

# A Re-Examination Of The Property Tax Burden

Mary Beal-Hodges, University of North Florida, USA

Mary O. Borg, University of North Florida, USA

Harriet A. Stranahan, University of North Florida, USA

## ABSTRACT

*The property tax is the major source of own revenues for most city and county governments, yet economists have had very little definitive information to share with policymakers about the burden that it imposes on local citizens. This is because most previous studies of property taxes have used a Suits index analysis which does not allow for any independent variables other than income. We estimate a regression model using current income and various socio-demographic variables in order to take a more fine grained approach. We use data obtained from the Florida Department of Revenue from 326,976 single family homeowners in four northeast Florida counties geo-coded with the 2010 block group census data. We find that the property tax is regressive with respect to current income. With respect to demographic variables, we find that homeowners over the age of 65 pay a higher average tax rate based on their current incomes. African Americans pay a lower tax rate than other races based on their current income. When we combine income and demographic variables to predict the tax rate paid by a hypothetical low socio-economic status household versus a high socio-economic status household, we find that the high SES household pays a higher average tax rate. Thus, the demographic variables temper the regressivity of the property tax based on current income alone.*

**Keywords:** Property Tax Incidence; Suits Index; Property Tax Burden; Horizontal and Vertical Equity

## INTRODUCTION

Since the introduction of the “new” view of the property tax over four decades ago (Mieszokowski, 1972) almost all studies of the property tax have looked at the burden of taxes relative to the homeowner’s permanent income. This is theoretically accurate, but the measure of permanent income in all of these studies is approximated by the assessed value of the property. This means that the property tax burden on homeowners is found to be proportional because the tax is a fixed percentage of the property’s value. In jurisdictions that provide a deduction for some amount of the property’s value (homestead exemptions, for example), the tax is slightly progressive. It is doubtful, however, that homeowners view the property tax burden in such a benign way. For example, the property tax payer revolts, beginning with California’s Prop 13 in 1978, have not been fueled by citizens viewing their tax burdens as proportional or slightly progressive taxes on their capital incomes. Taxpayers ignore the theory and view their property taxes as a burden on their current incomes. Therefore, policymakers are wise to take into account the property tax burden relative to current income, as well.

We are more interested in the short run burden of property taxes on a homeowner’s current income (and the policy effects that this elicits for local governments) than on the theoretical implications of the property tax burden in the long run. We also wish to discover the socioeconomic and demographic groups that bear more of the burden of property taxes. Therefore, in this paper we examine the incidence of property taxes relative to *current* income and various demographic variables in order to determine both the vertical and the horizontal equity of property taxes in the *short run*.

## LITERATURE REVIEW

The study of property tax incidence is complicated by the fact that much more is known about the property on which the tax is levied than on the owners of the property who actually pay the tax. Traditional economic studies of the

incidence of taxation compare the amount of tax paid to the taxpayer's income in order to compute an average tax rate. Average tax rates are then examined to see how these rates vary as taxpayers' income increases in order to determine if taxes are regressive, proportional or progressive. But since the essential element of this formula is missing in property tax data (the taxpayer's income), studies have had to use surrogate methods to estimate the incidence of the property tax. Generally, these fall into two categories. The first uses the value of the property as a proxy for the homeowner's permanent income. As stated above, we are not interested in determining the incidence of the tax relative to the homeowner's permanent income so we reject the home's value as our income proxy. The second method computes a Suits index using aggregate measures of the total distribution of taxes compared to the total distribution of income.

A Suits index compares the cumulative distribution of the tax burden to the cumulative distribution of income<sup>1</sup>. The primary limitation of a Suits index analysis is that it does not account of any confounding factors and cannot shed light on how a household's tax burden changes across different economic and demographic groups.

There are a small number of studies that have estimated individual measures of property taxes and household income to estimate the incidence of the property tax. Kevin Ihlanfeldt (1982) used data from the Annual Housing Survey to estimate a regression model of the income elasticity of the property tax using a proxy of the household's *permanent income*. He found that the tax was regressive at low levels of income and roughly proportional at higher levels. Another more recent study by Davies, Orton, and Bosworth (2007) used a regression model to look at the relationship between the property tax in England and *current income*. Similar to the results of Ihlanfeldt (1982), they found that the property tax was roughly proportional at higher income levels, but it had a U-shaped relationship at lower income levels.

Given the dearth of information that looks at the individual relationship between property taxes and income, our study is an attempt to add to this literature. Not only do we look at the relationship between current income and property taxes, but we also examine how the property tax rate varies across the age, ethnicity, and educational levels of homeowners. To our knowledge, no other studies have examined the socioeconomic determinants of the property tax burden even though this information may be vital to policymakers.

## **DATA AND METHODOLOGY**

Our research examines the property tax burden for households living in four counties in northeast Florida. The model includes income, age, education, ethnicity and household composition as predictors of *the property tax paid as a percentage of current income*. We believe it is important for policymakers to understand the property tax burden from a taxpayer's perspective. Households may purchase a home with their long term income potential in mind, but they pay their property taxes out of current income. Homeowners must forgo thousands of dollars in the consumption of other goods and services to pay their property taxes. Our results imply that certain income and socioeconomic groups may feel this burden more intensely since they forfeit a greater proportion of their annual disposable income to pay property taxes.

We have 2013 data from the Florida Department of Revenue on 326,976 single family homeowners in Duval, St. Johns, Nassau and Clay counties that include a variety of property tax information. This data set excludes rentals and vacation homes and includes only single-family homes, mobile homes, and condos that are the owners' primary residences. We geo-code each address to the census block group and merge the property tax data with the 2010 census data. The block group data include a variety of demographic characteristics such as average age, median household income, ethnicity and educational attainment.

These four counties are part of Jacksonville MSA which consists of a large urban center, fast developing suburbs and quiet rural areas. These counties are not that different than the nation as a whole. The sample averages are

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<sup>1</sup> The Suits index ranges from a value of -1 (perfectly regressive) to +1 (perfectly progressive) with a value of zero indicating a proportional tax. The three studies that calculate Suits indexes with aggregate estimates of current income (Suits, 1977; Phares, 1980; and Metcalf, 1994) show a large degree of variation, with Suits indexes that range from +.23 (slightly progressive) to -.23 (slightly regressive). The more recent studies that use the property's value as a proxy for permanent income (Metcalf, 1994; Plummer, 2003) are also inconclusive with Suits indexes ranging from -0.11 to +0.26. These contradictory results have left economists with very little definitive information to share in property tax policy debates.

remarkably similar to national statistics; however, the sample contains neighborhoods that are more ethnically diverse. There is a higher proportion of African Americans and Hispanics and lower proportion of Whites than national averages. Other demographic characteristics such as education, family composition, percent elderly and median income are similar to national averages.

Property tax rates vary across states but Florida falls close to the middle when ranking property taxes paid as a percent of home value or as a percent of median income. Florida has no income tax and local communities rely heavily on property tax revenue for funding schools and local government operations. Property taxes are assessed by county but there are property tax exemptions that lower some households' taxes. These include the Homestead Exemption for primary residents, the Widower and Disabled Exemptions and a property tax exemption for poor Seniors. In addition, in 1995 Florida voters passed the Save Our Homes Amendment which sets an upper limit on the growth rate of their property value for assessment purposes to 3% or the CPI, whichever is less. This amendment gives greater tax savings to those living in their current homes longer. All of these tax breaks work to reduce property taxes for eligible home owners.

Although using demographic and socioeconomic information obtained from census block level data to approximate the values of individual characteristics is uncommon in the economics profession, it has been used for years in other academic disciplines with a high degree of success ("How People Use the Census," 2002; Krieger, 1992; Geronimus and Bound, 1998; Coate and Schwester, 2011). For example, Choy, Switzer, DeMartel, & Pasonnet (2008) provided convincing evidence that census block level information is robust in predicting the prevalence and incidence of disease when they compared a census data model to an independently collected individual dataset with very similar results. The descriptive statistics for the variables are shown below.

**Table 1.** Descriptive Statistics

<b>Variable</b>	<b>Mean</b>	<b>Standard Deviation</b>
Property Tax as a Percent of Annual Income	2.95	3.34
Property Tax as a Percent of Home Value	1.17	0.49
Some College -Percent over 25 years old with some college by block group	33.56	8.75
Bachelor - Percent over 25 with a bachelor's degree by block group	18.82	11.42
Post Bach- Percent over 25 with some post graduate work by block group	8.81	7.32
White - Percent Caucasian by block group	70.56	27.40
African American - Percent African American by block group	21.85	27.40
Asian -percent Asian by block group	3.37	5.35
Hispanic - percent Hispanic by block group	6.64	6.96
Other - percent Other by block group	4.21	4.70
Under 18 -percent with children under 18 years old living at home by block group	24.05	8.31
Over 65 - percent with a householder over 65 years old by block group	13.34	8.57
Duval County Florida	0.58	0.49
Nassau County Florida	0.06	0.24
St. Johns County Florida	0.19	0.39
Median Income \$1000 by block group	60.68	26.95
Income 25-50 - Dummy variable indicating median income in block group \$25,000-\$50,000	0.33	0.47
Income 50-75 - Dummy variable indicating median income in block group \$50,000-\$75,000	0.35	0.48
Income 75-100 - Dummy variable indicating median income in block group \$75,000-\$100,000	0.18	0.38
Income over 100 - Dummy variable indicating median income in block group is over \$100,000	0.09	0.29
JV 1000- Assessed home value	146.44	165.10
Millage2013 - amount paid in taxes	17.79	1.89

**EMPRICAL RESULTS**

The dependent variable in our OLS regression models is the average tax rate or the proportion of current income that is paid in property taxes, which is calculated by the dividing the property tax paid by the homeowner’s estimated current income. The amount of tax paid is the actual amount of property tax paid on each home and the value of the

homeowner’s current income is approximated by the median income in the homeowner’s block group. In addition, the independent variables used in all regression equations are taken from the 2010 census block group data.

Table 2 contains the results of our OLS regression models. The two models are the same except that the first model contains the household’s median income and the second model includes categorical income variables.

**Table 2.** OLS Regression Results (Dependent Variable = Property Tax/Annual Income)

<b>Independent Variable</b>	<b>Model 1 (median income)</b>	<b>Model 2 (income categories)</b>
Some College	-0.0101*** (0.000725)	-0.00613*** (0.000748)
Bachelors	0.0416*** (0.000790)	0.0398*** (0.000781)
Post Bachelors	0.102*** (0.00118)	0.0981*** (0.00118)
African American	-0.0175*** (0.000296)	-0.0188*** (0.000306)
Asian	0.0210*** (0.00111)	0.0160*** (0.00112)
Hispanic	0.00975*** (0.000933)	0.0137*** (0.000938)
Other	-0.0632*** (0.00135)	-0.0615*** (0.00136)
Under 18	0.00133 (0.000847)	-0.00374*** (0.000851)
Over 65	0.0106*** (0.000833)	0.0108*** (0.000833)
Duval	0.721*** (0.0169)	0.737*** (0.0170)
Nassau	0.962*** (0.0270)	0.890*** (0.0270)
St. Johns	0.799*** (0.0197)	0.648*** (0.0199)
Median Income	-0.0364*** (0.000331)	
Income 25 - 50		-1.711*** (0.0283)
Income 50 - 75		-2.334*** (0.0316)
Income 75 - 100		-3.330*** (0.0351)
Income >100		-4.202*** (0.0407)
Constant	3.530*** (0.0485)	3.753*** (0.0526)
Observations	326,976	326,976
R-squared	0.117	0.119

The results show the property tax is a regressive tax. Lower income households pay a significantly higher proportion of their annual incomes in property taxes as compared to high income households. On average, the lowest income households spend 4 percent more of their income on property taxes than the highest income group. Note that the property tax is an ad valorem tax and rises with the value of the home. Wealthy households that consume more housing are likely to pay a higher absolute amount in taxes, but the regression results suggest that they bear a smaller tax burden. It is also important to note that these regressions control for demographic characteristics by including variables for age, ethnicity, education and family composition. The results show that higher income households pay a smaller percentage of their current incomes in property taxes than their lower

income counterparts, across all ages, ethnicities and education levels. Thus, property taxes are a smaller burden for the wealthiest in this study.

Ethnic and racial composition of the neighborhood is also a significant predictor of household property tax burdens. On average, we find that neighborhoods with more African Americans pay a smaller percentage of their income in property taxes as compared to neighborhoods with more Caucasians. Studies have suggested that housing values and appreciation is lower in African American communities (Brown, 2012; Krivo and Kaufman, 2004). This may help explain why assessments and property tax burdens of African Americans are less, too. Interestingly, neighborhoods with a higher concentration of Asian and Hispanic homeowners pay slightly higher property taxes as a percentage of their annual incomes. This result has not been documented in previous literature but may suggest that Asians and Hispanics homeowners invest more in housing resulting in higher property tax assessments relative to their current incomes.

Household property tax burden also varies across educational attainment categories. The results show that neighborhoods with a larger proportion of highly educated households tend to pay proportionately more of their annual income in property taxes as a percent of current income. Small but significant coefficients show that neighborhoods with 10% more post-bachelor degree holders spend an average of 0.3% more of their current income in property taxes. This effect persists for neighborhoods populated with more bachelor degree holders as well: these neighborhoods pay an average of 0.9% more of their current income in property taxes. Our results suggest that the Tiebout (1956) hypothesis may be at work here, with highly educated families moving to higher tax rate neighborhoods to take advantage of highly rated schools. Thus, these homeowners may be paying higher tax rates by choice.

We also find that age is an important indicator of tax burden. On the one hand, seniors might be expected to have lower tax rates because some seniors get the Seniors Exemption. Also, seniors may be more likely to have long housing tenure and would receive greater benefits from the Save our Homes Assessment Cap. Adding in the Homestead Exemption, one might expect seniors to have lower property tax burdens.

On the other hand, the housing market boom in the U.S. resulted in shocking increases in residential property taxes for many elderly homeowners (Shan, 2010). Thus seniors might be expected to have a higher tax burden if they experienced rising taxes while on fixed incomes. Our regression results suggest that neighborhoods with more elderly pay more in taxes as a percent of their annual income, all else equal. It may be that households headed by seniors are more likely to be cash poor but house rich and as a result, have a higher tax burden.

### **PROPERTY TAX INCIDENCE PREDICTIONS**

Combining the effects of income and other socio-demographic variables in our regression results makes it difficult to understand the overall tax burden implications of the property tax. For example, our results show that neighborhoods with more African American households pay proportionately less of their annual income in property taxes; whereas, low income neighborhoods pay proportionately more. Therefore, if a neighborhood has a high proportion of African American households and is also low income will they pay proportionately more or less of their income in property tax? To provide more information about tax burdens, we have created several different household scenarios to supplement our analysis.

**Table 4.** Predicted Tax Burden as a Percentage of Income

<b>Scenario One: Implications for Vertical Equity</b>	
Characteristics	Predicted Tax Burden as a Percentage of Current Median Income
Low Income (10 <sup>th</sup> percentile), Mean of Other Variables	4.0862% (4.0632%, 4.1091%)
High Income (90 <sup>th</sup> percentile), Mean of Other Variables	1.6735% (1.6483%, 1.6987%)
% Change in Tax Burden from Low Income to High Income	-59.0451%
<b>Scenario Two: Implications for Horizontal Equity</b>	
<b>Case 1: Race-African American</b>	
Characteristics	Predicted Tax Burden as a Percentage of Current Median Income
High African American (95%), Mean of Other Variables	1.6839% (1.6405%, 1.7272%)
Low African American (5%), Mean of Other Variables	3.3342% (3.3175%, 3.3508%)
% Change in Tax Burden from High to Low African American	-98.00%
<b>Case 2: Elderly-Over 65</b>	
Characteristics	Predicted Tax Burden as a Percentage of Current Median Income
High Elderly (95%), Mean of Other Variables	3.1449% (3.1132%, 3.1766%)
Low Elderly (5%), Mean of Other Variables	2.8465% (2.8271%, 2.8659%)
% Change in Tax Burden from High to Low Elderly	-9.49%
<b>Scenario Three: Implications for Socioeconomic Status</b>	
Characteristics	Predicted Tax Burden as a Percentage of Current Median Income
Low SES: Low Education(5 <sup>th</sup> ), Low Income (5 <sup>th</sup> ), Mean of Other Variables	2.9108% (2.8753%, 2.9464%)
High SES: High Education (95 <sup>th</sup> ), High Income (95 <sup>th</sup> ), Mean of Other Variables	3.2510% (3.2081%, 3.2939%)
% Change in Tax Burden from Low SES to High SES	11.69%

95% prediction intervals are in parentheses

The first scenario creates two households that are identical in every way except that one has low income (the bottom 5% of the sample's income distribution) and the other has high income (the top 95% of the sample's income distribution). Other than the income variable, all of the other independent variables are at the sample mean. In this case, we find that the tax is regressive with high income households paying 59% less of their annual income in property tax than low income households.

The second scenario examines the effects of demographic differences in homeowners. The first case shows the effect of living in a predominantly African American neighborhood on a homeowner's average property tax rate. We create two neighborhoods that have the sample's median household income and the sample mean values on all independent variables except for the percentage of African Americans in the census block. One of the neighborhoods has a high percentage of African Americans (95%) and the other neighborhood has a low percentage of African American households (5%). In this case, we find that households in African American neighborhoods pay 98% less of their annual income in tax than their counterparts in neighborhoods with few African Americans.

In the second hypothetical case we create two identical neighborhoods with the sample's median income and mean values for all of the independent variables except age. In neighborhoods where 95% of homeowners are over age 65, these older homeowners do pay a significantly higher average tax rate than their younger counterparts. However, the difference is less than 10%, which seems somewhat small given the attention that elderly homeowners receive when property tax relief is on the public agenda.

In the previous scenarios we isolated the impact of a single independent variable to understand how it affected average tax rates. In the real world, however, the characteristics represented by our independent variables are seldom found in isolation. Therefore, in our final scenario, we combine these characteristics to create two stereotypical households-- a low socioeconomic status (SES) household and a high SES household. The high SES household has high income, is Caucasian, and has a household head with a high level of educational attainment. The low SES household, on the other hand, has a low income level, is not Caucasian, and has a household head with a low level of educational attainment. To our surprise, these predictions show that property taxes are progressive relative to socio-economic status when current income is used to calculate average tax rates. Relative to their current incomes, low SES households pay almost 12% less in property tax than their high SES counterparts.

### CONCLUSIONS

The property tax is the major source of revenues for most city and county governments, yet economists have had very little definitive information to share with policymakers about the burden that it imposes on local citizens. From a theoretical standpoint, we agree that the property tax can be viewed as a profits tax on all capital. However, that view only holds in the long run and when certain restrictive assumptions are met (such as the perfect mobility of resources). In the real world of short term local politics, analyzing the property tax as a burden on current disposable income helps to provide useful information to policymakers who need a basic understanding of how the property tax burden is distributed across different neighborhoods. Particular tax exemptions and tax assessment caps further complicate the discussion of the impact of property taxes on various constituencies. Previous empirical research has not investigated which economic and demographic groups are spending more of their disposable income to support local government operations.

By including a variety of socio-demographic variables in our regression analyses, we are able to estimate who bears the greatest property tax burdens. For example, we find that African Americans pay a lower percentage of their current income in property taxes compared to homeowners of other races and ethnicities but seniors and highly educated homeowners pay a slightly higher percentage. When we created a hypothetical high SES household, we find that these neighborhoods have higher average tax rates than a low SES neighborhood. This provides some evidence that is consistent with the Tiebout hypothesis. These results suggest that the property tax may be less regressive relative to current income than one would suspect by looking at income alone. Furthermore, the results suggest that income is just one of several important factors associated with a household's property tax burden.

Our study also sheds light on the common wisdom that older homeowners are more burdened by property taxes than younger homeowners. We found older homeowners do pay an average tax rate that is about 10% higher than equivalent younger households. This suggests that older homeowners may be choosing to consume a high level of housing, or perhaps due to mobility constraints, may be housing rich but cash poor.

### AUTHOR BIOGRAPHIES

**Mary Beal-Hodges** received her Ph.D. in economics from Florida State University. She is an instructor in the economics department at the University of North Florida. Her research interests are in the areas of econometrics and public policy.

**Mary O. Borg** (corresponding author), is a Professor of Political Economy at the University of North Florida. Her research interests are in the areas of public policy, lotteries, and economic education.

**Harriet A. Stranahan** is a Professor of Economics at the University of North Florida. Her research interests are in the areas of public finance and economic education.



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**NOTES**