NBER WORKING PAPER SERIES

THE (UN)CHANGING GEOGRAPHICAL DISTRIBUTION OF HOUSING TAX BENEFITS: 1980 to 2000

Todd Sinai
Joseph Gyourko

Working Paper 10322
http://www.nber.org/papers/w10322

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
February 2004

This paper was prepared for the November 2003 Tax Policy and the Economy conference in Washington, DC, and is forthcoming in *Tax Policy and the Economy, Volume 18*. We are grateful to the National Bureau of Economic Research and the Research Sponsor Program of the Zell/Lurie Real Estate Center at Wharton for supporting this research, and to Daniel Feenberg, Jim Poterba, and Steven Sheffrin for helpful advice and comments. Dan Simundza provided excellent research assistance. Correspondence should be directed to: Todd Sinai, 308 Lauder-Fischer Hall, 256 S. 37th Street, Philadelphia, PA 19104-6330. Phone: (215) 898-5390. Email: sinai@wharton.upenn.edu.

The (Un)changing Geographical Distribution of Housing Tax Benefits: 1980 to 2000
Todd Sinai and Joseph Gyourko
NBER Working Paper No. 10322
February 2004
JEL No. H20, R38

ABSTRACT

Even though the top marginal income tax rate has fallen substantially and the tax code has become less progressive since 1979, the tax benefit to homeowners was virtually unchanged between 1979-1989, and then rose substantially between 1989-1999. Using tract-level data from the 1980, 1990, and 2000 censuses, we estimate how the income tax-related benefits to owner-occupiers are distributed spatially across the United States. Geographically, gross program benefits have been and remain very spatially targeted. At the metropolitan area level, tax benefits are spatially targeted, with a spatial skewness that is increasing over time. In 1979, owners in the top 20 highest subsidy areas received from 2.7 to 8.0 times the subsidy reaped by owners in the bottom 20 areas. By 1999, owners in the top 20 areas received from 3.4 to 17.1 times more benefits than owners in any of the 20 lowest recipient areas. Despite the increasing skewness, the top subsidy recipient areas tend to persist over time. In particular, the very high benefit per owner areas are heavily concentrated in California and the New York City to Boston corridor, with California owners alone receiving between 19 and 22 percent of the national aggregate gross benefits. While tax rates are somewhat higher in these places, it is high and rising house prices which appear most responsible for the large and increasing skewness in the spatial distribution of benefits.

Todd Sinai
Wharton School
University of Pennsylvania
308 Lauder-Fischer Hall
256 South 37th Street
Philadelphia, PA 19104-6330
and NBER
sinai@wharton.upenn.edu

Joseph Gyourko
Wharton School
University of Pennsylvania
308 Lauder-Fischer Hall
256 South 37th Street
Philadelphia, PA 19104-6330
gyourko@wharton.upenn.edu

Introduction

It is generally accepted that the favorable tax subsidy to homeownership in the United States stimulates the demand for housing, raising prices and increasing the homeownership rate.[1] That this subsidy comes at a significant cost is also well documented at the national level, with a number of authors having estimated the tax expenditure associated with the mortgage interest and property tax deductions as well as the untaxed return on housing equity.[2]

Over time, these marginal incentives for homeownership – and the aggregate cost of those subsidies – have changed considerably. For example, Poterba's (1992) analysis of the impacts of the various tax reforms of the 1980s reports a significant increase in the marginal cost of owner-occupied housing between 1980 and 1990 across the income distribution, but particularly for high income owners, due in large part to a drop in marginal tax rates for high income households and an overall reduction in the progressivity of the tax code. In our work below, we calculate that the real cost of the tax subsidy to homeownership has risen substantially in the last 20 years, from $198 billion (in 1999 dollars) in 1979, to $284 billion in 1989, and $420 billion in 1999.

In addition, recent evidence shows that the value of the subsidy to owner-occupied housing varies dramatically over space. Gyourko and Sinai (2003), using 1990 Census data, find that the benefits of the tax subsidy are highly skewed with just a handful of metropolitan areas reaping most of the net gains from the favored tax treatment of owner-occupiers.

These sets of stylized facts naturally lead one to wonder whether the changes over time in marginal incentives for homeownership and in the aggregate cost of the homeownership subsidy

[1] See Rosen (1989) for a classic analysis and Bruce and Holtz-Eakin (1999), Capozza, Green, and Hendershott (1996), and the report to the Ford Foundation by Green and Reschovsky (2001) for more recent investigations into how the tax code might function in these regards.
[2] For example, see Follain and Ling (1991) and Follain, Ling, and McGill (1998).

have also affected the geographic distribution of the benefits. Because housing markets are inextricably tied to a physical location, and are not national in scope, knowing the extent to which the tax benefits vary spatially is important for determining the potential impact of any change in the tax treatment of owner-occupied housing. Moreover, the nature of the spatial distribution of benefit flows is likely to be important for any consideration of the potential impacts on house prices, the homeownership rate, or the political economy of fundamental tax reform.

In addition, knowledge of how the geographical distribution of program benefits changes also is useful for analysis of the spatial equity of the tax treatment of owner-occupied housing. For example, every year the Tax Foundation calculates each state's ratio of federal spending received to taxes paid, and finds substantial variation across states. Our results, that the benefits of the subsidy to owner-occupied housing vary spatially, suggest that this sort of calculation should include implicit tax expenditures and subsidies alongside the observable taxes and spending. Indeed, many of the Tax Foundation's states with the lowest ratios of spending to actual taxes paid are the same ones whose home owners receive the largest housing-related subsidies.

In this paper, we examine how the spatial distribution of the tax subsidy to owner-occupied housing changes over three decades. Using the 1980, 1990, and 2000 Censuses, we calculate the value of the tax subsidy to owner-occupied housing as the difference in ordinary state and federal income taxes currently paid by home owners and the taxes they would pay if the tax code treated them like landlords. In the latter scenario, there is no preference for investing in one's home relative to other assets.

Interestingly, while we find that the marginal tax subsidy for homeownership has

decreased over the last 20 years on net, the aggregate value of the tax benefits actually increased. Our analysis indicates that this is due to rising house prices and growth in the number of homeowners more than offsetting the decline in average tax benefit per dollar of house. In particular, the after-tax cost of a dollar of owner-occupied housing rose between 1979 and 1989 before falling slightly by 1999, as the marginal tax rates on housing deductions were reduced and then increased. All else constant, one would expect the value of the tax benefit to fall with tax rates. However, this is not the case at the per-owner level, where the benefit remained flat during the 1980s before rising by 20 percent during the 1990s. The fact that the aggregate subsidy rose substantially during the 1980s, from $198 billion in 1979 to $284 billion in 1989, is due at least in part to growth in the number of homeowners.

In regard to the spatial distribution of the subsidy, these tax changes, increases in house prices, and growth in the number of homeowners were not individually neutral. However, they happen to offset each other so that at the state level the spatial distribution of the tax benefits changes little over time. At the metropolitan area level, however, spatial skewness of the subsidy has been increasing. This phenomenon appears to driven by the relatively large house price increases experienced in various coastal areas of California and in the Northeast between New York City and Boston. Even so, the top recipients tend to persist; they just receive a larger fraction of the total subsidy over time.

Among states, California always receives the largest gross subsidy flow, but this is not due solely to the fact that it has the most owners. For example, in 2000 it received 18.7 percent of the aggregate subsidy while having only 9.4 percent of the nation's owners. That high ratio of benefits to owners applies to only a very small number of other states such as New York (9.5 percent of total benefit flow while being home to only 5.3 percent of the nation's owners in

2000), indicating that this program has highly spatially targeted beneficiaries. This pattern of spatial skewness to where program benefits flow is even more extreme at the metropolitan area level. Comparing subsidy flows in 1979 in the top 20 areas versus those in the bottom 20 areas finds that owners in the high recipient areas received from 2.7 to 8.0 times the subsidy reaped per owner in the bottom group. By 1999, the analogous calculation finds the typical owner in the top twenty areas receiving from 3.4 to 17.1 times more benefits than owners in any of the 20 lowest recipient areas.

The precise economic implications of these results depend upon whether or not the subsidy is capitalized into land prices. While such an analysis is well beyond the scope of this paper, the broad range of possible outcomes can be readily understood. If the subsidy were fully capitalized, eliminating it would not affect the user cost of owning but many owners in a few metropolitan areas would experience significant changes in wealth. While the savings associated with eliminating the subsidy would be redistributed back to homeowners, the net wealth effect still could be significant in many areas regardless of how one thinks the tax benefits are financed. If the tax subsidy is not capitalized into land prices, then the user cost of ownership must reflect it.

The remainder of the paper proceeds as follows. In the first section, we describe the tax subsidy to owner-occupied housing and how we measure it. Section two reports our results, beginning with an analysis of how benefits flow across states and followed by a description of the distribution across metropolitan areas. Finally, there is a brief conclusion and summary.

I. Measuring Housing-Related Tax Benefits

The fact that there is a subsidy to owner-occupied housing can most easily be seen by

comparing the current tax treatment of home owners to how they would be taxed if housing were treated like any other asset. In particular, owner-occupied housing gets favorable tax treatment, but housing owned by a landlord is treated like any other income-producing, depreciable asset. Both homeowners and landlords are allowed to deduct mortgage interest and property taxes as expenses (as long as the homeowner itemizes). But a landlord must pay tax on her rental income while a homeowner does not. The homeowner implicitly pays herself rent to occupy her house, but because she is both landlord and tenant, that transfer is tax-free whereas if the parties were distinct, the rent would be taxed. On the other hand, landlords can deduct depreciation and maintenance, while homeowners cannot.

It is apparent from this comparison that the tax subsidy to owner-occupancy arises largely from the non-taxation of the implicit rent on the home. However, it is not so straightforward to compute the amount of the benefit. Implicit rent is unobserved and the components of landlords' tax bills are often difficult to estimate. Instead, as we show below, it is much more straightforward to calculate the difference between the equilibrium taxes paid by homeowners and landlords. Underlying this approach is the same assumption used in the familiar user cost of owning concept developed in Hendershott and Slemrod (1983) and Poterba (1984): the marginal home owner invests in owner-occupied housing until the point where the annual cost she incurs exactly equals the rent she would have to pay as a tenant in the same property.

We begin with the equilibrium annual flow cost of owning. That user cost is described in equation (1) and takes into account the fact that implicit rental income is untaxed while mortgage interest and property taxes are deductible for itemizers:

$$(1) \qquad R_H = (1-\tau_{ded})\alpha i + (1-\tau_{ded})\tau_p + (1-\tau_{int})(1-\alpha)r + (1-\tau_{int})\beta + M + \delta - \Pi^H.$$

The left-hand side variable, R_H, is the annual cost of owner occupancy per dollar of housing value. These costs include: (a) the after-tax cost of mortgage interest, $(1-\tau_{ded})\alpha i$, where α is the loan-to-value ratio on the house, *i* is the mortgage interest rate, and τ_{ded} is the owner-occupier's marginal tax rate, equal to her marginal rate (denoted τ_{int}) if she itemizes and zero otherwise; (b) the after-tax cost of property tax payments, $(1-\tau_{ded})\tau_p$, with τ_p the effective property tax rate; (c) the after-tax opportunity cost of investing equity in the house rather than in some other riskless investment at rate of return, r; this is given by $(1-\tau_{int})(1-\alpha)r$ and is a cost to all owners, whether they itemize or not;[3] (d) an after-tax risk premium, $(1-\tau_{int})\beta$, to account for the difference in risk between bonds and housing; this applies to the entire long position in the house and thus is unaffected by the choice of leverage;[4] (e) annual maintenance costs per unit of housing which are given by M; (f) the cost of true economic depreciation per unit of house which is assumed to occur at rate δ; and (g) any annual appreciation in the house value, Π^H, which reduces the carrying cost.[5]

If the home owner were treated as a landlord, the residence would be taxed just like any other asset. Neutral tax treatment obviously requires taxing the implicit rental income on the home, but if treated like landlords, owner occupiers also would be able to deduct maintenance

[3]Implicitly, we assume that the opportunity cost of tying up equity in a house is foregoing taxable returns. If the home owner were to invest in a tax-exempt asset instead, we assume the return would be $(1-\tau)r$ rather than r, yielding the same after-tax return.

[4] In this framework, the homeowner's financial position can be thought of as being long one house and short one bond (the mortgage). This allows us to decompose the opportunity cost of being long the house as the riskless rate of return plus a premium that reflects the difference in risk between a bond position and an equivalent risk alternative to investing in housing. The difference between the mortgage interest rate and the equivalent duration riskless rate is reflected in the options to default on or prepay the mortgage. These options have value to the owner, so the premium above the riskless rate for borrowing is rolled into the mortgage rate as a cost.

[5]This specification treats capital gains on housing as untaxed and realized every year. Given that there now is a $250,000 capital gains exclusion ($500,000 for married couples filing jointly) that can be applied every other year, this is not unrealistic. Even in earlier periods, the assumption of no capital gains taxation on housing was valid for the vast majority of households.

expenses and depreciation, not just the mortgage interest and local property taxes presently allowed. In this case, a different annual cost would result, as described in equation (2):

(2) $R_H' = (1-\tau)\alpha i + (1-\tau)\tau_p + (1-\tau)(1-\alpha)r + (1-\tau)\beta + \tau R_H' + (1-\tau)M + (1-\tau)\delta - (1-\tau)\Pi^H$.

With perfect competition in the rental housing market, rents must equal the annual cost, so $\tau R_H'$ would be the tax due on imputed rent.[6] Grouping the R_H' terms and dividing both sides by $(1-\tau)$ yields the simplified version in equation (3),

(3) $R_H' = \alpha i + \tau_p + (1-\alpha)r + \beta + M + \delta - \Pi^H$.

One possible strategy to estimate the tax benefits of owner-occupancy would be to compute R_H' as the sum of the terms of on the right-hand side of equation (3), add that value to the homeowner's reported income, and then determine the additional tax that would be paid. There are two important drawbacks to that approach. One is that we do not have good data on maintenance, depreciation, or expected capital gains, so the estimate is likely to be a noisy one. The other is that simply adding the implicit rent to income does not accurately capture the impact of itemization rates because the tax rates on deductions differ for non-itemizers.

The alternative strategy we pursue in this paper is to compute the difference between R_H' and R_H directly by subtracting equation (1) from (3). Doing so yields the following:

(4) $R_H' - R_H = \tau_{ded}\alpha i + \tau_{ded}\cdot(\tau_p) + \tau_{int}((1-\alpha)r + \beta)$.[7]

---

[6] This also assumes accrual taxation of capital gains which, when combined with statutory ordinary income and capital gains rates being equal, allows us to focus on program benefits arising from differential tax treatment of ordinary income. As our 2003 paper shows, in this setting a dollar of house price appreciation has approximately the same value to owner-occupiers and landlords, so there is no differential impact on user costs. The analysis behind this conclusion is fairly complex, and we refer the interested reader to that paper for the details.

[7] Note that we have abstracted throughout from *how many* housing dollars on which a home owning family receives a subsidy. A change in the tax treatment of owner-occupied housing might affect house values, but because we measure the subsidy on a per dollar basis, we abstract from the possibility that there is a second order effect through changes in house prices. This is done for two reasons. First, determining precisely how a change in the subsidy would be capitalized into house values is beyond the scope of this paper. Second, any change in house price would only increase the magnitudes of our estimates. For example, if the benefit to owner-occupied housing were reduced,

Not only does this approach get the impact of itemization correctly, but the terms for which we would have the most problems measuring accurately (M, δ, and Π) difference out in the subtraction. Thus, the tax subsidy to owner-occupancy can be computed as the sum of three components: (a) the tax value of home mortgage interest deductions ($\tau_{ded} \cdot \alpha \cdot i$); (b) the tax value of local property tax deductions ($\tau_{ded} \cdot \tau_p$); and (c) the tax that would have been paid on the equity invested in the home had it been invested elsewhere ($\tau_{int} \cdot ((1-\alpha) \cdot r + \beta)$).[8] While the sum of these three terms represents total ordinary income tax benefits to owner occupiers under the current code, we hasten to emphasize that this does not imply that mortgage interest or local property tax deductions themselves are responsible for creating the subsidy. As noted above, the subsidy arises from the non-taxation of imputed rent. It simply is the case algebraically that the subsidy can be represented by the three terms on the right-hand side of equation (4). Looking at the deductions alone would underestimate the true subsidy.

Estimation Strategy and Data

The procedure for estimating the tax code-related subsidy to owner-occupiers is represented graphically in the tax schedule with three marginal tax brackets shown in Figure 1. A home-owning family with no housing-related deductions would have a taxable income (TI) of Y_1. However, if they were not owners, they may have invested their housing equity in a vehicle that yielded a taxable return that would raise their TI to Y_2. Thus, Y_2 is the counterfactual TI for

---

house prices might also fall, further decreasing the subsidy.

[8]The depreciation term nets out because we have assumed landlords can deduct economic depreciation and, after 1986, that is probably not far from the truth. Deloitte and Touche (2000) and Gravelle (2001) conclude that economic lifetimes for rental properties in 1989 (and now) are somewhat shorter than the statutory lifetimes. The statutory depreciable life in 1981 (of 15 years) was shorter than true economic depreciation, so we may overestimate the subsidy to owner-occupiers in 1979.

a home-owning family if it were to stop being an owner. Starting with that TI, we can compute the tax value of each of the three aforementioned deductions. With a taxable income of Y_2, this hypothetical family would have a tax liability of T_1. Assume that claiming the home mortgage interest deduction (HMI) would lower TI to $Y_2 - HMI$ (presuming for simplicity that all of HMI was above the standard deduction) and the tax liability to T_2. Therefore, the tax savings for this family from the mortgage interest deduction is $T_1 - T_2$.

Although in this example the mortgage interest deduction does not move the family into a lower tax bracket, the property tax deduction does. Beginning with TI equal to $Y_2 - HMI$, we can compute the tax savings from the property tax deduction as the tax bill with only the mortgage interest deduction, T_2, minus the tax bill with both the mortgage interest and property tax deductions, T_3. In this case, T_2 and T_3 span a kink in the tax schedule, but still account for the fact that the average tax rate is less than the marginal tax rate at $Y_2 - HMI$.

Finally, we compute the value of the non-taxation of the return on housing equity. Because the return on housing equity is not included in TI, taxable income is measured at Y_1 instead of the greater amount Y_2. The tax value of not including that income is measured as the change in tax between T_3 (the tax bill corresponding to a TI of $Y_2 - HMI - T_p$) and T_4 (the tax bill corresponding to an TI of $Y_1 - HMI - T_p$).

It is apparent from Figure 1 that the order in which the deductions are taken matters when the tax schedule is not linear. For example, $T_1 - T_2 > T_3 - T_4$, even though $HMI < Y_1 - Y_2$. After adding back the implicit return on housing equity, we compute the deductions in the following order: (a) tax savings from the mortgage interest deduction; (b) the tax savings associated with the property tax deduction; and (c) the savings from the return on housing equity being untaxed. We have repeated the estimation using all six possible sequences in which the deductions can be

taken. While the relative magnitudes of the categories change, the differences are minor.

We calculate each of the tax liabilities T_1 through T_4 by combining tract level information covering the entire United States from the STF3 files of the 1980, 1990, and 2000 decennial Censuses with the National Bureau of Economic Research's (NBER) TAXSIM program. TAXSIM calculates federal and state tax liabilities from our tax data and allows us to engage in a "what-if" calculation to determine what taxes would have been paid had a household not had various housing deductions or had invested in an asset with a taxable income stream. For each year in our data, the TAXSIM program incorporates all relevant federal and state tax law, including housing and property tax deductions.

To construct representative households to pass through the TAXSIM tax calculator, we start by computing the distribution of household income among homeowners at the tract level.[9] For each tract, we divide the household income distribution into deciles and assign the median income for each decile to all the households in that category. Thus, the lowest-income one-tenth of the households are assumed to have an income equal to that of the fifth percentile for the tract, the next lowest-income tenth of the households are assigned an income equal to that of the 15th percentile for the tract, and so forth.

We then map tract-level information on the distribution of house values, P_H, to incomes by assigning to households in each decile of the income distribution the value corresponding to the same decile of the house value distribution. For example, we assume that the household in the 5th percentile of the income distribution for the tract also owns the home in the 5th percentile

[9] All tax benefit figures reported in this paper are based on tract-level data that aggregates household income across its various sources.

of the housing price distribution for the same tract.[10]

The actual value of the tax benefits depends on certain demographic data that are likely to affect the number of exemptions and the overall amount of deductions. Tract level data that are available in each census year include the distribution of whether households are single, married, or single with children; the percentage of households with children; and the percentage of households over 65 years of age. We create a representative household for each possible combination of these characteristics and then compute the weighted average estimated tax, where the weights are the tract-level distributions of the demographic characteristics.

Unfortunately, the census data lack information on most non-housing categories of potential tax deductions. We compute mortgage interest, state tax, and property tax deductions, but we do not observe medical expenses, charitable giving, deductible interest (other than for a home mortgage), and several other miscellaneous categories. Two countervailing problems arise from underestimating possible deductions. First, we would be more likely to incorrectly assume the family does not itemize. This error would cause us to underestimate the tax value of the mortgage interest and property tax deductions since less would be deducted at the margin. On the other hand, undercounting deductions for itemizers could increase the tax value we do measure since the remaining deductions are applied against higher marginal tax rates. Consequently, we impute missing tax deductions to our census data based on data from the Department of the Treasury's *Statistics of Income* (*SOI*) public use tax micro sample. A

[10]This matching process presumes that owners and renters in a tract have identical income distributions. Fortunately, our spatial results are robust to assuming an extreme case in which all the owners in a tract have a higher income than any of the renters, and houses are matched to owners so that the highest income owner owns the highest value house, the next highest income owner occupies the next highest valued house, and so forth. In reality, any sorting into houses by income would not be perfect, as is suggested by the data in O'Sullivan *et al* (1995) which matches tax returns and property tax assessments in California. Unfortunately, those data are no longer available. However, for the 1989 data we have tried using the mean income and house value in each tract, rather than the full distribution, and it does not make any qualitative difference to the spatial skewness we observe.

modified Heckman-style sample selection model is employed to correct for the selective observing of deductions only by itemizers.[11]

Following the procedure shown in Figure 1, we augment the observed income by an estimate of how much higher the household's income would have been had they invested in an equivalently risky taxable asset rather than housing. First, we calculate the opportunity cost of the equity in one's home, or $P_H*((1-\alpha)*r + \beta)$, where *r* is the riskless yield on seven-year Treasuries in the relevant census year: 9.47, 8.57, and 5.79 percent, respectively. Then we compute β: the risk premium for the whole house.[12] The estimates below assume that the expected equivalent-risk opportunity cost of investing in a house was equal to the geometric mean on the value-weighted S&P500 return (including dividends) over a certain time period. For simplicity, we assume the relevant period always runs from the beginning of 1926 to the end of the census year (i.e., 1926-1979, 1926-1989, and 1926-1999), yielding expected returns of 8.79, 10.13, and 11.22 percent, respectively. The risk premium is the difference between this yield and the risk-free yield. Thus, for 1989, we define β to be the 10.13 percent S&P500 return minus the 8.57 percent Treasury yield, for a premium of 1.56 percentage points. The opportunity cost of riskless equity and the risk premium are then added to income.

[11] The interested reader should see the Appendix to Gyourko & Sinai (2003) for a detailed description of the procedure. The imputation results indicate that, absent the correction, we would have underestimated deductions and therefore the number of itemizers. This turns out to be important because the underestimation of itemizers was not random across space. In high house value and high income tax states such as California, not observing non-housing deductions only infrequently caused us to miscategorize an owner family as a non-itemizer. Home mortgage interest, local property taxes, and state income taxes generally were sufficient to make California residents itemizers. This was not the case in many states with lower house values and lower state taxes. Hence, the imputation has an important effect on the measured spatial distribution of program benefits.

[12] The risk adjustment follows from Poterba (1991), with the calculation effectively assuming that the mortgage rate would be the yield on seven-year Treasuries in the absence of the options to prepay or default. Other assumptions regarding the relative risk of owner-occupied housing obviously could be made, as there is no clear agreement on this issue. However, we have repeated all the analyses reported in the paper under widely varying assumptions about the relative risk of owner-occupied housing. While the aggregate subsidy certainly does vary with the presumed opportunity cost of equity in the home, the nature of the spatial distribution of the subsidy across states and metropolitan areas largely is unaffected.

We estimate the value of the mortgage interest deduction by computing each tract-decile's tax value as the weighted average difference in tax bills with and without it. The mortgage interest deduction itself is defined as $P_H*\alpha*i$. Leverage ratios, α, vary by age and are computed from household data in the *Survey of Consumer Finances* (*SCF*) closest in time to the relevant census year. A weighted average leverage for each tract was computed based on the tract's age distribution.[13] The mortgage interest rate, *i*, was calculated by taking an average across households in the same *SCFs*. From the 1983 *SCF*, which is the closest in time to 1979, we calculate the average mortgage rate was 10.21 percent. For 1989, the analogous rate was 9.56 percent, with a rate of 7.85 percent matched from the 1998 SCF to the 1999 census data.

The tax value of the mortgage interest deduction can differ from mortgage interest paid times the marginal tax rate for three reasons. First, only families that itemize on their tax returns receive any benefit on the margin from the deductibility of mortgage interest. Also, only the excess of the mortgage interest deduction plus other itemized deductions over the standard deduction has value for a taxpayer. Therefore, we would only multiply the portion of mortgage interest in excess of the standard deduction (after itemizing all other non-housing related deductions first) by the tax rate. Additionally, since the tax schedule is nonlinear, taking the mortgage interest deduction may lower the taxpayer's marginal and average tax rates.

The second component involves the value of the deduction of local property taxes. Property tax payments themselves are defined as $P_H*\tau_p$, where τ_p is the average effective property tax rate. We were not able to find reliable estimates for this variable over time.

[13]There is considerable heterogeneity in leverage by age in all years. For example, in 1998, loan-to-value ratios by age are as follows: 20-24 year olds – 66.5 percent; 25-29 year olds – 64.2 percent; 30-34 year olds – 62.6 percent; 35-39 year olds – 61.0 percent; 40-44 year olds – 52.3 percent; 45-49 year olds – 44.5 percent; 50-54 year olds – 41.3 percent; 55-59 year olds – 30.9 percent; 60-64 year olds – 21.3 percent; 65-69 year olds – 13.2 percent; 70-74 year olds – 9.6 percent; and 75+ year olds – 4.6 percent. Leverage in previous decades is, on average, lower.

Consequently, we use information for an intermediate year—1990.[14] This variable is allowed to vary by metropolitan area using data provided by Stephen Malpezzi, who has calculated average property tax rates in 1990 for a large number of areas. Census tracts not located within metropolitan areas covered in the Malpezzi data are assigned the average state-level local property tax rate as reported by the Advisory Commission on Intergovernmental Relations (ACIR (1987)).[15] The tax value of the deduction associated with these payments then is computed the same way as for the mortgage interest deduction.

The third term we estimate arises from the fact that the government does not tax as income the return home owners could have earned on their equity had they not invested in their homes. We calculate the reduction in tax liabilities that occurs when we remove the imputed income that we had added in the first step. This approach accounts for the possibility that a family might move into a higher marginal tax bracket if the return on its housing equity were taxed.

II. Results

Summary Statistics for the Nation

The national aggregate gross value to owners of housing-related ordinary income tax benefits, reported in the first panel of Table 1, is quite large and has risen over time—from $198 billion in 1979 to $284 billion in 1989 to $420 billion in 1999 (in constant 1999 dollars).[16]

[14] Property taxes are such a small component of the total subsidy – about 10 percent – that the noise in this measure probably has little qualitative effect on our conclusions.

[15] The ACIR did not report state-by-state breakdowns for 1989, so we use the 1987 data. We have also experimented with assuming a 1 percent and 1.5 percent national average effective rate. Our findings are not sensitive to these changes.

[16] The bulk of the tax code-related benefits to owners arises from the third of the three components from equation (4). Depending upon the census year, from two-thirds to three-quarters of the total benefits are due to not having to pay tax on the return to equity invested in the home plus the difference in expected return on housing versus the cost

These subsidies are large and are significantly higher than those typically reported by Treasury or the Joint Committee on Taxation primarily because those government agencies calculate only the traditional tax expenditures – the tax cost of the mortgage interest and property tax deductions – rather than the failure to tax implicit rent. Since houses are only partially leveraged and the expected return on a house is greater than mortgage rates, those deductions measure only a portion of the true tax expenditure.[17] In addition, our figures include state tax subsidies.

The housing subsidy is sizeable – and growing – even on a per owner or per household basis. While the aggregate real subsidy amount increased 112 percent since 1979, the number of owner-occupied units rose just 70 percent between 1979 and 1999 (from 40.9 million in 1979 to 69.7 million in 1999) so the subsidy per owner-occupied household has been going up. Gross program benefits per owner-occupied household were $4,840 in 1979, remained constant over the ensuing decade with the 1989 figure being $4,818, and then rose in the 1990s to $6,024 in 1999. The analogous figures on a per household basis range from just over three thousand dollars in 1979 to just over four thousand dollars in 1999.

While it has long been understood that the subsidy is skewed in aggregate towards those with high incomes and high house values, much less is known about the spatial skewness of this aspect of the tax code. It is to that issue we now turn. We begin by documenting just how the tax subsidy to owner-occupied housing is skewed, describe how that skewness changes over time, and then investigate the factors driving any changes in the distribution of the subsidy

---

of the mortgage. Results on the decomposition of the subsidy are available upon request.

[17] Our estimates of the tax savings from the mortgage interest deduction alone are quite close to, but lower than, what we obtain by looking at actual tax return data. We cannot use the Statistics of Income data to compute the full tax expenditure because tax return data do not include information about house values, only itemized deductions. In addition, the SOI data do not report state of residence for taxpayers with AGI above a threshold, so our calculations using the SOI are also below the true figure. On the other hand, the Joint Committee on Taxation's projected tax expenditure on mortgage interest deductions for 1999 (these do not include state taxes) is slightly lower than what we calculate.

across states and metropolitan areas.

State-Level Results

While we will focus most of our analysis on the amount of tax benefits per owner, we begin with the most basic measure of the spatial distribution of the benefits: the aggregate benefit flow for each state by year. Not surprisingly, the most populous state, California, stands out in Table 2, with its owners receiving gross benefits of nearly $40 billion in 1979, well over $60 billion in 1989, and almost $80 billion in 1999. No other state approaches these levels, although the benefit flow to New York has risen dramatically over time. A closer examination shows that, as the national aggregate value of the subsidy increases, the additional benefits appear to be distributed in rough proportion to where they were already going. That is, while the aggregate benefit to California doubles between 1979 and 1999, so does the subsidy to small beneficiaries such as Georgia, Maryland, and North Carolina. Thus, the states tend to maintain their same relative standing, but the absolute (real) dollar difference between the highest and lowest recipient increases substantially.

Of course, changes in aggregate subsidy flows are heavily affected by population growth. To net out differential increases in the number of homeowners, Figure 2 reports benefits scaled by the number of owners in each state in 1979 and 1999.[18] Even on a per owner basis, people in only a handful of states, often the most populous ones, reap substantially more from tax code-related housing benefits than the typical owner nationally. For example, while California is no longer the extreme outlier it was in the aggregate data in Table 2, it still is one of only seven states that received at least $6,000 per owner in 1979 and at least $8,000 per owner in 1999. Overall, the per owner subsidies in the top few states are well over double those received by

[18] Data for all three years – 1979, 1989, and 1999 – is reported in the Appendix.

owners in the vast majority of states. Thus, while the Gini coefficients for the distribution of per owner benefits across states are relatively low in each decade (0.20 in 1979, 0.32 in 1989, and 0.25 in 1999), it would not be accurate to consider the benefit distribution an especially egalitarian one in spatial terms.

Although the subsidy per owned unit has risen over time, the skewness has persisted at least since 1979. Benefit flows always are concentrated in the hands of owners in just a few states and the top three states have remained there for the last 20 years. However, the spatial distribution has changed some with owners in northeastern states doing better over time.

Of course, Figure 2 confounds changes in the national level of subsidy with its distribution across space. However, the typical state receives less than the national average benefit per owner, with a few states receiving about double the average. These disparities rise between 1979 and 1989, but are mitigated somewhat by 1999.[19] To isolate the spatial distribution from the dollar value of the subsidy, we have computed the ratio of each state's share of the subsidy to its share of the nation's owners. For example, the median state has a ratio of subsidy share to owner share of 0.83 in 1979, 0.71 in 1989, and 0.76 in 1999. These generally are less than half of California's numbers which are 1.77 in 1979, 2.29 in 1989, and 2.00 in 1999.[20]

Figure 3 provides more detail on the heterogeneity in benefit changes by state over the 1980s and 1990s by measuring each state's changes relative to the national average change. The top panel highlights that owners in northeastern and mid-Atlantic states did better than average in the 1980s. California and Hawaii are the only exceptions to that statement. There was less

[19] While one cannot compute transfers across states without making assumptions regarding how the program is financed, it seems certain that transfers are flowing from a host of states to owners in California and a select few other states. See our 2003 paper for transfer estimates assuming lump sum and proportional financing schemes using 1990 data. In both cases, the outcome is the majority of states transferring resources to owners in the smaller number of other states.

[20] While Hawaii's and the District of Columbia's ratios are higher in each decade, California's are more relevant empirically because of its very large number of owners.

heterogeneity in the 1990s, and it was owners in the less populous western states of Colorado, Oregon, and Utah who experienced significantly greater than average increases that decade. Owners in California and Hawaii received smaller than average benefit flow increases that decade.

As suggested in the introduction, many factors have changed over time that could influence the value of the tax benefits associated with owner-occupancy. The most obvious is tax rates themselves. Because owner-occupied housing is a true tax shelter in the sense that one can deduct expenses without declaring any income on the asset, a reduction in tax rates naturally lowers the value of the tax shelter. Figure 4 plots the 'average' marginal tax rate (state+federal) on housing deductions for 1979 and 1999, calculated using the Census data and the NBER's TAXSIM program. While marginal rates do differ across states, those differences have declined over time. Overall, marginal rates fell significantly during the 1980s and then rose modestly during the 1990s due to a series of tax reforms at the federal level. [21]

That aggregate benefits rose and benefits per owner did not decline on average between 1979 and 1989 indicates that other factors were changing to counterbalance the negative effect that an increase in the tax price of housing would have on the value of the benefit. In addition, the fact that most of the important tax changes were at the federal level may help explain why the nature of the spatial distribution across states was not affected very much.

Other components of the subsidy were changing, of course, and house prices in particular. Figure 5 graphs mean house price by state in 1979, 1989, and 1999, with Figure 6 reporting the percentage changes over time for each state. Values in many of the coastal states in

[21] Like tax rates, the probability of itemizing declined significantly between 1979 and 1999, reducing the subsidy to owner-occupied housing. Changes in the spatial distribution of itemizers, once one nets out the effect of house prices on the likelihood of itemization, do not seem to determine the changes in the benefits. This is not surprising since we saw in section I that itemization only affects the value of a small portion of the tax subsidy.

particular have skyrocketed over the past 20 years. In California, mean real prices rose from just over $200,000 in 1979 to nearly $300,000 in 1999. The change has been even more dramatic in places such as Massachusetts, where the average home was worth a little more than $100,000 in 1979. One decade later, mean prices had doubled (in real terms), and prices held firm in that state during the 1990s. It seems clear that it is this type of change that has allowed the average subsidy per owner in Massachusetts to rise so much over the past two decades. Indeed, a comparison of Figures 3 and 6 suggests that rising real house prices can help account for the dramatic increases in benefits per owner that have occurred in a small number of states, especially northeastern ones in the 1980s.

Of course, there are other factors at work, including the rising return in equity markets which raises the value of the tax shield on home equity in our calculations. While a detailed decomposition analysis of changes in the tax benefit over time is beyond the scope of this study, the data show that the factors that do change did so in a largely offsetting fashion with respect to the spatial distribution across states in the 1980s. The rise in aggregate and per owner benefits in the 1990s probably reflects a growing share of households that are owners, rising real house prices, and increasing tax rates. On net, the spatial distribution of benefits across states is fairly skewed in each census year, with very few states experiencing significant changes in their relative status. Whether this holds at the metropolitan area level is the subject of the following subsection.

Between-Metropolitan Area Results

In this subsection, we disaggregate the data further to examine subsidy flows at the metropolitan area level and find that the distribution of housing benefits are more skewed than at the state level, and that skewness is increasing over time. Results are computed for 380 areas

that were identifiable Census Core-Based Statistical Areas (CBSAs).[22]

Aggregate benefit flows at the CBSA level, which are reported for selected areas in the Appendix, document how extremely spatially targeted are the overall benefit flows. The vast majority of metropolitan areas receive a relatively modest benefit flow, while a relatively small number of areas receive very large aggregate benefit flows.

This form of spatial skewness also has increased over time at the metropolitan area level. For example, if we focus just on the three CBSAs that contain the nation's three largest cities of New York City, Los Angeles, and Chicago, their owners received benefit flows equal to $27.3 billion in 1979. While being home to just 10.1 percent of all owners living in designated metropolitan areas in the 1980s, they received 14.7 percent of all benefits flowing to metropolitan census tracts. By 1989, the spatial skewness of aggregate tax subsidy flows had become even more extreme. Owners in just these three CBSAs received 17.7 percent of all metropolitan area benefits while constituting an even smaller share of the nation's owners at 9.3 percent. The share of owners in these areas had fallen to 8.5 percent by 1999, but their benefit share was 1.72 times higher at 14.6 percent.

Figure 7, which plots benefits scaled by the number of owners in the CBSA, highlights that the subsidy flows disproportionately towards owners in a relatively small number of metropolitan areas and that the skewness is increasing over time. In this figure, CBSAs are ordered by their per-owner subsidy. Thus, the more extreme curvature in the graphs as the

[22]Benefit flows to census tracts not located within CBSAs are not included in the figures reported in this section. CBSAs are Census's new (2003) county-based definition of metropolitan areas. We apply the same definition in each of the three Census files, realizing of course that the economic relationship between the counties is weaker earlier in previous decades. By construction, a CBSA must contain at least one urban area of 10,000 or more population. The county (or counties) "in which at least 50 percent of the population resides within urban areas of 10,000 or more population, or that contain at least 5,000 people residing within a single urban area of 10,000 or more population, is identified as a "central county"" and is included in the CBSA. Additional "outlying counties" are included in the CBSA if they meet specified requirements of commuting to or from the central counties.

decades progress is an indication that spatial skewness, net of population changes, has been on the rise.

This is made even more clear in Tables 3 and 4, which report the top and bottom 20 CBSAs in terms of benefits per owner in 1979 and 1999, respectively. (We limit consideration to the 179 CBSAs that are above the median in terms of the number of households.[23]) The table also includes per household values of the subsidy, although the sorting is on a per owner basis.

These two tables make clear that there are very wide disparities in the size of benefit flows across places. For example, Table 3 documents that in 1979 an owner in one of the top 20 areas received from three to eight times the benefit flow of an owner in one of the bottom 20 areas.[24] The differentials are narrower on a per household basis, with households in the top twenty areas having benefit flows that are from 2 to 4 times those in the bottom twenty areas. While differences in ownership rates – which are lower in the top subsidy areas – do account for some of the gap between the top and bottom recipient areas, the disparity still is large even on a per household basis.

Table 4's figures based on 1999 data indicate that the differentials widened considerably over the ensuing two decades. For example, a comparison of the per owner subsidy in the 20th highest ranked area (Lake County-Kenosha County, IL-WI, Metropolitan Division) with the same figure for the 20th lowest ranked area (Scranton-Wilkes-Barre, PA, MSA) finds a ratio of 3.4 to 1—or 1.3 times the ratio for the analogously ranked areas in 1979. Comparing the 10th highest area's (Honolulu, HI, MSA) benefit per owner value with that for the 10th lowest area

[23] The top twenty areas in terms of benefits per owner are virtually unchanged by restricting the sample to more populous areas containing more than the median number of households. This is not the case among the bottom twenty areas. If the full sample of 380 CBSAs is used, Texas is even more overrepresented as it contains a large number of less populous metropolitan areas.

[24] These ranges were determined by computing the ratio of benefit per owner in the top-ranked area versus the bottom ranked area, from the second-to-highest ranked area versus the second-to-lowest ranked area, and so forth.

(Fort Smith, AR-OK, MSA) finds a ratio of 5.6 to 1—which is 1.5 times the ratio for similarly ranked areas in 1979. The disparity widens even further when comparing the top-ranked area (San Francisco-San Mateo-Redwood City, CA, Metropolitan Division) to the bottom-ranked area (McAllen-Edinberg-Pharr, TX, MSA) in terms of benefit per owner, with a ratio of 17.1 to 1 ($26,385/$1,541). Thus, the top recipient areas are receiving relatively more per area than the bottom ranked areas in 1999 than in 1979. Moreover, the benefits flowing to owners in the very top areas rose by 50-100 percent in real terms, while they were flat or declined slightly in the very bottom-ranked areas.

An even clearer face can be put on the skewness depicted in Figure 7 by examining who and where the top and bottom recipient areas are on a per owner basis. Fourteen of the top 20 areas appear in both 1979 and 1999. They include Honolulu, HI, Bridgeport-Stamford-Norwalk, CT, Bethesda-Frederick-Gaithersburg, MD, Lake County-Kenosha County, IL-WI, and ten areas spanning the length of California's coastline. By 1999, a series of areas, primarily located along the New York City-Boston corridor (Suffolk County-Nassau County, NY, New York-Wayne-White Plains, NY-NJ, Cambridge-Newton-Framingham, MA, Boston-Quincy, MA, and Newark-Union, NJ-PA) joined the top 20 list, replacing midwestern areas such as Ann Arbor, MI, Warren-Farmington Hills-Troy, MI, and Milwaukee-Waukesha-West Allis, WI, along with Anchorage, AK, and Washington-Arlington-Alexandria, DC-VA-MD-WV. Thus, the top recipient areas have become even more dominated by coastal areas, with the northeast being much more heavily represented in the 1999 rankings.[25] There is less stability among the bottom twenty ranked areas, with ten being present in both 1979 and 1999. Moreover, this group always has a very strong southern representation (especially, but not exclusively, Texas), and the

[25] The only interior area to join the top twenty list in 1999 was Boulder, CO.

metropolitan areas tend not to situated along the Atlantic or Pacific coasts.

In sum, the spatial skewness of benefit flows per owner has grown over time, with the top areas now receiving very large multiples of the subsidy received by the bottom areas. Geographically, this skewness now is a bi-coastal phenomenon, with metropolitan areas spanning the state of California and between New York and Boston dominating the top 20 benefit per owner rankings. Still, there is strong persistence over time in the areas that receive the most benefit, and their share of the total has been rising.

Because the most important tax code changes tend to have occurred at the federal level, plots of tax rates and tax rate changes at the metropolitan level are not particularly helpful in increasing our understanding of these results. In contrast, examining house prices over time at the local level is very illuminating. For example, Figure 8's plots of the distribution of mean house values by metropolitan area over time look strikingly similar to the distributions of benefits per owner in Figure 7. While it is the case that incomes and tax rates are somewhat higher in coastal metropolitan areas, those differences are not nearly as pronounced as for house values. Thus, it is rising real house prices, especially in key coastal metropolitan areas, augmented by generally higher tax rates in those areas, that is increasing the absolute and relative benefits flowing to their owners. Because how the housing is financed has only a second-order effect (through itemization) on the value of the subsidy, it is not necessary for households to refinance their houses to increase their subsidies. Since higher prices reflect higher implicit rental value, if housing were treated symmetrically tax revenues would increase with house prices.

III. Conclusions

Estimating the tax subsidy to home owners by comparing the taxes they now pay with those they would pay if they faced neutral tax treatment – like landlords, in our example – shows a substantial increase in the value of the tax benefit over time. While some of the aggregate increase clearly is due to a rise in the number of homeowners, benefits per owner are about 20 percent higher in 1999 than they were in 1979 at the national level. This is particularly interesting given that it occurs despite marginal and average tax rates falling over the past two decades. The evidence suggests that rising house prices, especially in key coastal areas and in certain regions of the country, can help account for the fact that the value of the subsidy has risen even though the tax subsidy per dollar of housing has declined.

Spatially, we demonstrate that the subsidy flows disproportionately to owners in a relatively small number of states—California, especially. Spatial skewness is even more extreme at the metropolitan level, and the data indicate that skewness there has increased over time, though the top recipient areas tend to remain so. Rising house prices in certain coastal metropolitan areas appear to play a large role in explaining this phenomenon.

While the magnitude and skewness of the subsidy are striking, one note of caution is in order when interpreting these results. While it may appear that current homeowners in some parts of the country reap a large tax subsidy, their house prices may be higher to reflect it. That is, the after-tax annual cost of housing in high-subsidy areas may not differ from low-subsidy areas by the full amount of the tax benefit. In the extreme case, if house prices have fully capitalized the benefit, current homeowners are no better off on a flow basis.

Computing the incidence of the tax subsidy to owner-occupied housing – the degree to which the subsidy shows up in higher house prices rather than as a reduced flow cost of homeownership – is beyond the scope of this paper. In addition, there is no consensus in the

economics literature on the answer: estimates range from full capitalization to very low capitalization.[26] Unfortunately, where the incidence lies has crucial implications for public policy. For example, it would be easy to jump to the conclusion that, due to the spatial inequity of the tax subsidy to owner occupied housing, policymakers should restructure the tax benefit. But if a reduction in benefit is capitalized into house prices, current homeowners may experience a loss of wealth. If those homeowners had been the beneficiaries of the rise in house prices when the tax subsidy increased, such a reduction in asset value might be equitable. However, it is quite likely that current homeowners purchased their house with the tax benefit already capitalized into the price, paying more on the expectation of future subsidies.

The degree of the capitalization of the subsidy into house prices also is unlikely to be spatially neutral. In places where land is in short supply, an increase in demand for housing is likely to show up more in house prices than it would in cities where it is easy to add more housing stock. That housing demand can be created by local economic factors or the subsidy to owner occupied housing. Thus, for the same underlying economic reasons, places where the tax benefit is the greatest are places with high land prices and also places where the subsidy is more likely to be capitalized into the house price. While we cannot say how much of any reduction in the tax benefit would show up as lower house prices, it seems likely that a larger fraction (of a larger benefit) would be reflected in house prices in the high benefit areas.

[26] For examples, see Bruce and Holtz-Eakin (1999) and Capozza, Green, and Hendershott (1996).

Selected References

Bruce, Donald, and Douglas Holtz-Eakin. "Apocalypse Now? Fundamental Tax Reform and Residential Housing Values," *mimeo*, Syracuse University, November 1999.

Capozza, Dennis, Richard Green and Patric Hendershott. "Taxes, Mortgage Borrowing, and Residential Land Prices." In Henry Aaron and William Gale, eds. *Economic Effects of Fundamental Tax Reform*. Washington, D.C.: Brookings, 1996, pp. 171-210.

Deloitte & Touche. "Analysis of the Economic and Tax Depreciation of Structures," *Deloitte & Touche working paper*. Washington, D.C.: June 2000.

Feenberg, Daniel Richard, and Elizabeth Coutts, "An Introduction to the TAXSIM Model," *Journal of Policy Analysis and Management* vol. 12 no. 1, Winter 1993, pages 189-194.

Follain, James, and David Ling. "The Federal Tax Subsidy to Housing and the Reduced Value of the Mortgage Interest Deduction," *National Tax Journal*, Vol. 44, no. 2 (1991): 147-168.

----------, David Ling, and Gary McGill. "The Preferential Income Tax Treatment of Owner-Occupied Housing: Who Really Benefits?" *Housing Policy Debate*, Vol. 4, no. 1 (1993): 1-24.

----------, and Lisa Melamed. "The False Messiah of Tax Policy: What Elimination of the Home Mortgage Interest Deduction Promises and a Careful Look at What It Delivers," *Journal of Housing Research*, Vol. 9 no. 2 (1998): 179-199.

Geolytics, Inc. *CensusCD 1980, 1990, 2000*, census tract-level data, East Brunswick, NJ.

Gravelle, Jane. "Whither Depreciation?" *National Tax Journal*, Vol. 54, no. 3 (2001): 513-526.

Green, Richard and Andrew Reschovsky. *Using Tax Policy to Increase Homeownership Among Low- and Moderate-Income Households.* Final Report to the Ford Foundation, 2001.

Gyourko, Joseph and Todd Sinai. "The Spatial Distribution of Housing-Related Ordinary Income Tax Benefits," *Real Estate Economics*, forthcoming 2003.

Hendershott, Patric and Joel Slemrod. "Taxes and the User Cost of Capital for Owner-Occupied Housing," *AREUEA Journal*, Winter 1983, 10 (4), 375-393.

Joint Committee on Taxation. "Estimates of Federal Tax Expenditures for Fiscal Years 1999-2003 (JCS-7-98)," (Washington, DC) U.S. Government Printing Office, December 14, 1998.

Moody, J. Scott. "Federal Tax Burdens and Expenditures by State: Which States Gain Most from Federal Fiscal Operations?" *Tax Foundation Monograph No. 124*, July 2003

Poterba, James. "Tax Subsidies to Owner-Occupied Housing: An Asset Market Approach," *Quarterly Journal of Economics*, November 1984, 99 (4), 729-752.

Poterba, James. "House Price Dynamics: The Role of Tax Policy and Demography," *Brookings Papers on Economic Activity*, 1991, 2, 143-203.

----------. "Taxation and Housing: Old Questions, New Answers," *American Economic Review*, May 1992, 82 (2), 237-242.

Rosen, Harvey. "Housing Decisions and the U.S. Income Tax," *Journal of Public Economics,* June 1979, 36 (1), 87-109.

O'Sullivan, Arthur, Terri Sexton, and Steven Sheffrin. *Property Taxes and Tax Revolts: The Legacy of Proposition 13*. Cambridge Press, 1995.

U. S. Bureau of the Census. *Summary Tape File 3 (STF3)*, census tract-level data. Washington, D.C.: 1990.

U.S. Department of the Treasury. *Statistics of Income, 1979, 1989, and 1999 Public Use Microsamples*. Washington, D.C.: 1980, 1990, 2000.

Table 1: Aggregate Tax Subsidy, National Level, by Year

	Total (billions of $99)
1979	$197.9
1989	$284.0
1999	$420.1
	Per Owner ($99)
1979	$4,840
1989	$4,818
1999	$6,024
	Per Household ($99)
1979	$3,023
1989	$3,121
1999	$4,015

Table 2: Aggregate Benefit Flow in Billions of $1999
By State and Year

	1979	1989	1999
Alabama	$1.80	$2.25	$4.18
Alaska	$0.38	$0.40	$0.67
Arizona	$2.69	$3.23	$6.55
Arkansas	$0.65	$1.17	$2.09
California	$38.07	$63.73	$78.66
Colorado	$3.37	$3.07	$8.56
Connecticut	$4.29	$8.10	$8.23
Delaware	$0.58	$0.89	$1.20
District of Columbia	$0.99	$1.23	$1.41
Florida	$8.61	$11.83	$19.62
Georgia	$3.63	$5.30	$10.49
Hawaii	$1.81	$2.70	$2.91
Idaho	$0.43	$0.65	$1.55
Illinois	$9.92	$11.87	$19.71
Indiana	$3.01	$3.31	$6.13
Iowa	$1.43	$1.70	$3.07
Kansas	$1.77	$1.94	$2.93
Kentucky	$1.28	$1.89	$3.81
Louisiana	$2.22	$2.04	$3.49
Maine	$0.54	$1.37	$1.59
Maryland	$4.53	$7.42	$9.56
Massachusetts	$5.12	$11.84	$14.03
Michigan	$10.39	$9.92	$17.59
Minnesota	$4.11	$4.14	$7.67
Mississippi	$1.01	$1.11	$2.00
Missouri	$2.61	$3.64	$6.11
Montana	$0.43	$0.49	$1.04
Nebraska	$0.76	$0.85	$1.67
Nevada	$0.82	$0.93	$2.30
New Hampshire	$0.64	$1.60	$1.74
New Jersey	$8.96	$15.01	$17.60
New Mexico	$0.84	$1.12	$2.15
New York	$15.20	$32.99	$39.72
North Carolina	$2.59	$5.03	$10.54
North Dakota	$0.26	$0.27	$0.41
Ohio	$8.09	$7.82	$13.32
Oklahoma	$1.77	$1.72	$2.67
Oregon	$2.87	$2.50	$6.48
Pennsylvania	$8.80	$10.45	$13.82
Rhode Island	$0.80	$1.48	$1.49
South Carolina	$1.48	$2.48	$4.76
South Dakota	$0.23	$0.24	$0.48
Tennesseee	$2.26	$2.84	$5.61
Texas	$9.12	$8.88	$15.60
Utah	$1.22	$1.14	$3.21
Vermont	$0.11	$0.59	$0.72
Virginia	$5.30	$7.82	$10.90
Washington	$4.04	$4.77	$9.52
West Virginia	$0.87	$0.90	$1.40
Wisconsin	$4.90	$5.11	$8.64
Wyoming	$0.31	$0.22	$0.46

Table 3: Benefits Per Owner and Per Household, Select CBSAs above median population in 1979, in $1999

Top 20 (by 1979 per owner)

Top 20 Areas by per owner subsidy, 1979

CBSA Name	Subsidy Per Owner Occupied Unit 1979	Subsidy Per Household 1979
Honolulu, HI Metropolitan Statistical Area	$13,491	$7,132
San Francisco-San Mateo-Redwood City, CA Metropolitan Division	$13,126	$6,156
San Jose-Sunnyvale-Santa Clara, CA Metropolitan Statistical Area	$11,320	$6,830
Santa Barbara-Santa Maria-Goleta, CA Metropolitan Statistical Area	$10,731	$5,615
Santa Ana-Anaheim-Irvine, CA Metropolitan Division	$10,719	$6,430
Bethesda-Frederick-Gaithersburg, MD Metropolitan Division	$10,669	$7,080
Bridgeport-Stamford-Norwalk, CT Metropolitan Statistical Area	$10,189	$6,870
Los Angeles-Long Beach-Glendale, CA Metropolitan Division	$9,585	$4,621
San Diego-Carlsbad-San Marcos, CA Metropolitan Statistical Area	$8,758	$4,813
Lake County-Kenosha County, IL-WI Metropolitan Division	$8,637	$6,236
Anchorage, AK Metropolitan Statistical Area	$8,616	$4,843
Santa Cruz-Watsonville, CA Metropolitan Statistical Area	$8,598	$5,332
Oxnard-Thousand Oaks-Ventura, CA Metropolitan Statistical Area	$8,553	$5,744
Oakland-Fremont-Hayward, CA Metropolitan Division	$8,427	$4,856
Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Division	$8,349	$4,425
Salinas, CA Metropolitan Statistical Area	$8,037	$4,549
Milwaukee-Waukesha-West Allis, WI Metropolitan Statistical Area	$7,738	$4,611
Santa Rosa-Petaluma, CA Metropolitan Statistical Area	$7,677	$4,857
Ann Arbor, MI Metropolitan Statistical Area	$7,483	$4,094
Warren-Farmington Hills-Troy, MI Metropolitan Division	$7,387	$5,689

Bottom 20 Areas by per owner subsidy, 1979

CBSA Name	Subsidy Per Owner Occupied Unit 1979	Subsidy Per Household 1979
McAllen-Edinburg-Pharr, TX Metropolitan Statistical Area	$1,687	$1,173
Waco, TX Metropolitan Statistical Area	$2,010	$1,252
Fort Smith, AR-OK Metropolitan Statistical Area	$2,177	$1,490
Lakeland-Winter Haven, FL Metropolitan Statistical Area	$2,180	$1,539
Killeen-Temple-Fort Hood, TX Metropolitan Statistical Area	$2,247	$1,332
Kingsport-Bristol, TN-VA Metropolitan Statistical Area	$2,294	$1,751
Pensacola-Ferry Pass-Brent, FL Metropolitan Statistical Area	$2,303	$1,614
Scranton--Wilkes-Barre, PA Metropolitan Statistical Area	$2,307	$1,564
Columbus, GA-AL Metropolitan Statistical Area	$2,418	$1,496
Johnstown, PA Metropolitan Statistical Area	$2,418	$1,740
Jacksonville, FL Metropolitan Statistical Area	$2,564	$1,670
Deltona-Daytona Beach-Ormond Beach, FL Metropolitan Statistical Area	$2,599	$1,848
Chattanooga, TN-GA Metropolitan Statistical Area	$2,602	$1,800
Fayetteville, NC Metropolitan Statistical Area	$2,612	$1,619
Beaumont-Port Arthur, TX Metropolitan Statistical Area	$2,628	$1,885
Hickory-Morganton-Lenoir, NC Metropolitan Statistical Area	$2,652	$2,001
Huntington-Ashland, WV-KY-OH Metropolitan Statistical Area	$2,652	$1,896
Macon, GA Metropolitan Statistical Area	$2,667	$1,666
Augusta-Richmond County, GA-SC Metropolitan Statistical Area	$2,733	$1,855
Springfield, MO Metropolitan Statistical Area	$2,760	$1,851

Note: Median number of households in 1979 among all 380 CBSAs is 56,664

Table 4: Benefits Per Owner and Per Household, Select CBSA's above median pop, 1999

Top 20 areas by per owner subsidy, 1999

CBSA Name	Subsidy Per Owner Occupied Unit 1999	Subsidy Per Household 1999
San Francisco-San Mateo-Redwood City, CA Metropolitan Division	$26,385	$13,327
San Jose-Sunnyvale-Santa Clara, CA Metropolitan Statistical Area	$24,629	$14,874
Bridgeport-Stamford-Norwalk, CT Metropolitan Statistical Area	$17,418	$12,075
Santa Barbara-Santa Maria-Goleta, CA Metropolitan Statistical Area	$16,759	$9,593
Suffolk County-Nassau County, NY Metropolitan Division	$15,655	$12,520
Oakland-Fremont-Hayward, CA Metropolitan Division	$15,151	$9,189
New York-Wayne-White Plains, NY-NJ Metropolitan Division	$14,776	$6,123
Santa Ana-Anaheim-Irvine, CA Metropolitan Division	$14,593	$8,953
Salinas, CA Metropolitan Statistical Area	$14,554	$7,994
Honolulu, HI Metropolitan Statistical Area	$14,115	$7,944
Santa Rosa-Petaluma, CA Metropolitan Statistical Area	$13,030	$8,338
Oxnard-Thousand Oaks-Ventura, CA Metropolitan Statistical Area	$12,895	$8,734
Cambridge-Newton-Framingham, MA Metropolitan Division	$12,643	$7,804
Los Angeles-Long Beach-Glendale, CA Metropolitan Division	$12,096	$5,845
Boulder, CO Metropolitan Statistical Area	$11,855	$7,719
San Diego-Carlsbad-San Marcos, CA Metropolitan Statistical Area	$11,641	$6,476
Bethesda-Frederick-Gaithersburg, MD Metropolitan Division	$11,223	$7,894
Boston-Quincy, MA Metropolitan Division	$10,941	$6,389
Newark-Union, NJ-PA Metropolitan Division	$10,870	$6,823
Lake County-Kenosha County, IL-WI Metropolitan Division	$10,700	$8,127

Bottom 20 areas by per owner subsidy, 1999

CBSA Name	Subsidy Per Owner Occupied Unit 1999	Subsidy Per Household 1999
McAllen-Edinburg-Pharr, TX Metropolitan Statistical Area	$1,541	$1,126
Brownsville-Harlingen, TX Metropolitan Statistical Area	$1,696	$1,149
Beaumont-Port Arthur, TX Metropolitan Statistical Area	$2,027	$1,428
El Paso, TX Metropolitan Statistical Area	$2,153	$1,380
Lubbock, TX Metropolitan Statistical Area	$2,326	$1,380
Corpus Christi, TX Metropolitan Statistical Area	$2,341	$1,483
Killeen-Temple-Fort Hood, TX Metropolitan Statistical Area	$2,345	$1,329
Huntington-Ashland, WV-KY-OH Metropolitan Statistical Area	$2,448	$1,765
Ocala, FL Metropolitan Statistical Area	$2,466	$1,969
Lakeland-Winter Haven, FL Metropolitan Statistical Area	$2,528	$1,855
Fort Smith, AR-OK Metropolitan Statistical Area	$2,537	$1,785
Kingsport-Bristol, TN-VA Metropolitan Statistical Area	$2,789	$2,136
Deltona-Daytona Beach-Ormond Beach, FL Metropolitan Statistical Area	$2,866	$2,162
Shreveport-Bossier City, LA Metropolitan Statistical Area	$2,873	$1,901
San Antonio, TX Metropolitan Statistical Area	$2,931	$1,891
Pensacola-Ferry Pass-Brent, FL Metropolitan Statistical Area	$3,000	$2,134
Youngstown-Warren-Boardman, OH-PA Metropolitan Statistical Area	$3,069	$2,275
Charleston, WV Metropolitan Statistical Area	$3,071	$2,272
Mobile, AL Metropolitan Statistical Area	$3,087	$2,158
Scranton--Wilkes-Barre, PA Metropolitan Statistical Area	$3,156	$2,199

Note: Median number of households in 1999 among all 380 CBSAs is 92,249.

Figure 1

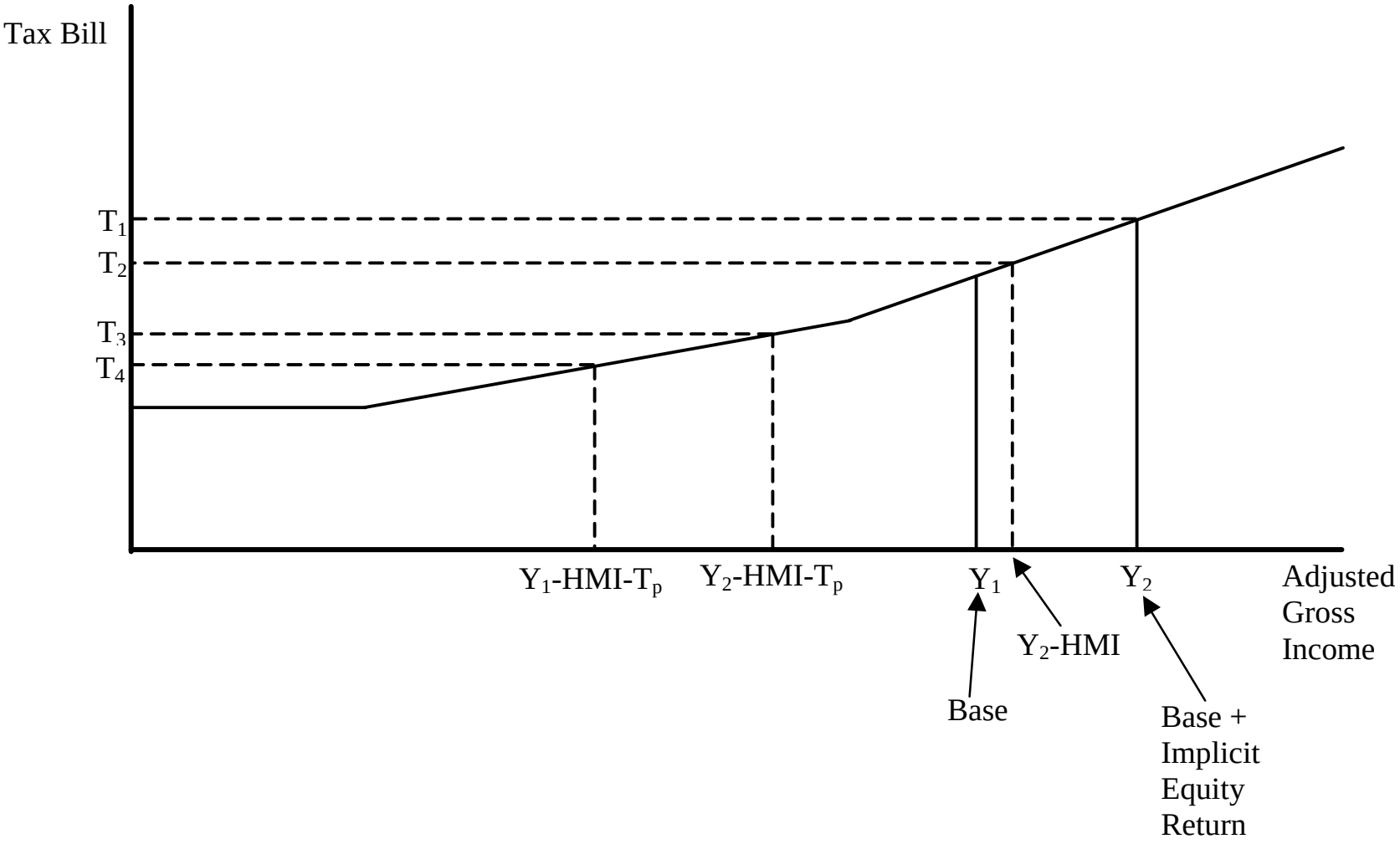

Tax Bill
T_1
T_2
T_3
T_4
Y_1-HMI-T_p
Y_2-HMI-T_p
Y_1
Y_2
Adjusted Gross Income
Y_2-HMI
Base
Base + Implicit Equity Return

Figure 2: Average Tax Benefits Per Owned Unit, by State and Year

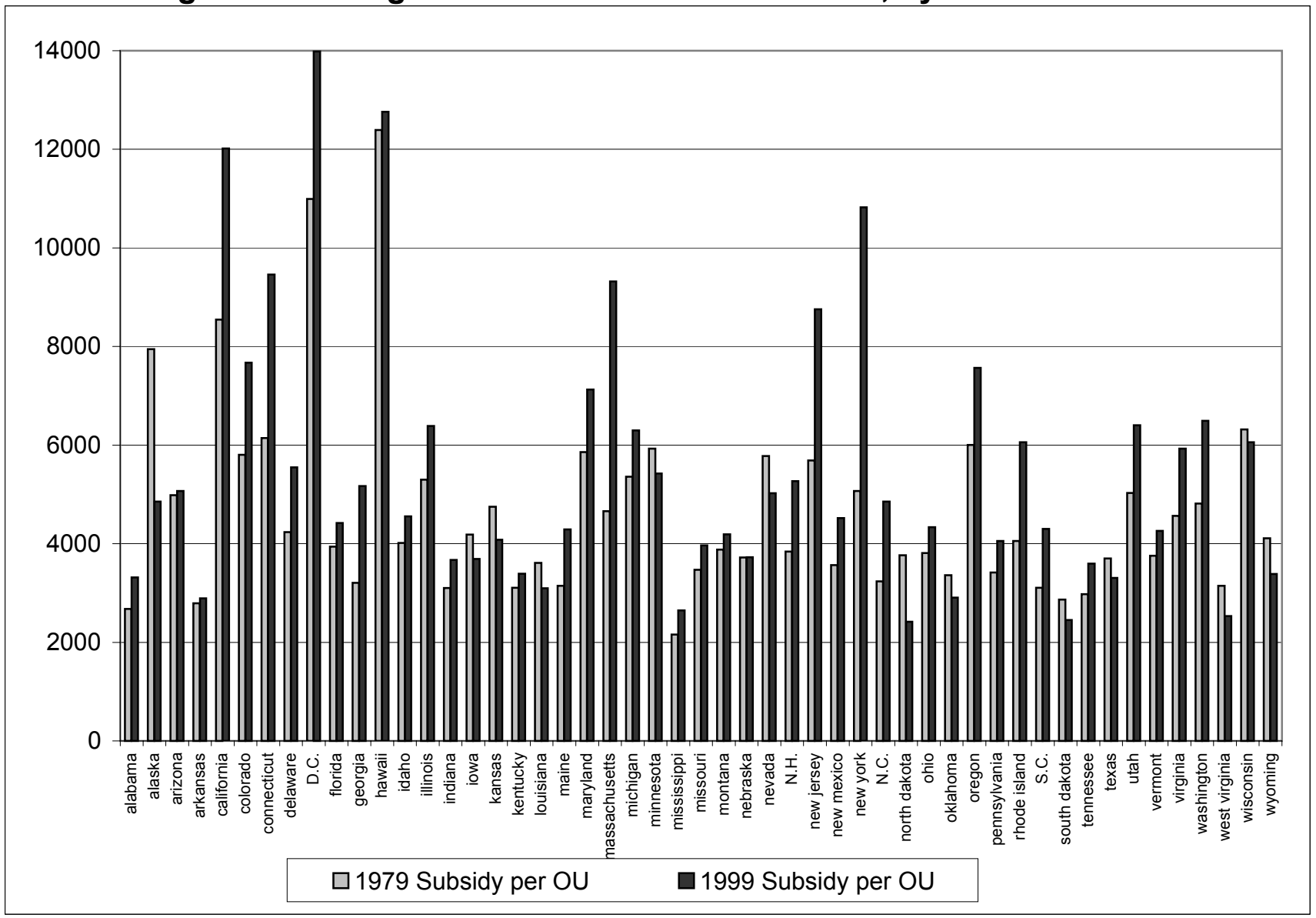


Figure 3: Changes in Benefits per Owner Relative to National Average, by State

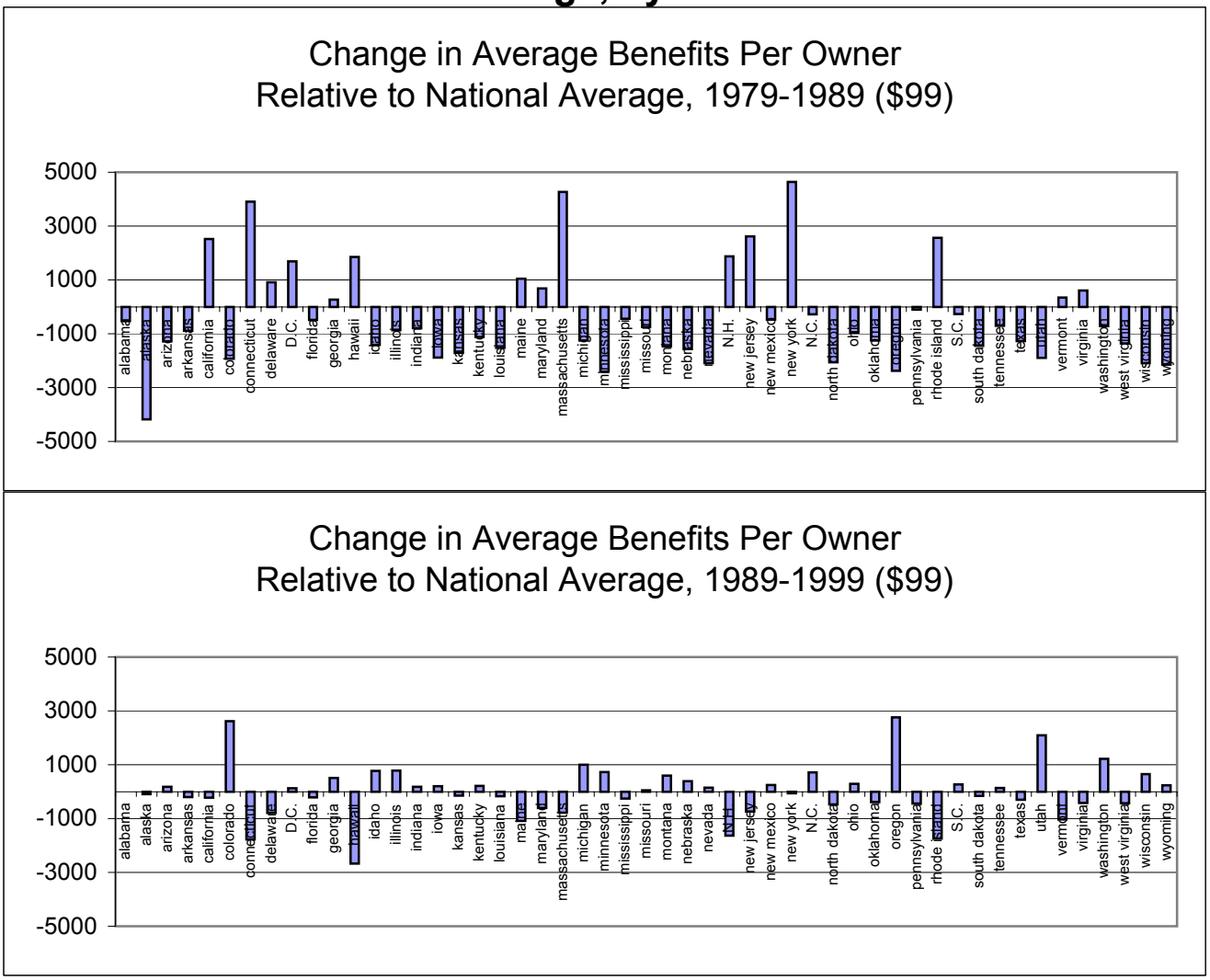


Figure 4: Average Marginal Tax Rates, by State and Year

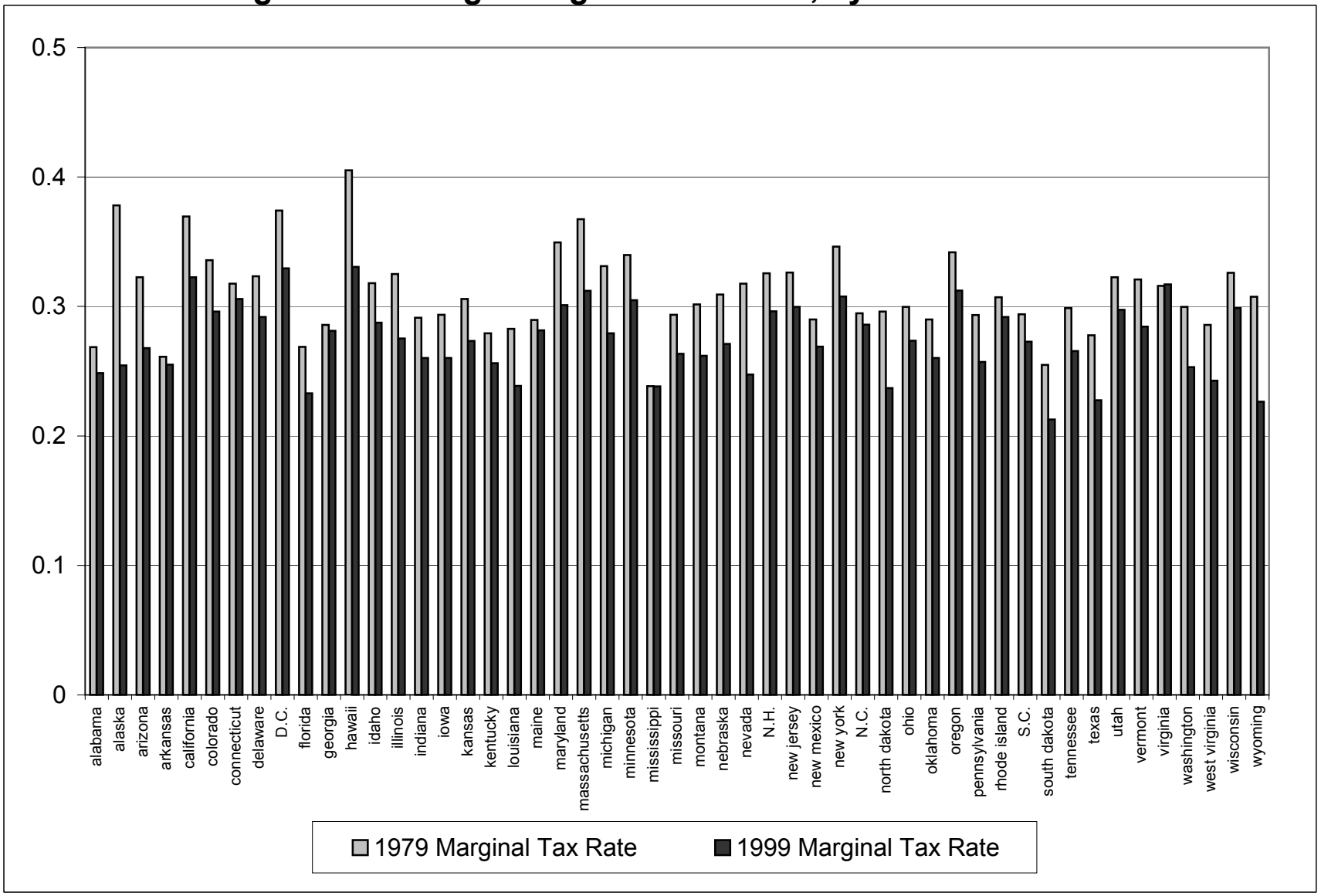


Figure 5: Average House Prices by State

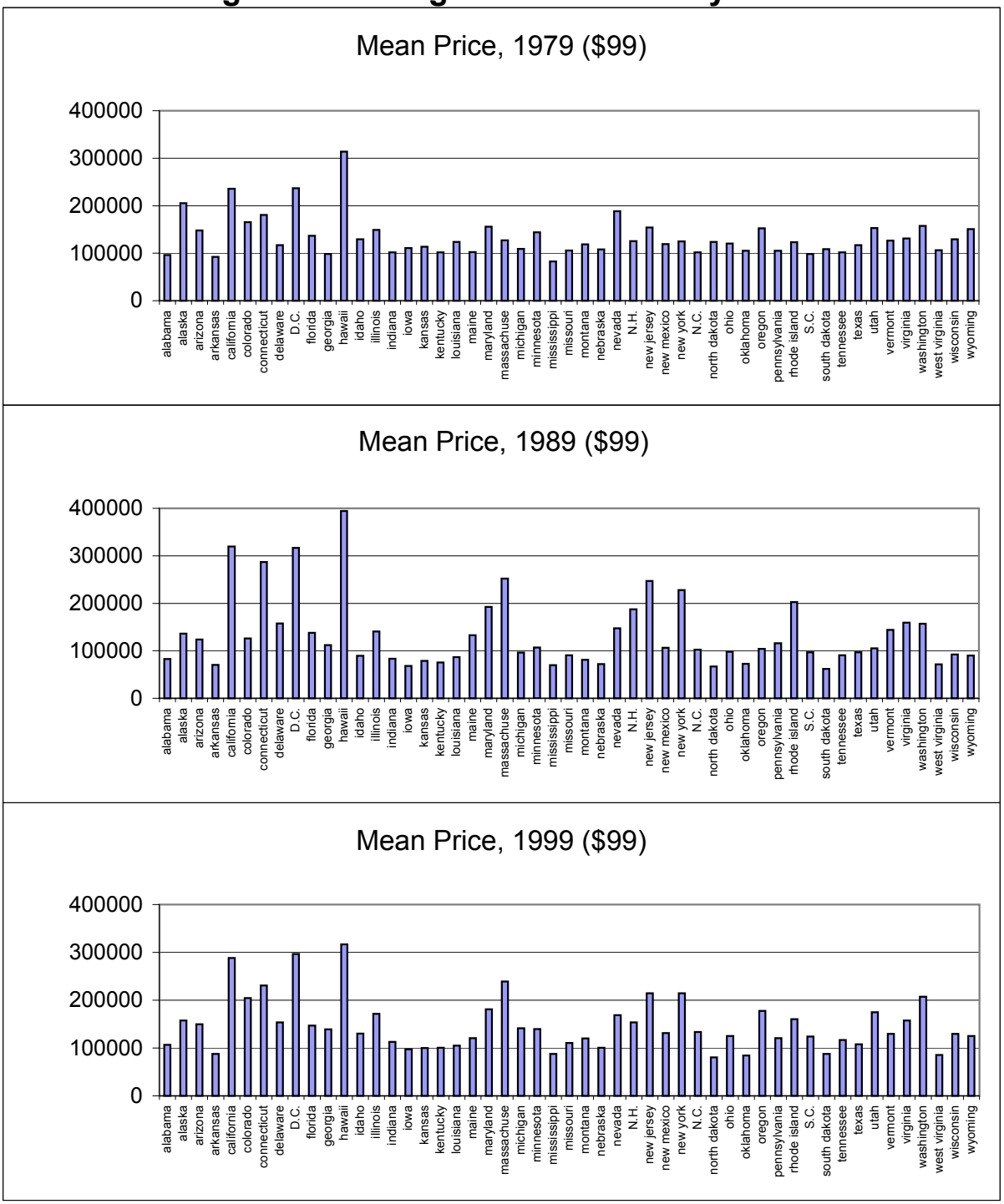


Figure 6: Percentage Change in Mean House Prices, by State

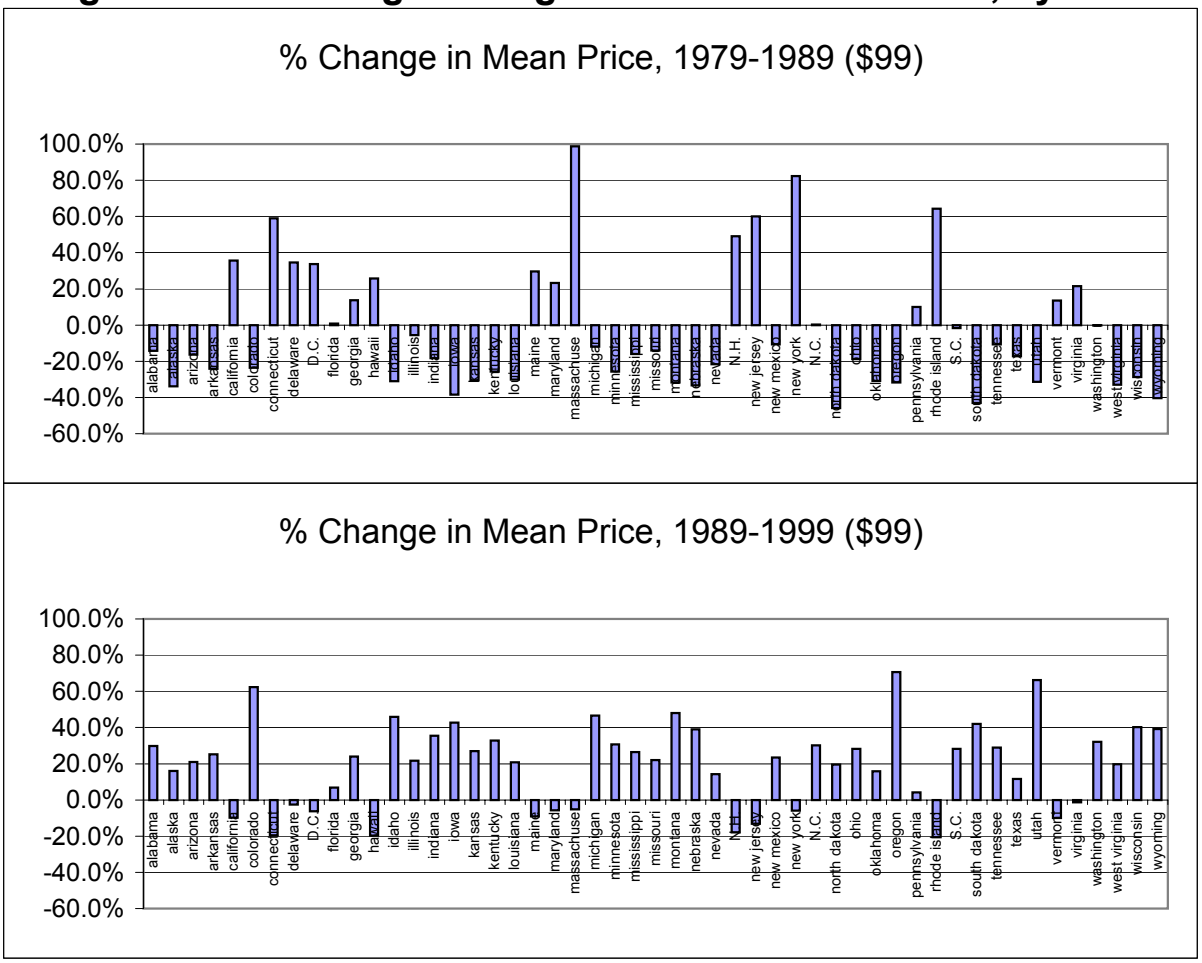


Figure 7: Benefits Per Owner, by Metropolitan Area and Year

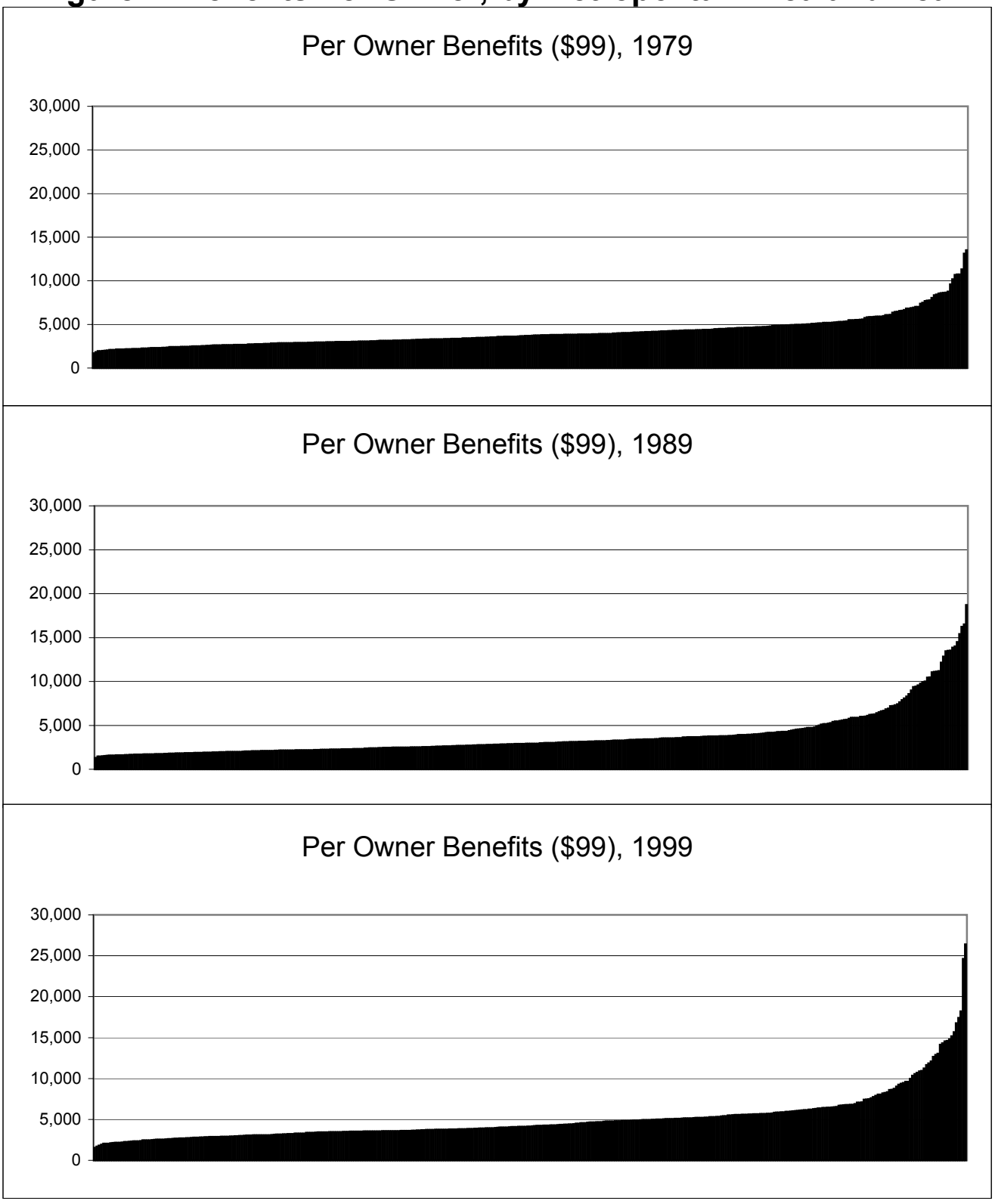
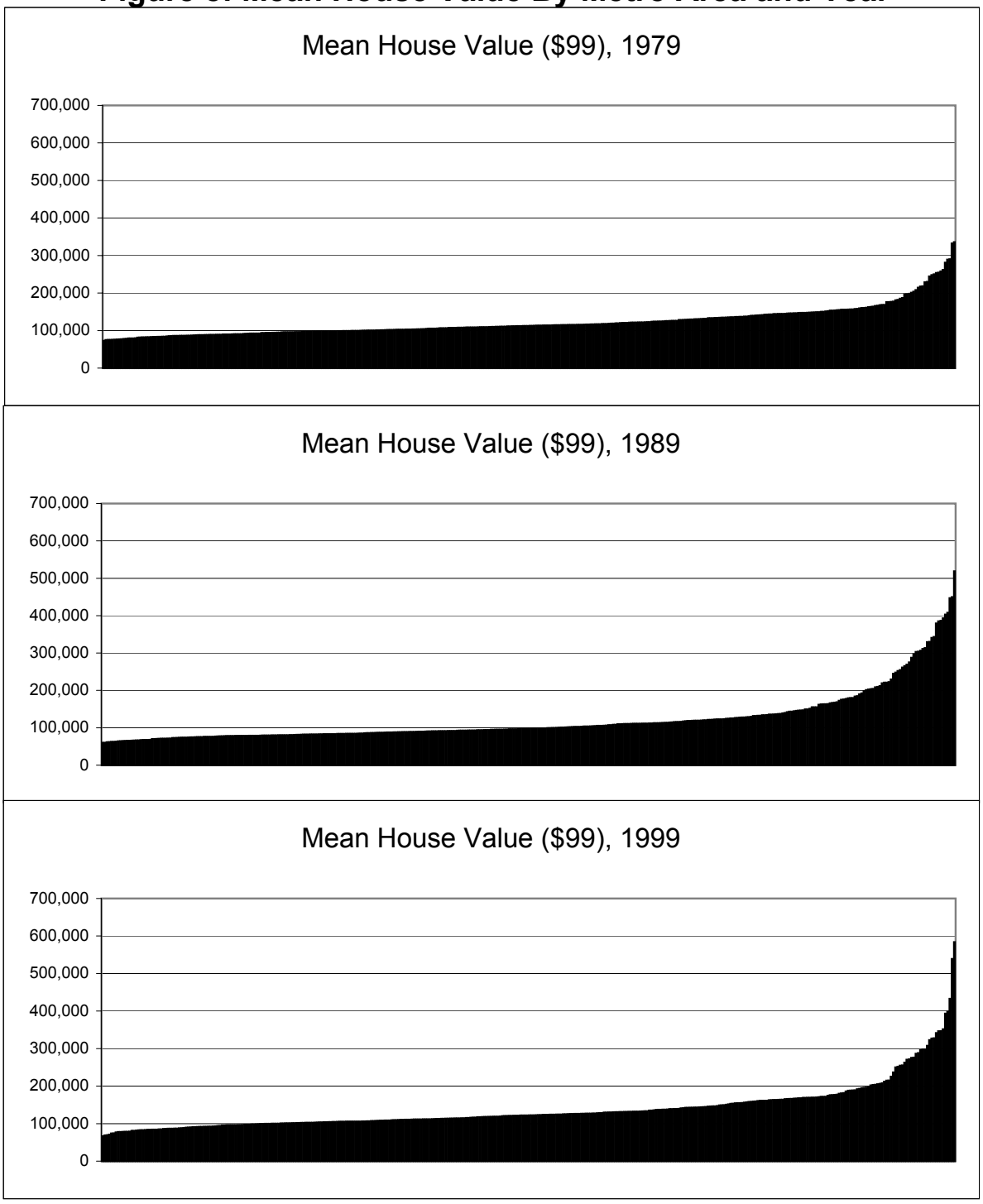


Figure 8: Mean House Value By Metro Area and Year



Appendix Table A: Selected Data for U.S. States

state name	value of aggregate tax benefits ($99)			tax benefit per owner-occ unit ($99)			number of owners			mean house value ($99)			average marginal tax rate		
	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999
alabama	1,802,227,840	2,253,063,424	4,175,816,448	2,675	2,121	3,318	673,806	1,062,054	1,258,635	96,129	82,428	106,983	26.9%	21.9%	24.9%
alaska	379,607,232	397,060,160	672,533,120	7,947	3,746	4,856	47,765	105,994	138,502	205,408	135,935	157,736	37.8%	24.8%	25.5%
arizona	2,690,386,432	3,231,756,288	6,554,214,400	4,984	3,678	5,069	539,757	878,580	1,292,938	148,093	123,851	149,931	32.3%	25.8%	26.8%
arkansas	650,788,864	1,167,047,424	2,090,370,944	2,790	1,882	2,890	233,238	620,027	723,428	92,488	70,168	87,847	26.1%	21.0%	25.5%
california	38,067,302,400	63,727,050,752	78,659,928,064	8,545	11,041	12,020	4,455,057	5,772,075	6,544,294	235,602	319,707	288,367	37.0%	31.5%	32.3%
colorado	3,373,017,856	3,073,462,784	8,560,170,496	5,806	3,851	7,670	580,961	798,109	1,116,008	165,177	126,149	204,708	33.6%	26.5%	29.6%
connecticut	4,288,072,448	8,098,544,128	8,226,069,504	6,144	10,032	9,460	697,929	807,271	869,568	180,498	286,864	230,847	31.8%	31.4%	30.6%
delaware	582,245,824	891,791,488	1,198,751,488	4,235	5,129	5,549	137,485	173,874	216,046	117,084	157,535	153,474	32.3%	28.0%	29.2%
D.C.	987,615,872	1,225,863,040	1,412,150,912	10,995	12,655	13,983	89,828	96,866	100,993	236,762	316,488	296,733	37.4%	31.3%	32.9%
florida	8,611,905,536	11,832,546,304	19,615,412,224	3,941	3,427	4,418	2,185,388	3,452,472	4,439,483	136,515	137,655	146,958	26.9%	21.7%	23.3%
georgia	3,629,056,000	5,302,925,824	10,490,105,856	3,206	3,451	5,170	1,131,977	1,536,745	2,029,097	98,568	112,028	138,960	28.6%	25.4%	28.1%
hawaii	1,806,276,224	2,702,411,520	2,905,577,472	12,390	14,223	12,759	145,783	190,005	227,729	313,646	394,430	316,968	40.5%	33.5%	33.1%
idaho	428,736,544	652,517,888	1,548,928,000	4,018	2,582	4,557	106,701	252,670	339,913	129,274	89,276	130,260	31.8%	25.6%	28.7%
illinois	9,924,210,688	11,869,473,792	19,707,949,056	5,300	4,406	6,391	1,872,329	2,694,029	3,083,895	148,959	140,727	171,253	32.5%	25.0%	27.5%
indiana	3,012,318,464	3,314,499,584	6,128,819,200	3,103	2,285	3,672	970,666	1,450,766	1,669,036	101,982	83,422	113,003	29.1%	23.7%	26.0%
iowa	1,432,509,056	1,702,115,200	3,070,541,312	4,187	2,284	3,693	342,165	745,371	831,419	110,751	68,159	97,233	29.4%	23.0%	26.0%
kansas	1,765,733,888	1,938,567,168	2,932,505,088	4,750	3,021	4,079	371,740	641,760	718,852	113,504	78,970	100,258	30.6%	23.9%	27.3%
kentucky	1,278,161,536	1,891,647,360	3,814,249,728	3,107	1,969	3,390	411,350	960,473	1,125,263	101,580	75,539	100,380	27.9%	21.0%	25.6%
louisiana	2,216,166,400	2,039,128,320	3,485,700,096	3,611	2,064	3,099	613,664	987,958	1,124,960	123,998	86,733	104,837	28.3%	20.7%	23.9%
maine	539,102,592	1,367,156,992	1,591,701,248	3,145	4,170	4,292	171,395	327,846	370,893	102,243	132,530	120,413	29.0%	27.0%	28.2%
maryland	4,525,458,432	7,418,500,096	9,560,833,024	5,858	6,524	7,127	772,546	1,137,154	1,341,442	155,912	192,235	181,120	34.9%	28.9%	30.1%
massachusetts	5,115,107,840	11,840,002,048	14,027,061,248	4,658	8,901	9,322	1,098,037	1,330,122	1,504,750	126,902	252,197	239,309	36.7%	33.7%	31.2%
michigan	10,390,330,368	9,924,272,128	17,592,858,624	5,360	4,089	6,299	1,938,581	2,427,308	2,793,111	109,309	96,207	141,093	33.1%	25.5%	27.9%
minnesota	4,107,958,272	4,137,303,552	7,665,030,144	5,930	3,497	5,426	692,749	1,183,118	1,412,679	144,255	107,095	139,938	34.0%	27.9%	30.5%
mississippi	1,007,276,608	1,105,440,512	2,002,671,872	2,157	1,697	2,645	466,907	651,565	757,115	82,710	69,491	87,925	23.9%	19.9%	23.8%
missouri	2,607,953,152	3,644,891,392	6,112,291,840	3,471	2,703	3,963	751,437	1,348,536	1,542,237	105,572	90,693	110,746	29.4%	23.1%	26.3%
montana	428,192,928	490,939,264	1,037,627,648	3,879	2,384	4,190	110,392	205,895	247,622	118,764	81,022	119,956	30.2%	23.1%	26.2%
nebraska	763,762,240	853,186,688	1,674,232,704	3,721	2,131	3,727	205,278	400,382	449,178	108,070	72,160	100,306	30.9%	23.1%	27.1%
nevada	817,402,432	932,990,656	2,297,021,184	5,781	3,665	5,024	141,395	254,566	457,199	188,371	147,546	168,613	31.8%	23.2%	24.7%
N.H.	638,592,448	1,596,936,704	1,743,287,424	3,842	5,695	5,270	166,213	280,415	330,783	125,703	187,447	153,730	32.6%	29.3%	29.6%
new jersey	8,955,282,432	15,010,032,640	17,601,245,184	5,687	8,282	8,753	1,574,611	1,812,339	2,010,815	154,362	246,995	214,630	32.6%	28.3%	30.0%
new mexico	843,683,584	1,122,229,888	2,145,111,168	3,567	3,068	4,522	236,538	365,736	474,400	119,025	106,216	131,164	29.0%	24.2%	26.9%
new york	15,197,323,264	32,992,880,640	39,722,639,360	5,067	9,683	10,824	2,998,990	3,407,462	3,669,796	125,073	227,971	214,444	34.6%	30.1%	30.8%
N.C.	2,587,712,512	5,025,573,376	10,542,273,536	3,237	2,936	4,853	799,308	1,711,672	2,172,152	101,989	102,358	133,273	29.5%	24.2%	28.6%
north dakota	260,747,040	266,344,288	414,378,784	3,767	1,688	2,420	69,218	157,788	171,259	123,919	67,123	80,265	29.6%	20.8%	23.7%
ohio	8,087,154,176	7,822,331,392	13,320,946,688	3,812	2,836	4,336	2,121,384	2,757,772	3,072,384	120,203	97,637	125,233	30.0%	24.6%	27.4%
oklahoma	1,766,557,312	1,717,336,960	2,668,697,600	3,362	2,091	2,907	525,460	821,267	918,136	105,161	72,772	84,317	29.0%	22.8%	26.0%
oregon	2,869,642,496	2,504,379,392	6,482,011,648	6,001	3,599	7,565	478,187	695,772	856,858	152,463	104,173	177,739	34.2%	27.2%	31.2%
pennsylvania	8,800,496,640	10,449,649,664	13,818,100,736	3,415	3,290	4,057	2,577,100	3,176,255	3,406,045	105,430	115,942	120,697	29.3%	23.4%	25.7%
rhode island	803,631,232	1,482,526,720	1,485,555,840	4,056	6,594	6,060	198,140	224,829	245,128	123,122	202,311	160,513	30.7%	28.6%	29.2%
S.C.	1,481,468,416	2,477,453,568	4,762,169,344	3,107	2,820	4,299	476,795	878,396	1,107,619	98,249	96,554	123,803	29.4%	24.9%	27.3%
south dakota	226,558,576	239,957,360	484,884,800	2,869	1,402	2,450	78,964	171,122	197,902	108,525	61,841	87,845	25.5%	18.1%	21.3%
tennessee	2,262,095,872	2,840,229,632	5,612,573,696	2,975	2,252	3,595	760,328	1,260,974	1,561,394	101,570	90,677	116,947	29.9%	23.4%	26.6%
texas	9,122,002,944	8,877,802,496	15,597,929,472	3,700	2,403	3,307	2,465,540	3,694,082	4,716,914	116,826	96,644	107,786	27.8%	20.4%	22.8%
utah	1,217,788,160	1,136,289,280	3,210,896,384	5,028	3,106	6,401	242,219	365,781	501,605	153,176	105,104	174,779	32.3%	26.6%	29.7%
vermont	114,842,080	593,118,784	723,118,464	3,754	4,080	4,259	30,593	145,368	169,777	126,830	144,010	129,562	32.1%	27.5%	28.4%
virginia	5,300,419,584	7,820,744,192	10,895,771,648	4,564	5,148	5,928	1,161,331	1,519,273	1,837,926	131,179	159,395	157,349	31.6%	26.8%	31.7%
washington	4,037,749,760	4,768,554,496	9,521,277,952	4,813	4,074	6,494	838,846	1,170,590	1,466,081	157,329	156,948	207,334	30.0%	23.0%	25.3%
west virginia	874,336,896	899,306,240	1,402,487,936	3,147	1,763	2,533	277,790	510,041	553,619	106,439	71,315	85,444	28.6%	21.3%	24.3%
wisconsin	4,895,357,440	5,110,471,168	8,643,598,336	6,317	4,206	6,060	775,010	1,214,900	1,426,329	129,365	92,239	129,357	32.6%	27.4%	29.9%
wyoming	305,814,560	222,550,080	459,084,256	4,113	1,946	3,389	74,358	114,373	135,471	151,016	89,961	125,252	30.8%	20.4%	22.6%
Nation	197,878,141,392	284,002,854,736	420,069,163,200	4,840	4,818	6,024	40,885,208	58,951,786	69,730,677	137,536	148,106	158,764			

Appendix Table B: Data for Selected CBSAs

CBSA name	value of aggregate tax benefits ($99)			tax benefit per owner occ unit ($99)			number of owners			mean house value ($99)			marginal tax rates		
	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999
Akron, OH	638,726,656	516,888,928	932,638,016	4,012	3,006	4,827	159210	171939	193216	123,480	101,418	135,480	30.4%	24.9%	27.9%
Albany-Schenectady-Troy, NY	640,422,528	1,238,426,112	1,248,092,544	3,673	6,251	5,866	174374	198129	212761	97,292	146,335	122,295	33.3%	29.1%	29.5%
Albuquerque, NM	464,202,976	528,685,024	979,671,808	4,158	3,630	5,130	111640	145651	190951	136,033	122,163	145,352	30.8%	26.3%	28.6%
Anchorage, AK	294,608,640	222,468,304	386,975,904	8,616	4,157	5,291	34195	53517	73139	218,177	145,365	165,659	38.3%	25.4%	26.0%
Atlanta-Sandy Springs-Marietta, GA	2,001,247,616	3,397,691,136	7,016,630,272	4,288	4,716	6,764	466664	720466	1037289	121,854	144,184	171,392	31.7%	28.0%	30.3%
Atlantic City, NJ	227,104,752	288,889,664	318,181,024	5,016	5,249	5,047	45272	55032	63040	145,769	168,175	143,500	29.9%	26.3%	27.2%
Augusta-Richmond County, GA-SC	221,483,200	283,350,624	454,939,360	2,733	2,712	3,533	81039	104464	128785	89,463	93,675	105,276	28.1%	24.8%	26.8%
Austin-Round Rock, TX	433,828,544	517,870,752	1,510,661,632	4,275	3,100	5,496	101491	167072	274860	134,011	119,051	160,781	27.6%	21.6%	25.1%
Baltimore-Towson, MD	2,138,101,504	3,112,937,728	4,169,964,032	4,755	5,555	6,399	449670	560385	651626	133,862	166,357	165,544	33.0%	28.0%	29.3%
Baton Rouge, LA	397,446,304	335,150,976	635,060,992	3,963	2,309	3,569	100294	145173	177926	134,767	94,846	117,445	30.0%	22.2%	25.2%
Bellingham, WA	100,510,848	111,412,976	216,015,664	4,050	3,567	5,286	24816	31237	40863	149,040	146,820	187,997	28.0%	22.1%	24.3%
Bend, OR	18,944,644	86,332,608	264,858,176	4,869	4,165	8,034	3891	20728	32967	133,093	121,326	191,411	33.3%	27.8%	31.1%
Billings, MT	98,110,192	86,549,648	166,627,648	4,458	2,723	4,267	22008	31779	39052	136,578	89,560	117,921	31.2%	24.1%	26.7%
Boise City-Nampa, ID	255,588,224	235,741,696	617,279,104	4,210	2,894	5,046	60713	81459	122329	133,148	96,915	138,922	32.1%	26.9%	29.9%
Boston-Quincy, MA	1,444,536,960	3,393,614,336	4,288,292,608	4,772	9,753	10,941	302726	347955	391958	128,819	275,059	275,346	36.8%	34.1%	32.0%
Boulder, CO	243,525,776	280,866,944	880,046,848	6,889	5,199	11,855	35348	54027	74233	196,032	163,109	297,575	35.2%	28.7%	32.0%
Bridgeport-Stamford-Norwalk, CT	1,923,640,576	3,205,777,664	3,909,148,416	10,189	15,405	17,418	188793	208103	224436	257,432	407,753	393,162	35.7%	33.3%	33.1%
Buffalo-Cheektowaga-Tonawanda, NY	1,090,865,536	1,417,401,856	1,724,492,544	3,885	4,758	5,560	280786	297911	310169	95,849	103,569	101,591	33.0%	26.5%	27.9%
Cambridge-Newton-Framingham, MA	1,686,670,848	3,441,761,792	4,381,857,792	6,107	11,114	12,643	276194	309685	346591	156,010	302,768	307,466	39.6%	34.9%	33.1%
Camden, NJ	905,497,472	1,473,746,176	1,661,466,496	3,684	5,095	5,160	245816	289236	321989	114,437	161,389	141,217	31.1%	27.2%	28.6%
Cape Coral-Fort Myers, FL	216,397,632	369,687,648	688,554,688	3,849	3,657	4,774	56220	101093	144240	145,256	149,217	159,251	27.2%	22.2%	23.5%
Cedar Rapids, IA	152,935,744	164,628,496	321,963,552	4,372	2,858	4,647	34981	57598	69290	113,523	83,039	118,592	31.1%	24.6%	27.5%
Champaign-Urbana, IL	131,526,608	120,526,896	175,654,320	4,328	2,771	3,599	30389	43501	48802	130,475	97,901	108,430	30.3%	23.6%	25.4%
Charleston-North Charleston, SC	298,552,576	392,901,024	814,481,280	3,492	3,538	5,887	85498	111039	138360	109,154	118,143	158,663	29.9%	26.0%	28.4%
Charlotte-Gastonia-Concord, NC-SC	630,344,000	961,951,872	2,171,821,824	3,819	3,773	6,298	165057	254932	344824	111,778	122,980	160,711	31.3%	26.4%	30.5%
Chicago-Naperville-Joliet, IL	7,231,012,352	8,616,651,776	14,298,169,344	5,916	5,763	8,185	1222261	1495156	1746863	163,745	179,722	214,446	33.4%	26.5%	28.8%
Cincinnati-Middletown, OH-KY-IN	1,349,861,376	1,492,849,408	2,720,939,264	4,086	3,350	5,192	330386	445659	524044	125,086	112,169	142,408	30.0%	25.3%	28.3%
Cleveland-Elyria-Mentor, OH	2,340,626,688	1,891,229,824	3,076,908,288	4,619	3,535	5,298	506780	535003	580806	137,384	115,657	145,946	31.7%	25.7%	28.1%
Columbia, MO	66,004,672	68,706,872	143,254,080	3,614	2,667	4,290	18265	25761	33395	116,401	91,526	122,095	29.3%	23.5%	26.9%
Columbia, SC	310,364,192	441,571,616	758,316,736	3,654	3,291	4,406	84942	134160	172118	111,649	108,000	124,057	31.1%	26.6%	28.3%
Columbus, GA-AL	125,229,640	135,079,872	219,418,608	2,418	2,487	3,528	51800	54308	62194	82,239	87,537	103,540	26.2%	23.1%	25.7%
Columbus, OH	907,619,136	1,094,443,392	2,082,875,776	3,741	3,389	5,193	242635	322933	401117	121,344	113,436	143,824	29.4%	25.8%	28.4%
Dallas-Plano-Irving, TX	1,787,127,680	2,052,730,112	3,614,394,368	4,704	3,773	4,926	379955	544026	733778	139,413	138,433	145,829	29.9%	23.0%	25.0%
Dayton, OH	650,570,688	641,685,248	929,741,120	3,571	3,024	4,092	182160	212196	227208	115,115	102,132	120,683	29.7%	25.4%	27.6%
Denver-Aurora, CO	2,126,247,552	1,727,210,368	4,661,587,968	6,653	4,235	8,257	319579	407822	564536	181,670	134,048	214,808	35.3%	27.5%	30.5%
Detroit-Livonia-Dearborn, MI	2,523,734,528	1,749,090,432	2,907,995,904	4,606	3,508	5,681	547912	498536	511861	92,172	80,599	125,817	31.9%	24.1%	27.1%
Durham, NC	167,461,488	309,861,376	646,727,616	3,856	3,957	6,442	43430	78309	100396	115,163	128,616	163,509	30.4%	26.1%	29.9%
El Paso, TX	234,032,432	202,286,624	287,609,920	3,019	1,935	2,153	77511	104525	133596	107,332	88,590	82,208	24.9%	19.2%	21.1%
Erie, PA	214,140,800	152,758,544	240,796,192	3,169	2,192	3,267	67577	69705	73701	101,504	82,905	102,053	28.5%	22.4%	24.8%
Eugene-Springfield, OR	352,309,856	230,356,576	548,142,784	5,948	3,418	6,750	59234	67387	81208	154,441	100,775	163,778	33.3%	26.6%	30.5%
Fairbanks, AK	48,781,984	41,802,852	67,040,700	5,564	3,195	4,172	8767	13083	16070	157,684	122,467	138,943	34.5%	24.2%	25.1%
Flagstaff, AZ	27,159,490	63,852,540	137,561,136	4,954	3,539	5,549	5482	18042	24790	155,558	119,531	164,975	32.6%	24.7%	26.3%
Flint, MI	555,334,336	381,794,816	615,705,408	4,852	3,361	4,950	114454	113585	124382	96,477	76,577	110,748	33.3%	25.0%	27.1%
Fort Lauderdale-Pompano Beach-Deerfield Beach, FL	1,646,826,880	1,605,702,016	2,339,358,976	5,853	4,466	5,146	281351	359532	454625	186,762	172,201	166,958	30.0%	23.4%	24.3%
Fort Worth-Arlington, TX	714,726,016	895,811,776	1,444,907,520	3,322	2,906	3,629	215119	308241	398192	112,082	112,403	116,109	28.0%	22.5%	24.0%
Fresno, CA	486,070,144	468,251,712	651,644,352	5,177	3,906	4,562	93896	119869	142856	160,012	132,301	130,421	32.3%	26.3%	27.4%
Grand Junction, CO	84,098,384	59,602,872	151,216,544	4,694	2,533	4,540	17917	23534	33306	146,049	94,419	142,770	31.3%	23.7%	26.8%
Grand Rapids-Wyoming, MI	589,228,928	658,072,000	1,137,655,680	4,486	3,938	5,716	131340	167128	199044	98,972	96,166	131,514	31.6%	26.0%	28.2%
Greensboro-High Point, NC	340,587,552	452,484,608	814,777,856	3,430	3,210	4,745	99286	140951	171721	105,193	109,639	129,803	30.3%	25.3%	29.1%
Harrisburg-Carlisle, PA	366,251,072	386,465,376	573,905,792	3,300	3,084	4,069	110999	125306	141039	108,277	111,617	125,401	30.0%	24.8%	26.4%
Hartford-West Hartford-East Hartford, CT	1,158,310,656	2,346,470,912	2,000,050,816	5,021	8,571	6,763	230680	273757	295713	159,024	252,005	174,273	31.6%	31.4%	30.3%
Honolulu, HI	1,502,906,240	2,205,694,720	2,204,443,648	13,491	16,218	14,115	111399	136004	156179	335,396	446,772	346,203	41.4%	34.3%	33.7%
Houston-Baytown-Sugar Land, TX	3,217,568,256	2,229,041,408	4,054,737,408	5,122	2,922	4,019	628231	762905	1008875	146,784	109,944	123,350	31.3%	22.0%	23.9%
Huntsville, AL	148,019,184	234,739,440	393,487,488	2,935	3,156	4,104	50432	74386	95890	101,690	110,519	122,707	28.7%	25.3%	26.8%
Indianapolis, IN	873,032,064	949,692,672	1,911,556,224	3,457	2,984	4,751	252532	318234	402315	109,099	103,797	138,588	30.0%	25.2%	27.3%
Iowa City, IA	62,661,960	88,865,784	176,962,272	5,519	3,651	5,698	11354	24342	31055	144,804	105,105	143,365	31.6%	25.4%	27.6%
Ithaca, NY	66,261,812	114,455,608	124,161,200	4,062	6,211	6,340	16312	18427	19583	108,107	143,203	118,815	32.3%	28.2%	28.4%
Jonesboro, AR	23,401,900	44,457,928	79,336,656	3,180	1,908	2,901	7358	23306	27351	100,033	69,860	86,894	26.6%	20.4%	25.5%
Kansas City, MO-KS	1,351,621,504	1,420,376,064	2,399,717,888	4,240	3,428	4,902	318750	414357	489569	113,505	99,453	124,990	30.9%	25.2%	28.3%
Kennewick-Richland-Pasco, WA	143,552,320	76,011,232	175,173,440	4,656	2,240	3,800	30829	33940	46094	148,891	94,512	132,466	31.7%	21.6%	24.2%
Knoxville, TN	338,131,616	343,717,664	679,502,080	2,965	2,402	3,825	114060	143120	177630	102,427	95,948	123,920	29.8%	24.1%	26.8%
Lafayette, IN	80,248,152	86,830,472	158,273,760	3,781	2,543	3,985	21223	34141	39721	125,626	93,652	123,865	29.7%	24.1%	26.2%
Lake County-Kenosha County, IL-WI	881,901,568	1,269,607,936	2,215,093,760	8,637	7,874	10,700	102105	161245	207026	197,791	220,613	249,906	36.6%	28.2%	30.7%
Las Vegas-Paradise, NV	481,587,744	521,283,520	1,474,359,168	5,221	3,518	4,869	92232	148158	302807	175,772	143,027	163,791	31.0%	23.1%	24.8%
Lawrence, KS	38,067,052	59,406,500	109,807,448	4,391	3,755	5,504	8669	15821	19951	114,497	100,642	139,411	28.3%	24.2%	28.1%
Lewiston-Auburn, ME	57,581,660	92,324,232	92,302,400	2,655	3,707	3,466	21687	24906	26628	92,088	122,663	99,836	27.6%	26.9%	27.7%
Lexington-Fayette, KY	247,835,472	242,404,256	466,688,000	3,920	3,128	4,758	63228	77504	98076	128,039	112,415	133,161	29.2%	24.0%	27.9%
Lincoln, NE	165,446,768	149,776,992	298,532,896	4,317	2,779	4,651	38323	53892	64193	122,495	90,875	123,599	31.6%	24.9%	28.4%
Los Angeles-Long Beach-Glendale, CA	12,335,770,624	19,375,642,624	18,130,198,528	9,585	13,457	12,096	1287008	1439801	1498881	254,380	386,087	295,509	37.1%	32.1%	32.0%
Louisville, KY-IN	623,438,208	680,264,640	1,443,264,256	3,027	2,468	4,492	205993	275630	321312	97,123	89,075	126,171	28.2%	23.2%	27.4%

Appendix Table B: Data for Selected CBSAs

CBSA name	value of aggregate tax benefits ($99)			tax benefit per owner occ unit ($99)			number of owners			mean house value ($99)			marginal tax rates		
	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999
Macon, GA	106,113,760	124,471,864	197,234,224	2,667	2,591	3,548	39792	48041	55594	86,153	89,470	105,459	27.5%	23.7%	26.2%
Madison, WI	373,065,632	495,135,296	942,124,736	7,008	5,150	7,733	53238	96139	121835	148,707	110,895	162,775	33.4%	29.1%	31.2%
Manchester-Nashua, NH	252,867,904	494,829,472	519,464,800	4,212	6,235	5,537	60031	79363	93820	132,885	197,864	155,980	33.6%	30.1%	30.3%
McAllen-Edinburg-Pharr, TX	84,481,144	84,757,600	176,520,048	1,687	1,166	1,541	50078	72715	114570	72,628	59,351	65,744	20.9%	15.3%	18.9%
Memphis, TN-MS-AR	572,445,952	663,853,760	1,195,546,112	3,055	2,763	4,040	187405	240235	295908	100,904	103,283	122,037	29.7%	24.5%	27.5%
Miami-Miami Beach-Kendall, FL	1,600,257,280	1,605,941,248	2,571,840,768	5,492	4,271	5,737	291367	375990	448280			180,534	28.3%	21.7%	23.3%
Milwaukee-Waukesha-West Allis, WI	2,199,099,648	1,747,426,944	2,720,813,568	7,738	5,467	7,581	284193	319630	358877	149,936	115,181	154,504	34.4%	28.5%	30.3%
Minneapolis-St. Paul-Bloomington, MN-WI	3,359,491,072	3,105,091,072	5,678,496,768	6,812	4,701	6,897	493185	660569	823283	160,214	135,993	169,146	36.0%	30.3%	32.1%
Montgomery, AL	182,564,864	181,515,440	324,919,904	3,005	2,451	3,584	60763	74048	90661	103,484	92,742	112,540	27.8%	23.1%	25.7%
Napa, CA	185,243,440	266,457,696	422,983,296	7,754	9,994	14,307	23890	26662	29564	217,283	296,582	341,203	36.6%	31.9%	33.8%
Naples-Marco Island, FL	123,653,272	311,607,616	804,793,664	6,538	7,193	10,341	18912	43319	77829	197,018	254,473	287,863	28.8%	24.3%	26.1%
Newark-Union, NJ-PA	2,659,852,800	4,215,533,312	5,068,328,448	6,923	9,929	10,870	384233	424570	466273	175,800	287,460	254,550	33.4%	28.7%	30.6%
New Haven-Milford, CT	756,322,624	1,546,504,576	1,366,751,872	4,559	8,073	6,789	165903	191558	201320	150,936	244,286	177,198	29.6%	30.2%	29.2%
New Orleans-Metairie-Kenner, LA	955,555,328	757,202,432	1,262,510,592	4,321	2,801	4,118	221142	270328	306586	144,274	111,223	131,447	29.1%	22.6%	25.2%
New York-Wayne-White Plains, NY-NJ	7,755,856,896	17,816,422,400	22,499,680,256	6,341	12,827	14,776	1223091	1388925	1522705	165,309	342,882	327,423	34.1%	30.8%	31.7%
Norwich-New London, CT	199,853,296	439,776,064	429,275,584	3,858	7,291	6,451	51806	60315	66548	137,116	229,243	171,501	28.8%	29.5%	29.0%
Oakland-Fremont-Hayward, CA	3,027,167,744	5,568,395,776	7,949,591,552	8,427	12,156	15,151	359203	458087	524702	228,772	340,522	346,390	37.6%	32.7%	34.4%
Ocala, FL	65,046,552	117,274,488	210,059,008	2,023	1,984	2,466	32149	59112	85171	91,699	96,685	100,479	21.9%	19.4%	21.1%
Oklahoma City, OK	757,557,952	601,781,632	957,260,928	3,824	2,498	3,418	198083	240886	280030	113,343	83,771	95,609	30.3%	24.4%	27.1%
Olympia, WA	100,586,032	120,403,280	270,171,008	3,765	2,993	4,970	26713	40226	54364	142,915	121,344	168,830	28.6%	22.6%	24.8%
Omaha-Council Bluffs, NE-IA	468,226,624	465,733,024	940,805,696	3,604	2,768	4,780	129908	168235	196838	102,600	86,825	120,099	31.0%	25.0%	28.6%
Orlando, FL	565,440,832	967,848,448	1,668,616,320	3,255	3,240	4,025	173703	298736	414548	121,413	131,411	136,957	26.4%	22.6%	23.8%
Oshkosh-Neenah, WI	161,374,368	150,973,088	236,083,616	5,558	4,262	5,681	29037	35423	41558	114,657	92,898	121,612	31.7%	27.9%	30.2%
Oxnard-Thousand Oaks-Ventura, CA	927,708,288	1,920,400,768	2,117,084,288	8,553	13,501	12,895	108469	142242	164185	244,050	379,015	297,286	38.6%	34.0%	34.1%
Palm Bay-Melbourne-Titusville, FL	244,048,880	349,099,968	486,164,704	3,764	3,124	3,288	64832	111742	147878	133,669	128,269	120,474	28.0%	22.6%	23.1%
Peoria, IL	340,588,960	214,362,224	371,938,432	4,384	2,291	3,565	77684	93555	104331	125,203	77,900	105,416	31.7%	23.2%	25.9%
Philadelphia, PA	3,228,380,672	4,720,415,744	5,614,452,736	3,742	4,979	5,627	862778	947977	997749	110,273	162,830	153,021	30.2%	25.2%	27.0%
Phoenix-Mesa-Scottsdale, AZ	1,897,470,592	2,175,566,336	4,587,456,512	5,171	4,033	5,653	366932	539474	811467	151,625	132,229	160,945	32.9%	26.7%	27.8%
Pittsburgh, PA	2,370,635,520	1,693,993,728	2,559,060,736	3,809	2,475	3,598	622376	684553	711338	109,745	87,896	105,831	29.9%	22.3%	25.2%
Portland-South Portland, ME	311,336,096	680,303,936	802,344,640	3,595	5,969	5,882	86610	113967	136405	113,144	178,725	154,830	29.8%	29.6%	30.1%
Portland-Vancouver-Beaverton, OR-WA	1,915,478,144	1,454,741,760	4,102,248,704	6,423	3,986	8,745	298227	364981	469092	162,216	115,700	205,031	34.7%	27.7%	31.5%
Poughkeepsie-Newburgh-Middletown, NY	481,094,112	1,227,028,224	1,362,951,680	4,632	9,416	9,363	103852	130318	145570	115,355	209,302	167,594	34.9%	31.5%	31.1%
Providence-New Bedford-Fall River, RI-MA	1,118,298,240	2,216,024,576	2,237,987,840	3,801	6,602	6,025	294217	335660	371451	115,752	200,987	163,042	31.6%	29.8%	29.3%
Provo-Orem, UT	119,019,400	136,340,208	449,609,312	4,698	3,000	6,542	25332	45445	68727	153,190	106,098	185,641	30.6%	26.2%	29.7%
Raleigh-Cary, NC	273,847,648	568,685,760	1,464,367,872	4,163	4,267	7,055	65779	133280	207558	123,745	135,440	176,139	32.3%	27.1%	31.5%
Rapid City, SD	52,500,996	43,098,092	85,072,720	3,307	1,837	2,940	15874	23455	28937	123,886	79,631	105,847	26.6%	19.9%	22.4%
Redding, CA	124,933,808	141,344,464	195,947,280	4,560	3,914	4,671	27397	36112	41949	155,614	139,517	142,253	31.3%	26.4%	27.3%
Reno-Sparks, NV	291,332,256	254,740,128	510,701,760	7,002	4,536	6,426	41607	56155	79472	214,022	175,032	202,884	33.3%	23.8%	25.3%
Richmond, VA	669,487,680	908,106,944	1,464,138,752	3,793	3,794	5,007	176500	239381	292409	115,089	122,637	137,469	30.9%	26.6%	30.8%
Riverside-San Bernardino-Ontario, CA	1,846,830,848	3,668,636,672	4,094,103,296	5,265	6,491	5,938	350795	565185	689482	168,143	204,026	162,849	33.3%	29.5%	29.4%
Roanoke, VA	214,533,808	226,308,672	365,496,800	3,287	3,058	4,328	65270	74008	84449	103,743	104,160	126,589	29.2%	24.9%	25.9%
Sacramento--Arden-Arcade--Roseville, CA	1,423,387,776	2,240,527,104	3,018,712,832	5,736	6,823	7,404	248142	328401	407689	176,334	211,623	192,757	34.6%	30.0%	31.1%
St. Louis, MO-IL	1,820,621,184	2,325,556,992	3,613,991,424	3,732	3,425	4,769	487892	678994	757785	111,153	111,186	127,647	30.2%	24.9%	27.5%
Salt Lake City, UT	713,197,184	573,228,224	1,654,642,688	5,484	3,446	7,473	130047	166327	221403	160,980	113,302	195,723	33.2%	27.2%	30.7%
San Antonio, TX	615,769,728	662,697,600	1,136,645,376	2,909	2,246	2,931	211699	295080	387744	98,278	93,760	99,789	25.2%	20.1%	22.5%
San Diego-Carlsbad-San Marcos, CA	3,071,007,488	4,980,189,184	6,419,328,000	8,758	10,435	11,641	350663	477281	551431	249,665	306,009	286,299	36.4%	31.5%	32.5%
Sandusky, OH	70,773,448	58,789,320	100,586,704	3,815	2,849	4,401	18553	20633	22854	122,551	98,353	130,743	31.0%	25.7%	27.8%
San Francisco-San Mateo-Redwood City, CA	3,709,906,944	5,785,719,296	8,834,676,736	13,126	18,697	26,385	282648	309446	334833	332,138	518,772	583,460	41.3%	34.6%	37.2%
San Jose-Sunnyvale-Santa Clara, CA	2,758,220,288	5,184,223,744	8,606,179,328	11,320	16,494	24,629	243657	314308	349429	290,104	449,598	538,704	41.6%	34.7%	37.5%
Santa Ana-Anaheim-Irvine, CA	4,166,436,096	6,879,275,520	8,379,301,376	10,719	13,847	14,593	388700	496824	574181	280,805	384,555	326,706	41.2%	34.0%	34.3%
Santa Barbara-Santa Maria-Goleta, CA	558,587,776	994,041,536	1,283,205,888	10,731	13,992	16,759	52053	71043	76569	288,900	402,659	398,362	37.9%	32.6%	33.5%
Santa Cruz-Watsonville, CA	333,710,304	677,507,904	995,440,064	8,598	13,536	18,210	38812	50052	54665	261,270	392,714	432,492	36.2%	33.0%	35.1%
Santa Fe, NM	55,636,284	150,503,536	345,525,184	5,339	5,877	9,604	10421	25608	35977	168,263	189,389	251,715	30.7%	27.6%	30.9%
Sarasota-Bradenton-Venice, FL	436,005,728	605,854,720	1,071,165,696	3,983	3,783	5,317	109453	160172	201474	144,247	150,912	171,466	26.9%	22.4%	23.9%
Savannah, GA	151,784,432	185,250,416	355,236,000	3,235	3,157	4,970	46919	58678	71471	98,719	104,369	134,631	28.5%	25.1%	27.6%
Seattle-Bellevue-Everett, WA	2,229,990,912	2,890,294,784	5,330,780,160	6,068	6,088	9,240	367495	474735	576927	184,888	220,745	276,008	32.6%	25.4%	27.5%
Shreveport-Bossier City, LA	198,112,160	181,614,032	274,112,640	3,195	2,075	2,873	62013	87508	95407	107,286	85,519	94,969	27.4%	20.8%	23.7%
Sioux City, IA-NE-SD	89,235,160	66,895,184	125,322,664	3,277	1,971	3,373	27230	33941	37156	91,953	61,679	91,749	27.9%	21.7%	25.9%
Spokane, WA	285,376,064	194,817,424	401,747,264	3,339	2,159	3,749	85460	90221	107166	126,012	93,394	134,843	27.0%	20.5%	23.1%
Springfield, MA	388,719,040	908,740,160	770,020,096	3,241	5,994	4,678	119955	151613	164620	95,752	179,553	137,132	34.5%	32.3%	28.7%
Suffolk County-Nassau County, NY	4,128,623,360	9,964,110,848	11,485,210,624	6,469	14,493	15,655	638170	687506	733627	144,078	303,670	271,158	40.4%	33.5%	34.0%
Syracuse, NY	530,014,112	832,231,296	861,968,960	3,762	5,155	5,102	140902	161439	168948	94,019	112,818	97,032	33.3%	27.9%	28.0%
Tampa-St. Petersburg-Clearwater, FL	1,237,367,680	1,688,922,880	2,503,383,040	2,827	2,804	3,510	437714	602266	713279	110,606	119,167	124,169	25.2%	21.4%	23.0%
Toledo, OH	587,011,584	472,215,840	747,959,936	3,786	2,852	4,224	155038	165601	177066	116,684	95,903	121,175	30.0%	24.7%	27.0%
Topeka, KS	205,075,568	167,908,912	228,201,648	4,496	2,926	3,593	45608	57376	63505	109,656	77,186	90,824	30.4%	24.7%	27.4%
Trenton-Ewing, NJ	348,361,920	594,385,728	703,982,080	5,113	7,638	8,348	68136	77818	84325	136,347	222,056	198,387	32.3%	28.0%	29.7%
Tucson, AZ	631,105,600	561,815,424	992,154,624	4,964	3,525	4,645	127132	159362	213613	148,231	120,121	140,680	31.5%	25.3%	26.2%
Tulsa, OK	576,693,888	510,295,296	828,991,872	3,789	2,595	3,647	152221	196646	227323	117,616	87,982	101,605	30.4%	24.6%	27.4%
Washington-Arlington-Alexandria, DC-VA-MD-WV	4,013,167,872	6,601,027,584	8,239,034,880	8,349	9,371	9,463	480683	704426	870699	203,658	260,940	225,074	38.5%	31.5%	32.9%
Wichita, KS	460,482,208	439,964,768	595,440,128	4,696	3,410	3,967	98055	129026	150090	109,382	85,665	96,959	30.8%	25.1%	27.6%

Appendix Table B: Data for Selected CBSAs

CBSA name	value of aggregate tax benefits ($99)			tax benefit per owner occ unit ($99)			number of owners			mean house value ($99)			marginal tax rates		
	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999	1979	1989	1999
Wilmington, DE-MD-NJ	505,963,968	796,335,040	987,129,664	4,240	5,389	5,686	119345	147772	173622	118,327	165,297	154,280	32.8%	28.6%	29.8%
Winston-Salem, NC	248,565,392	322,453,408	571,343,360	3,532	3,281	4,811	70374	98271	118770	106,231	110,821	132,112	30.2%	25.4%	28.9%
York-Hanover, PA	279,696,768	296,279,584	439,873,792	3,358	3,097	3,899	83291	95670	112816	113,860	115,345	124,982	29.5%	24.8%	26.4%