on tenure experience such as do they have tenure or not. Finally, the survey asks questions on housing choice such as do they own a home.

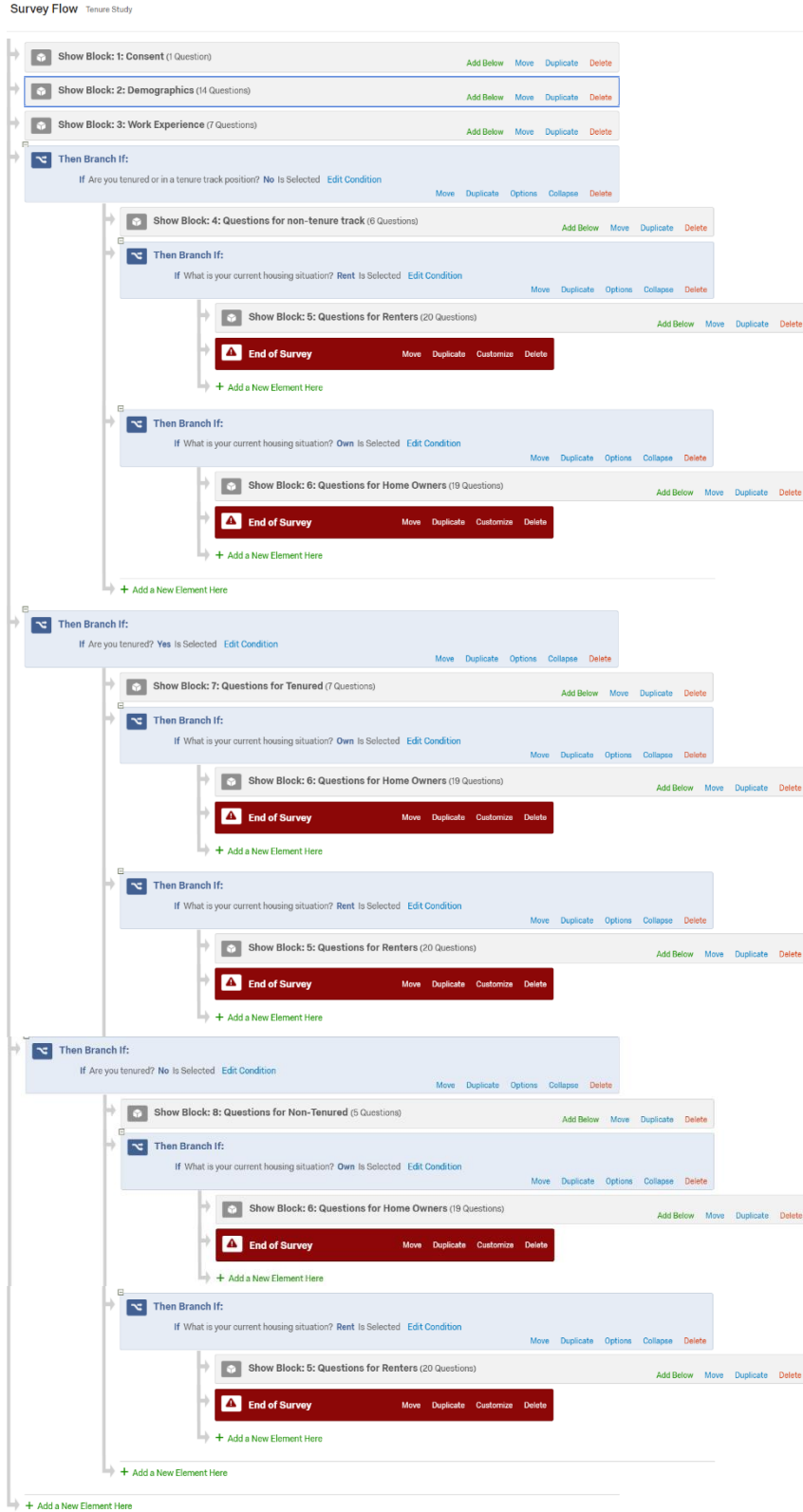
There are more than four blocks within the survey, but there are only four paths that one can follow. For example, a participant who answers yes as a tenured professor will not get the same questions as another participant who answers yes as a non-tenured professor. These split pathways occur at a few other points in the survey. A major split occurs at the housing choice question: “What is your current housing situation?” One may choose either “Rent” or “Own”.

Figure 1 below displays the flow of the *Qualtrics* survey. The first block is the consent page that immediately displays the IRB consent form, the verbal instruction video, and a question requiring participants to be eighteen years or older. The second block contains questions on demographics such as date of birth, gender, income, race, and marital status. The third block contains questions on work experience such as year hired at MTSU, tenure status, and college of association.

After the third block, the survey flow becomes more interesting and complicated. A negative answer to the tenured or tenure track questions moves participants to block four. Then the participant is sent to either block five if “Rent” is chosen or block six if “Own” is chosen. If at block three a participant answers positively to the tenured or tenured-track question, then he or she proceeds to block seven and then back to block four or five depending the answer to the current housing situation question. If in block three a participant answers positively to the tenured or tenure track question, and then negatively to the tenured question, then

he or she moves on to block eight that contains questions for non-tenured participants. Then, just as the other survey pathways, the participant's current housing situation determines if he or she moves to block five for renters or block six for owners.

Figure 1: Survey Flow



Meeting the requirements and regulations for safe research on human subjects was a priority in this study. Institute Review Board (IRB) approval from Middle Tennessee State University was necessary before making distributions of the *Qualtrics* survey. The process to get a research study IRB approved consists of many steps that must be completed accurately and in the right order. MTSU has a great track record as a research institution, and the integrity and wellbeing of its students and faculty must be upheld at all costs.

Each of the investigators in the research study completed all required research-specific CITI training modules. The modules included the human research, social and behavioral research, and 1-basic courses. In completing this training, one reads *The Belmont Report* and learns the three key principles for research with human subjects: respect for persons (autonomy), beneficence, and justice. This lengthy process was an important learning lesson for the researchers of the study. Once the training was complete, the application for exempt review was finished and submitted. The exempt review was possible because the survey withheld all personal information and was sent out and recorded anonymously.

Upon taking the survey, each participant immediately sees the official IRB consent form followed by a video that explains the procedures to be conducted verbally. The participant is asked if they are eighteen years or older, and with the help of *Qualtrics* survey flow, only the answer “yes” allows a participant to proceed to the survey. Failure to follow instructions or an answer of “no” to that question would immediately end the survey for the participant. Through this preliminary stage of the survey, it is confirmed that each continuing participant has understood

the researcher's disclosures, the questions be asked, and what would be done with the information.

This study poses minimal risk to the participants because no identifiable information is present. Additionally, we did not ask any personal questions that would harm the participants such as questions that make them recall physical assaults. Rather these questions were designed to elicit whether the participants have academic tenure and if they own a home. The benefits are to test my hypothesis that there is a link between academic tenure and housing choice. It was explained to the participants that positive results would tell us that people respond to job security and incentives. Positive results could also help local governments make decisions in the real estate markets. This information is relevant and useful for professors, universities, and local municipalities.

3.2 Data

The responses to the survey exceeded expectations and provided sufficient data for analysis. *Qualtrics* was used to collect and record responses. Over 900 MTSU faculty were asked to respond by email, and after the survey was closed, 231 responses were recorded. The responses slowed down close to 160, but after a reminder email, a second wave of responses occurred. At the end of the collection period, the data was exported in a CSV file to *Excel*. The downloaded response data was raw and needed to be cleaned before analysis.

First, the data needed to be converted into binary code and dates. On sheet two, the data was transposed, and only the categories needed for the regression were

kept. The recorded variables were age, gender, race, marital status, family from Tennessee, number of children, age of oldest child, private experience, academic experience, MTSU hire date, tenure track, tenure, MTSU tenure date, college, teaching self-evaluation, publications, ownership, and income level. The first category of each variable group was not recorded. For example, the White race was not needed because if we had all the other races it would be repetitive. At this point each participant was given either a 1 or a 0 for each variable. A number was given for the few quantitative variables, such as age and number of children.

The second round of data cleaning separated the responses by tenure status. In this study, academic tenure is the treatment and housing choice is the outcome. All the responses that were not tenure track were thrown out because they could not receive the treatment. The non-tenure track employees were kept as a reference point for future analysis but were not included in the regression. Finally, we took out all responses that weren't complete because they offered no information that can improve the statistical analysis.

Table 1: Tenure vs. Non-Tenure Homeownership Rates

	Own	Rent	Total
<i>Tenure</i>	136	5	141
<i>Non-Tenure</i>	35	14	49
<i>Total</i>	171	19	190

Figure 2: Tenure vs. Non-Tenure Homeownership Percentages

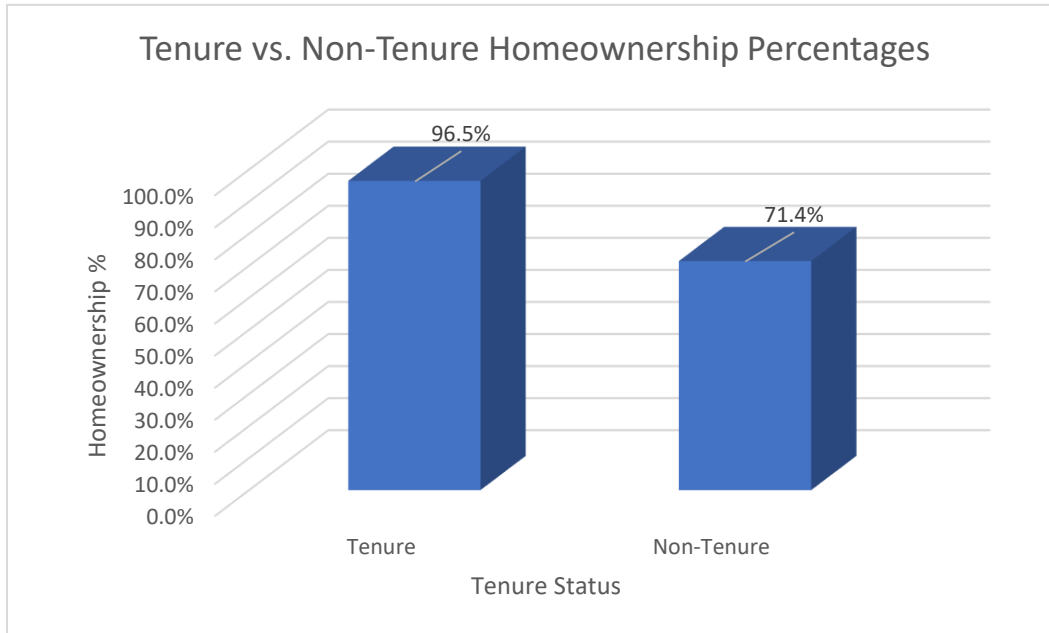


Table 1 shows that of the 190 clean observations, 90% own a home. Figure 2 shows that faculty with tenure are 96.5% owners, whereas the non-tenured faculty are 71.4% owners. This suggests that, in an informal manner, the null hypothesis that tenure effects housing choice is a viable hypothesis.

Table 2: Survey Results

Variable	Value
Housing (Own = 1)	0.9
Tenure (Tenure =1)	0.742105263
Age (Avg.)	53.43157895
Gender (Female = 1)	0.473684211
Number of Children (Avg.)	1.473684211
Family TN (Avg.)	0.184210526
Private Experience (Avg.)	6.489473684
Academic Experience (Avg.)	19.51052632
Married1 (Widowed)	0
Married2 (Single)	0.13157895
Married3 (Divorced)	0.11052632
Race 1 (White, Hispanic)	0.036842105
Race 2 (Black)	0.031578947
Race 3 (Asian)	0.010526316
Race 4 (Latino)	0.005263158
Race 5 (Native American)	0
Race 6 (Other)	0.005263158
College 1 (Behavioral and Health Sciences)	0.142105263
College 2 (Business (Jones))	0.215789474
College 3 (Education)	0.042105263
College 4 (Liberal Arts)	0.294736842
College 5 (Media and Entertainment)	0.084210526
College 6 (University College)	0.005263158
College 7 (Honors College)	0.005263158
income1 (25,000-50,000)	0.021052632
income2 (50,000-75,000)	0.142105263
income3 (75,000-100,000)	0.231578947
income4 (100,000-125,000)	0.163157895
income5 (125,000-150,000)	0.115789474
income6 (150,000-175,000)	0.094736842
income7 (175,000-200,000)	0.1
income8 (200,000-225,000)	0.063157895
income9 (225,000-250,000)	0.015789474
income10 (250,000-275,000)	0.010526316
income11 (275,000-300,000)	0.005263158
income12 (300,000-325,000)	0
income13 (325,000-350,000)	0.015789474
income14 (350,000-375,000)	0.005263158
income15 (375,000-400,000)	0
income16 (Greater than 400,000)	0.015789474

Table 2 shows that the respondents are diverse with respect to gender. Gender is 1 if female and 0 otherwise. The table shows that approximately 47% of the respondents are female and approximately 53% are male. This suggests that the sample set is representative of gender. The average age is 53, but this is expected at an academic institution.

Marital status variation is displayed in Table 2 as well. As shown, 0% are widowed, 13.2% are single, and 11.1% are divorced. In the raw data, there were a few respondents who were widowed, but they did not fully complete the survey. These responses offer no additional information that can improve the statistical analysis. The remainder of the respondents are all married, and accounted for approximately 75.8% sample. See Figure 3 for the marital status distribution.

Figure 3: Marital Status

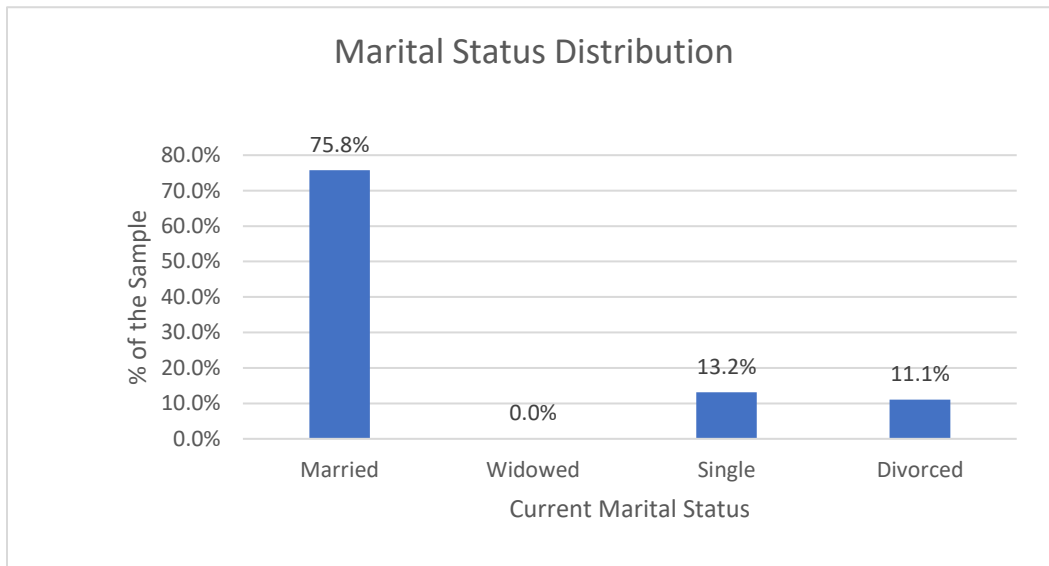


Table 2 shows that most of the participants in the study are White, Non-Hispanic. The remaining races accounted for less than 9% of the sample of 190 respondents.

3.7% of the sample are White, Hispanic, 3.2% are Black, 1.1% are Asian, .05% are Latino, 0% are Native American, and .05% are Other. This leaves White to account for 91.1% of the race distribution. It is possible that some Non-White participants felt uncomfortable completing the survey because of possible loss of anonymity. See Figure 4 below for the sample race distribution of MTSU.

Figure 4: Race Distribution

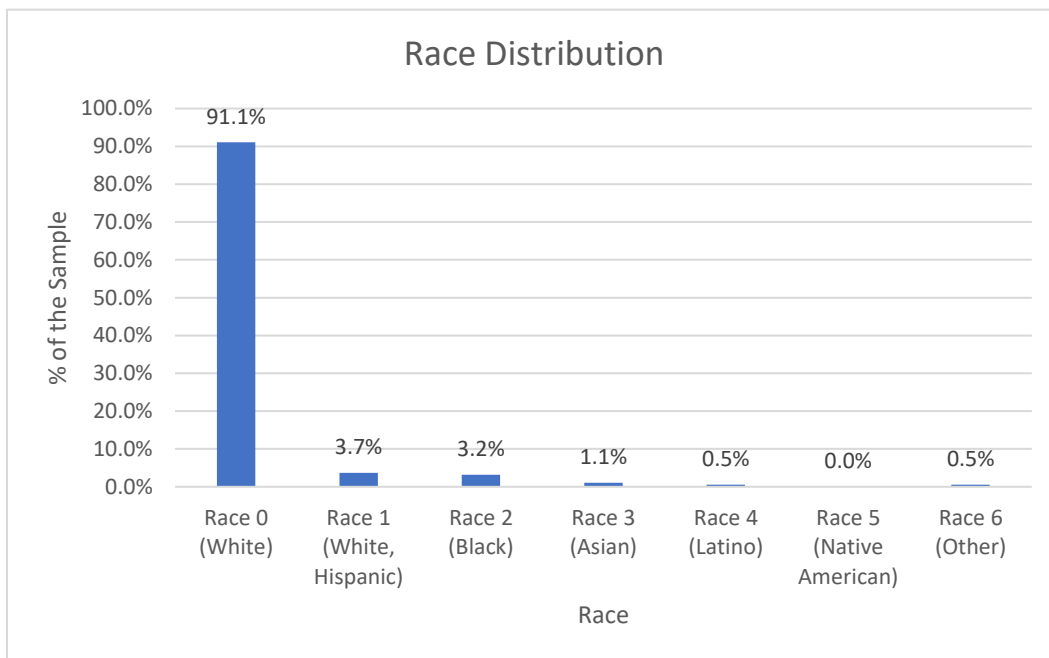
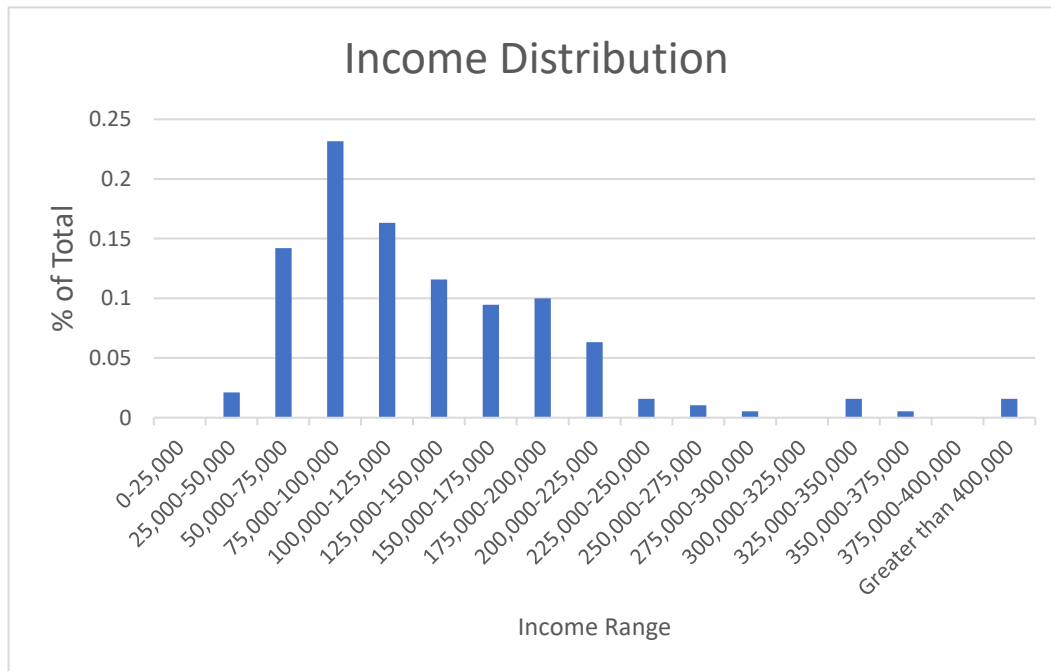


Table 2 additionally shows the number of participants and/or their spouses who are from the Middle Tennessee region. It is plausible to think that a participant with ties to Middle Tennessee is more likely to choose homeownership. Surprisingly only 18.4% are from the region. This truly suggests that MTSU is a national research institution.

Other interesting variables featured in Table 2 are private experience and academic experience. Private experience is the number of years between achieving an undergraduate degree and a terminal degree. The participants have an average of 6.49 years of private experience. Academic experience is the number of years since the completion of one's terminal degree. This is the number of years a participant has spent in academia. The respondents have an average of 19.51 years of academic experience. It is plausible to think that one with more private experience and academic experience is more likely to choose homeownership.

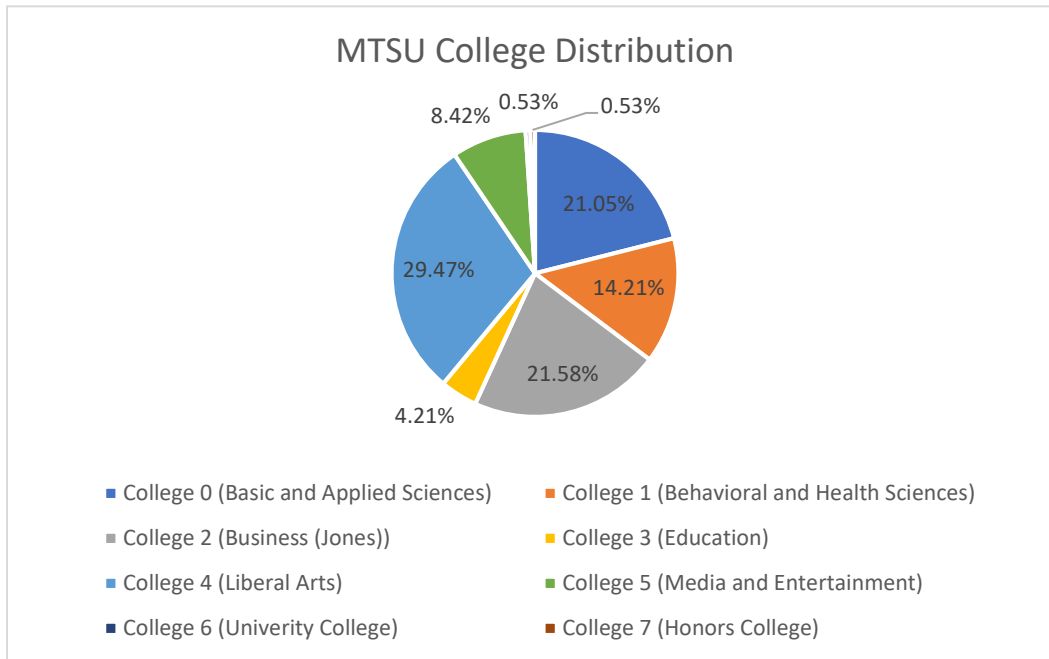
The income distribution for the sample is diverse. It is recorded as the current household annual income of the participant. Table 2 displays the numerical income results and figure 5 below is a graph of the income distribution. Most household incomes of the participants are between \$50,000 - \$225,000. A few outliers were above and below this range.

Figure 5: Income Distribution



232 participant responses were recorded from the survey. Of these there were 190 responses that were complete and usable. Table 2 shows the diversity of the sample used for analysis. The responses came from faculty in nearly every college on campus, including Basic and Applied Sciences, Behavioral and Health Sciences, Business (Jones), Education, Liberal Arts, Media and Entertainment, University College, and the Honors College. The number of respondents who claimed the Honors College is low because most are also affiliated with another college. Figure 6, shown below, is a pie chart displaying the MTSU College distribution of the participants.

Figure 6: MTSU College Distribution



The survey was sent out and released college by college, and the response window was twelve days. Surprisingly, many participants saw the email and immediately responded within the first thirty minutes. The responses continued to flow in over the next few days until they finally receded after day five. An email was then sent out to thank those who responded and remind those who had yet to complete the survey. The same email was sent out to everyone to ensure the anonymity of this research study. A second wave of responses resulted from this email. The data then was collected on day twelve. See Figure 7 below for the twelve-day trend of the responses.

Figure 7: Response Trend



Table 2 gives ample evidence that the sample of responses received is representative. 190 clean responses are enough to account for most of diversity among MTSU faculty members. One naïve sample can never provide perfect representation of population, though. We would have had a problem if only tenured faculty or only non-tenured faculty responded, but this was not the case. We also would have had a problem if only renters or only buyers responded to the survey, but this was not the case either.

4. The Econometric Model

The regression equation specified is:

$$\begin{aligned} \text{Own} = & a_0 + a_1 * \text{age} + a_2 * \text{gender} + a_3 * \text{race1} + a_4 * \text{race2} \\ & + a_5 * \text{race3} + a_6 * \text{race4} + a_7 * \text{race6} + a_8 * \text{married2} \\ & + a_9 * \text{married3} + a_{10} * \text{familyTN} + a_{11} * \text{children} \\ & + a_{12} * \text{privateexperience} + a_{13} * \text{income1} + a_{14} * \text{income2} \\ & + a_{15} * \text{income3} + a_{16} * \text{income4} + a_{17} * \text{income5} + a_{18} * \text{income6} \\ & + a_{19} * \text{income7} + a_{20} * \text{income8} + a_{21} * \text{income9} + a_{22} * \text{income10} \\ & + a_{23} * \text{income11} + a_{24} * \text{income13} + a_{25} * \text{income14} + a_{26} * \text{Tenure} + \text{error term} \end{aligned}$$

where own is 1 if the household is an owner and 0 otherwise. The variable age is the age of the respondent and gender is 1 if female and 0 otherwise. The variables race1 – race6 are 1 if the respondent is White-Hispanic, Black, Asian, Latino, Native American, Other, respectively. The variables married2 and married3 are 1 if the respondent is single or divorced, respectively. FamilyTN is 1 if the respondent or the respondent’s spouse is originally from the Middle Tennessee region and 0 if otherwise. The children variable is the number of children the respondent has, and private experience is the number of years of private experience the respondent had between achieving an undergraduate degree and beginning his or her terminal degree. The variables income1-income14 are \$25,000 household income ranges beginning with \$0 - \$25,000 and ending with Greater than \$400,000. Finally, the tenure variable is the tenure status of the individual. The participant is 1 if tenured and 0 if otherwise.

The main variable of interest is the tenure variable. The expectation is that tenure should have a positive impact on owning a home. Thus, the coefficient associated with tenure is expected to be positive. As seen in previous literature, it

is also expected that the Latino race has a negative impact on owning a home, therefore making the coefficient associated with the Latino race negative (Painter et al, 2000). Other research shows that marriage usually precedes homeownership, so the coefficient associated with single, married2, should be negative (Green et al, 2010).

The variable determining whether the respondent or the respondent's spouse is from the Middle Tennessee region is expected to have an impact on housing choice. Thus, the coefficient associated with familyTN is expected to be positive. The final variable of interest included in previous research is income. It is expected that the higher income ranges should have an increasing positive impact on home ownership (Ioannides et al, 1996). The coefficients associated with income13 and income14 are expected to be more positive than coefficients associated with income1 and income2.

5. The Results

The regression results that are presented in Table 3 show that academic tenure has a positive effect on homeownership. Specifically, tenure's estimated coefficient is .1917 which indicates that academic tenure increases the probability of homeownership by 19.17%. Additionally, the low P value of .001 is lower than the standard .05 critical level that separates statistically significant variables from those that aren't. In total, the results show that academic tenure is a statistically and positively important determinant of housing choice. Now housing choice can be added to the growing list of things that academic tenure affects like childbirth, teaching performance, and organizational commitment.

Table 3 also shows some expected results. Latino race, as denoted by race 4, has a negative coefficient value. The coefficient is $-.7805$, and this shows that Latinos are 78.05% less likely to own a home than White non-Hispanic faculty. The low P-value of .003 indicates the regression coefficient is statistically different from zero. This result is expected because previous studies have shown that Latinos are more likely to rent than Whites (Painter et al, 2000).

Table 3 shows some conforming results for marital status. The literature frequently finds that individuals who are single are more likely to rent than those who are married (Ioannides et al, 1996; Green et al, 2010). In Table 3, the variable `married2`, representing single marital status, has a negative coefficient value. The coefficient value is $-.1732$, and this means that single participants are 17.32% less likely to own a home. The P-value of .01 is less than .05, and therefore the

regression coefficient for married2 is statistically different than zero. These results build credibility for the model because they are consistent with literature review.

Some unexpected results are seen in Table 3 as well. Income, as defined by the fourteen income ranges, is statistically insignificant. This is because all the P-values are greater than .05. This is surprising because previous research shows that income is a determining factor of housing choice.

Another surprising result seen in Table 3 is the P-value for familyTN. The P-value for familyTN is .503 and is insignificant in this model because it is greater than the chosen confidence level of .05. This means that family ties to the Middle Tennessee region do not have a statistically significant effect on housing choice of MTSU faculty. Table 2 shows that only 19.4% of the participants and/or the participant's spouses have ties to the Middle Tennessee region.

Table 3 shows that both race 4 (Latino) and married 2 (single) decrease the probability of owning a home. Other studies find similar results for these variables (Ioannides et al, 1996; Green et al, 2010; Henderson et al, 1983; Painter 2010). This suggests that the regression is internally consistent.

The R-Sq value is 41.1 and this means that the regression model explains 41.1% of the variation in home ownership. Having such a high R-Sq value means the model is a success. A model is rarely perfect. WEcannot possibly account for every individual preference, such as certain individuals not wanting to own a home because they don't like maintenance. There are many factors involved with

financial decision making that results from one's past life experiences and personal preferences.

Table 3: Regression Results

Predictor	Coef	SE Coef	T	P	VIF
Constant	0.6239	0.1975	3.16	0.002	
age	0.002883	0.002487	1.16	0.248	2.226
gender	0.02559	0.03924	0.65	0.515	1.18
race1	-0.1431	0.1017	-1.41	0.161	1.128
race2	-0.0486	0.1079	-0.45	0.653	1.095
race3	-0.0548	0.1849	-0.3	0.767	1.095
race4	-0.7805	0.2605	-3	0.003	1.092
race6	-0.0042	0.2617	-0.02	0.987	1.102
married2	-0.17322	0.06646	-2.61	0.01	1.552
married3	-0.06689	0.0669	-1	0.319	1.353
familyTN	0.035	0.05213	0.67	0.503	1.256
children	0.01455	0.01641	0.89	0.377	1.497
privateexperience	0.000574	0.003225	0.18	0.859	1.475
income1	-0.4335	0.2028	-2.14	0.034	2.607
income2	-0.0183	0.1636	-0.11	0.911	10.037
income3	-0.0339	0.1567	-0.22	0.829	13.441
income4	-0.0211	0.1587	-0.13	0.895	10.573
income5	0.0302	0.1626	0.19	0.853	8.323
income6	-0.0156	0.1613	-0.1	0.923	6.861
income7	0.067	0.1588	0.42	0.674	6.979
income8	0.0101	0.1695	0.06	0.953	5.225
income9	0.0368	0.2129	0.17	0.863	2.167
income10	0.2719	0.2429	1.12	0.265	1.89
income11	-0.0632	0.2913	-0.22	0.829	1.366
income13	-0.7294	0.208	-3.51	0.001	2.067
income14	-0.0387	0.2909	-0.13	0.894	1.362
tenure	0.19171	0.05798	3.31	0.001	1.978

As stated in the introduction of this research, it may be conceivable that tenure track professors purchase homes to signal commitment to the department. If

this is the case, purchasing a home may influence tenure. In the econometric literature, this is called simultaneity (Angrist et al, 2009). It is well known that simultaneity can lead to biased estimation of results.

To account for simultaneity and thus mitigate any biases, we now conduct a procedure recommended by Angrist et al (2009) where one makes a prediction for tenure using variables that are correlated with tenure but not correlated with the choice of purchasing a home. The variables chosen for this procedure are publications and college affiliation of the faculty member. Table 4 presents the results of this regression.

Table 4: Prediction Regression for Tenure

Predictor	Coef	SE Coef	T	P	VIF
<i>Constant</i>	0.54941	0.08062	6.81	0	
<i>publications</i>	0.012514	0.002416	5.18	0	1.066
<i>college1</i>	-0.1186	0.1021	-1.16	0.247	1.451
<i>college2</i>	-0.04509	0.09077	-0.5	0.62	1.592
<i>college3</i>	-0.2496	0.1583	-1.58	0.117	1.154
<i>college4</i>	0.0888	0.08604	1.03	0.303	1.757
<i>college5</i>	-0.0106	0.1209	-0.09	0.93	1.287
<i>college6</i>	-0.662	0.4139	-1.6	0.111	1.024
<i>college7</i>	-0.0625	0.4161	-0.15	0.881	1.035

Table 4 shows that the P-value for publications is lower than .05 and thus is a significant determinant of tenure. As expected the coefficient of publications is positive. One more publication by a faculty member will lead to .0125 probability increase in tenure. Interestingly, the coefficients on the college variables are insignificant suggesting that not a determinant of tenure.

The second part of the correction procedure would be to use the predicted value of tenure as an explanatory variable for homeownership in lieu of the actual tenure variable. The predicted variable is only from variables (i.e. publications) that are not related to homeownership but are related to tenure.

Many of the income and race variables have few respondents. To correct for this possible problem, the income variables were grouped into five groups from the 16 original groups. Additionally, the race variables were grouped into two groups from the six original groups. The final regression results are given in Table 5.

Table 5: Final Model

Predictor	Coef	SE Coef	T	P	VIF
<i>Constant</i>	0.3239	0.1246	2.6	0.01	
<i>age</i>	0.006481	0.002223	2.92	0.004	1.487
<i>gender</i>	0.06096	0.04194	1.45	0.148	1.127
<i>NONCAUC</i>	-0.13894	0.07183	-1.93	0.055	1.08
<i>married2</i>	-0.15578	0.06984	-2.23	0.027	1.432
<i>married3</i>	-0.01242	0.06953	-0.18	0.858	1.222
<i>familyTN</i>	0.05147	0.05441	0.95	0.345	1.143
<i>children</i>	0.02113	0.01718	1.23	0.22	1.371
<i>privateexperience</i>	0.000522	0.003349	0.16	0.876	1.33
<i>incomeB</i>	0.04211	0.05001	0.84	0.401	1.504
<i>incomeC</i>	0.09763	0.06194	1.58	0.117	1.449
<i>incomeD</i>	0.2122	0.1637	1.3	0.197	1.07
<i>incomeE</i>	-0.27	0.1161	-2.33	0.021	1.228
<i>Pred. Tenure</i>	0.2217	0.127	1.75	0.082	1.361

Table 5 shows that the predicted tenure is significant at the 10% level as shown by its P-value of .082. The estimated coefficient, as expected, is positive with a value of .2217. This suggests that the appointment of tenure will increase the probability of owning a home by roughly 22%. Thus, the results of Table 3 are confirmed even while correcting for simultaneity. As before, age is still positive and significant. Finally, the variable that represents non-Caucasians is negative and significant which indicates that race groups other than Caucasians are less likely to own. This confirms past literature such as the results found in Painter et al (2010).

6. Conclusion

In this paper, we develop a model of housing tenure choice and compare my results with those of past research studies. The purpose of this study is to examine the effects of academic tenure on housing choice. We use this model to employ a regression analysis on a diverse sample of Middle Tennessee State University faculty. The data was gathered and recorded using email and the online survey platform called *Qualtrics*. The model includes a variety of demographic, economic, and endowment variables, but it cannot account for all the determinants of housing choice that could arise from personal preferences and experience. The regression shows that the model explains 41.1% of the variation in homeownership, and we demonstrate that my model produces similar results that have been seen in past research on housing choice determinants. These similar results suggest that the model is internally consistent.

First, we find that faculty who are younger and those who are non-Caucasian are more likely to rent, and these results agree with past research (Ioannides et al 1996, Green et al 2010, Henderson et al 1983, and Painter et al 2010). Some surprising results were that income, Tennessee region family origins and college affiliation were not statistically significant in determining housing choice. This might be because the sample only contains faculty on a university campus. Most importantly, the model concludes that academic tenure is a statistically and positively important determinant of housing choice. With this we can confidently reject the null hypothesis and accept the alternative hypothesis that academic tenure quantitatively influences housing choice.

Several extensions of this research are possible. The first of these would be to apply this model to various other universities that vary in size and culture. Second, the model and survey could be redesigned to more accurately account for income and its effect on housing tenure choice. One should expect income to influence housing choice, but my model found income to be statistically insignificant. Third, the publications variable should include the number of books completed. It would be interesting to compare the results of future research on academic tenure and housing choice with the findings of this research.

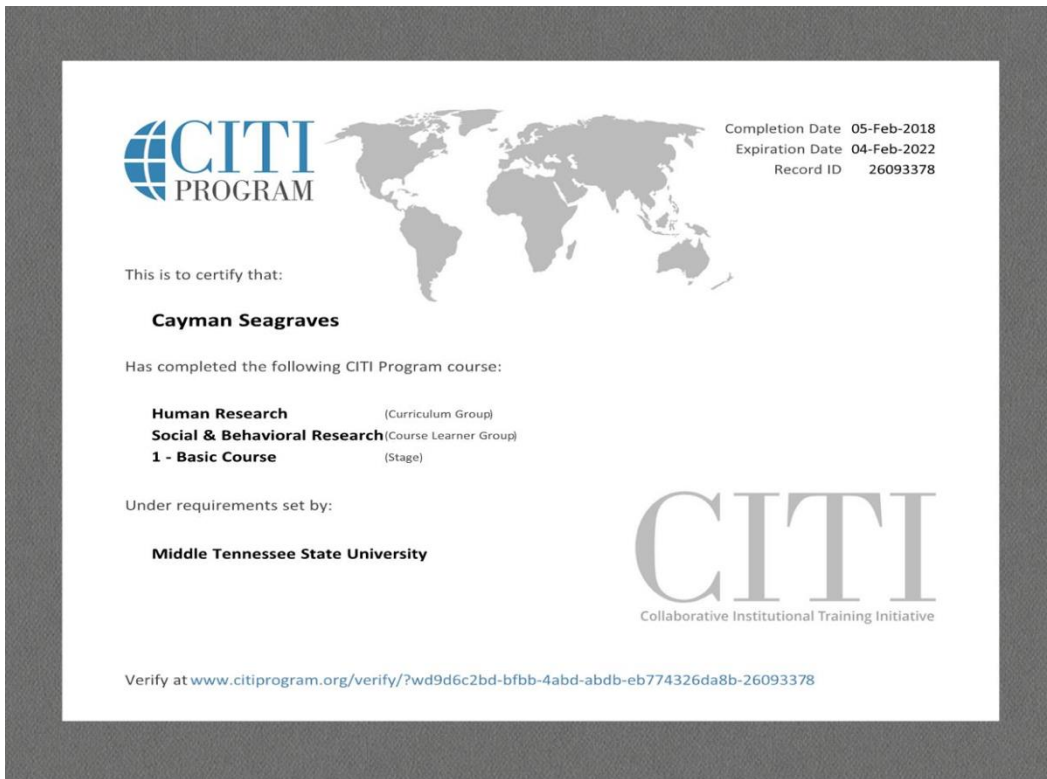
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Appendices

Appendix A: CITI Training Certificate



Appendix B: IRB Exemption Determination Notice

**IRB
INSTITUTIONAL REVIEW BOARD**
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129



IRBN007 – EXEMPTION DETERMINATION NOTICE

Monday, March 12, 2018

Investigator(s): Cayman Seagraves; Stuart Fowler
Investigator(s) Email(s): cns4t@mtmail.mtsu.edu; stuart.fowler@mtsu.edu
Department: Economics and Finance

Study Title: Academic Tenure and Housing Choice
Protocol ID: **18-1176**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category (2) *Educational Tests*. A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	EXEMPT from further IRB review***
Date of expiration	NOT APPLICABLE
Participant Size	100 [One Hundred]
Participant Pool	Adults 18+

Mandatory Restrictions	1. Participants must be age 18+ 2. Informed consent must be obtained 3. Identifying data may not be collected	
Additional Restrictions	NONE	
Comments	NONE	
Amendments	Date	Post-Approval Amendments NONE

***This exemption determination only allows above defined protocol from further IRB review such as continuing review. However, the following post-approval requirements still apply:

- Addition/removal of subject population should not be implemented without IRB approval
- Change in investigators must be notified and approved
- Modifications to procedures must be clearly articulated in an addendum request and the proposed changes must not be incorporated without an approval
- Be advised that the proposed change must comply within the requirements for exemption
- Changes to the research location must be approved – appropriate permission letter(s) from external institutions must accompany the addendum request form
- Changes to funding source must be notified via email (irb_submissions@mtsu.edu)
- The exemption does not expire as long as the protocol is in good standing

IRBN007 Version 1.2 Revision Date 03.08.2016
Institutional Review Board Office of Compliance Middle Tennessee
State University

- Project completion must be reported via email (irb_submissions@mtsu.edu)
- Research-related injuries to the participants and other events must be reported within 48 hours of such events to compliance@mtsu.edu

The current MTSU IRB policies allow the investigators to make the following types of changes to this protocol without the need to report to the Office of Compliance, as long as the proposed changes do not result in the cancellation of the protocols eligibility for exemption:

- Editorial and minor administrative revisions to the consent form or other study documents

- Increasing/decreasing the participant size

The investigator(s) indicated in this notification should read and abide by all applicable postapproval conditions imposed with this approval. [Refer to the post-approval guidelines posted in the MTSU IRB's website](#). Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident.

All of the research-related records, which include signed consent forms, current & past investigator information, training certificates, survey instruments and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board

Middle Tennessee State University

Quick Links:

[Click here](#) for a detailed list of the post-approval responsibilities. More information on exempt procedures can be found [here](#).

IRBN007 – Exemption Determination Notice

Page 2 of 2