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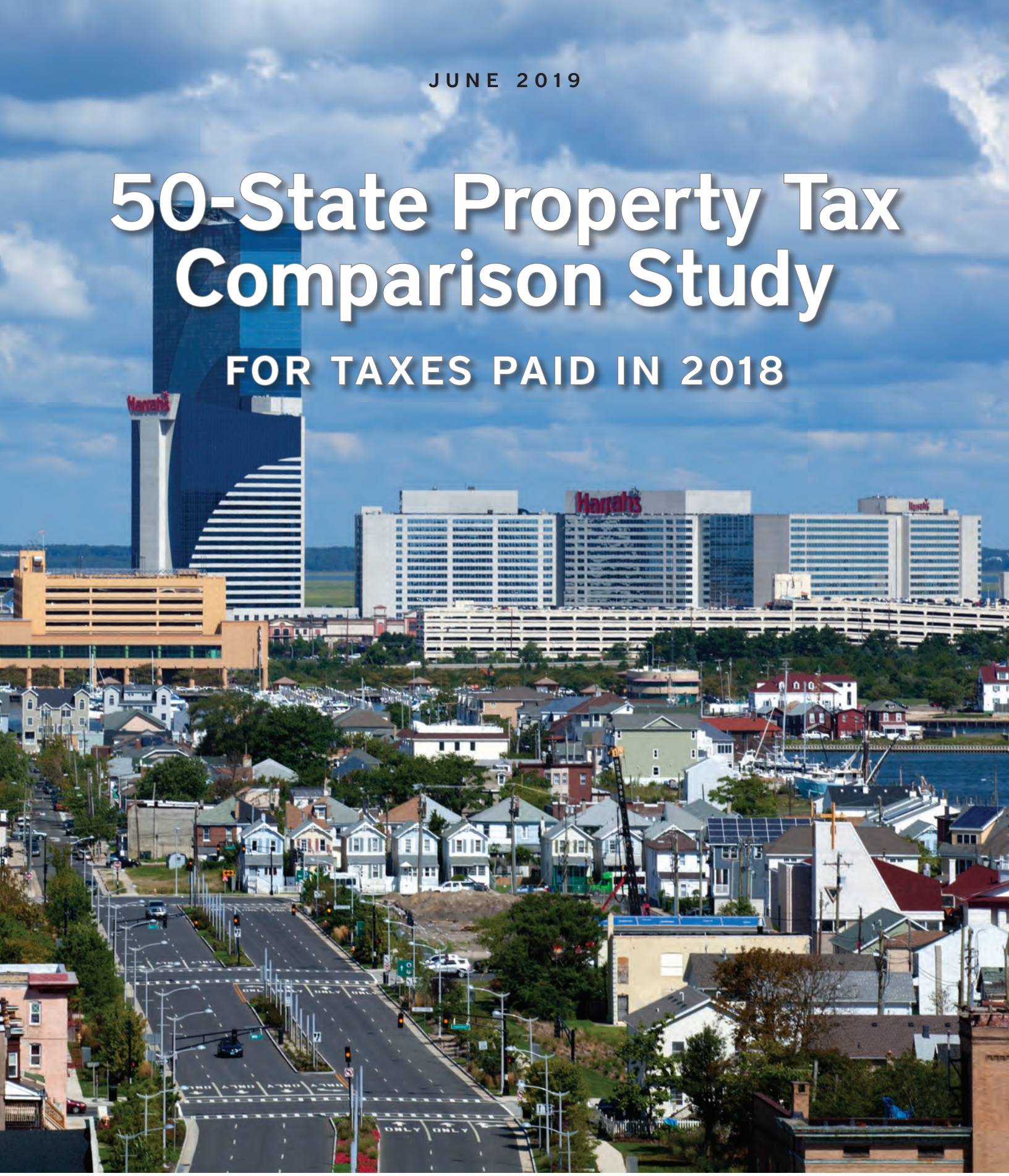
50-State Property Tax Comparison Study

FOR TAXES PAID IN 2018



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Executive Summary

As the largest source of revenue raised by local governments, a well-functioning property tax system is critical for promoting municipal fiscal health. This report documents the wide range of property tax rates in more than 100 U.S. cities and helps explain why they vary so widely. This context is important because high property tax rates usually reflect some combination of heavy property tax reliance with low sales and income taxes, low home values that drive up the tax rate needed to raise enough revenue, or higher local government spending and better public services. In addition, some cities use property tax classification, which can result in considerably higher tax rates on business and apartment properties than on homesteads.

This report provides the most meaningful data available to compare cities' property taxes by calculating the *effective tax rate*: the tax bill as a percent of a property's market value. Data are available for 73 large U.S. cities and a rural municipality in each state, with information on four different property types (homestead, commercial, industrial, and apartment properties), and statistics on both net tax *bills* (i.e. $3,000) and effective tax *rates* (i.e. 1.5 percent). These data have important implications for cities because the property tax is a key part of the package of taxes and public services that affects cities' competitiveness and quality of life.

Why Property Tax Rates Vary Across Cities

To understand why property tax rates are high or low in a particular city, it is critical to know why property taxes vary so much across cities. This report uses statistical analysis to identify four key factors that explain most of the variation in property tax rates.

Property tax reliance is one of the main reasons why tax rates vary across cities. While some cities raise most of their revenue from property taxes, others rely more on alternative revenue sources. Cities with high local sales or income taxes do not need to raise as much revenue from the property tax, and thus have lower property tax rates on average. For example, this report shows that Bridgeport (CT) has one of the highest effective tax rates on a median valued home, while Birmingham (AL) has one of the lowest rates. However, in Bridgeport, city residents pay no local sales or income taxes, whereas Birmingham residents pay both sales and income taxes to local governments. Consequently, despite the fact that Bridgeport has much higher property taxes, total local taxes are considerably higher in Birmingham ($2,805 vs. $2,069 per capita).

Property values are the other crucial factor explaining differences in property tax rates. Cities with high property values can impose a lower tax rate and still raise at least as much property tax revenue as a city with low property values. For example, consider San Francisco and Detroit, which have the highest and lowest median home values in this study. After accounting for assessment limits, the average property tax bill on a median valued home for the large cities in this report is $3,105. To raise that amount from a median valued home, the effective tax rate would need to be 22 times higher in Detroit than in San Francisco—6.19 percent versus 0.28 percent.

Two additional factors that help explain variation in tax rates are the level of local government spending and whether cities tax homesteads at lower rates than other types of property (referred to as "classification"). Holding all else equal, cities with higher spending will need to have

higher property tax rates. Classification imposes lower property taxes on homesteads, but higher property taxes on business and apartment properties.

Homestead Property Taxes

There are wide variations across the country in property taxes on owner-occupied primary residences, otherwise known as homesteads. An analysis of the largest city in each state shows that the average effective tax rate on a median-valued homestead was 1.443 percent in 2018 for this group of 53 cities.[1] At that rate, a home worth $200,000 would owe $2,886 in property taxes (1.443% x $200,000). On the high end, there are four cities with effective tax rates that are at least 2 times higher than the average – Aurora (IL), Bridgeport (CT), Detroit, and Newark (NJ). Conversely, there are six cities where tax rates are half of the study average or less – Honolulu, Charleston (SC), Boston, Denver, Cheyenne (WY), and Birmingham (AL).

Highest and Lowest Effective Property Tax Rates on a Median Valued Home (2018)

Highest Property Tax Rates				**Lowest Property Tax Rates**			
1	Aurora (IL)	3.65%	*Why:* High property tax reliance	49	Cheyenne (WY)	0.64%	*Why:* Low property tax reliance
2	Bridgeport (CT)	3.44%	*Why:* High property tax reliance	50	Denver (CO)	0.56%	*Why:* Low property tax reliance, classification, high home values
3	Detroit (MI)	3.28%	*Why:* Low property values	51	Boston (MA)	0.48%	*Why:* High home values, Classification shifts tax to business
4	Newark (NJ)	2.96%	*Why:* High property tax reliance	52	Charleston (SC)	0.37%	*Why:* Classification shifts tax to business, High home values
5	Milwaukee (WI)	2.57%	*Why:* Low property values	53	Honolulu (HI)	0.31%	*Why:* High home values, low local gov't spending, classification

Note: Data for all cities: Figure 2 (page 18), Appendix Table 1a (page 52), and Appendix Table 2a (page 60).

The average tax rate for these cities fell 3.5 percent between 2017 and 2018, from 1.495 percent to 1.443 percent, with decreases in 30 cities and increases in 21 cities.[2] The largest increase was in Providence, where the effective rate rose by about 6 percent, which drove the city's ranking up from 17th to 14th highest. The next largest increases were in Anchorage, Seattle, Kansas City (MO), and Baltimore. The largest decrease was in Charleston (SC), which had a 26 percent decline in its effective tax rate. The next largest declines were in Buffalo, Denver, Detroit, and Bridgeport (CT).

Note that differences in property values across cities mean that some cities with high tax *rates* can still have low tax *bills* on a median valued home if they have low home values, and vice versa. For example, Los Angeles and Wichita both have effective tax rates of 1.18 percent on median valued homes, but because the median valued home is worth so much more in Los Angeles ($647k vs. $135k), the tax bill is far higher in Los Angeles (2nd highest) than in Wichita (46th highest).

Effective tax rates rise with home values in about half of the cities (27 of 53), and this pattern has a progressive impact on the property tax distribution. Usually, this relationship occurs because of

[1] The largest cities in each state includes 53 cities, because it includes Washington (DC) plus two cities in Illinois and New York since property taxes in Chicago and New York City are so different than the rest of the state.
[2] Changes in two cases are not meaningful because of changes in city selection or methodology.

homestead exemptions that are set to a fixed dollar amount. For example, a $20,000 exemption provides a 20 percent tax cut on a $100,000 home, a 10 percent cut on a $200,000 home, and a 5 percent cut on a $400,000 home. The increase in effective tax rates with home values is steepest in Boston, Honolulu, Atlanta, New Orleans, and Washington (DC).

Commercial Property Taxes

There are also significant variations across cities in commercial property taxes, which include taxes on office buildings and similar properties. In 2018, the effective tax rate on a commercial property worth $1 million averaged 1.945 percent across the largest cities in each state. The highest rates were in Providence (RI), Detroit, Chicago, Bridgeport (CT), and Aurora (IL), all of which had effective tax rates that were at least two-thirds higher than the average for these cities. On the other hand, rates were less than half of the average in Fargo (ND), Virginia Beach, Honolulu, Seattle, and Cheyenne (WY).

Highest and Lowest Effective Property Tax Rates on $1-Million Commercial Property

Highest Property Tax Rates				**Lowest Property Tax Rates**			
1	Providence (RI)	3.85%	*Why:* High property tax reliance	49	Honolulu (HI)	1.02%	*Why:* High property values, Low local gov't spending
2	Detroit (MI)	3.83%	*Why:* Low property values	50	Fargo (ND)	0.97%	*Why:* Low local gov't spending, Classification
3	Chicago (IL)	3.55%	*Why:* High local gov't spending, Classification shifts tax to business	51	Virginia Beach (VA)	0.96%	*Why:* Low local gov't spending, High property values
4	Bridgeport (CT)	3.46%	*Why:* High property tax reliance	52	Seattle (WA)	0.90%	*Why:* High property values, Low property tax reliance
5	Aurora (IL)	3.34%	*Why:* High property tax reliance	53	Cheyenne (WY)	0.63%	*Why:* Low property tax reliance

Note: Analysis includes an additional $200k in fixtures (office equipment, etc.)
Data for all cities: Figure 3 (page 24), Appendix Table 1b (page 55), and Appendix Table 3a (page 76).

Outside of declines attributable to changes in city selection or data sources, there were four cities with notable drops in commercial tax rates from 2017 to 2018. Effective tax rates fell by 18 percent in Charleston (SC) (Ranking fell from 30th to 33rd), by 10 percent in Detroit (from 1st to 2nd), and by 9 percent in Bridgeport (from 3rd to 4th) and Minneapolis (8th to 12th). The largest increase was in Wilmington (DE), where the effective tax rate increased by 33 percent, which drove the city's ranking up from 48th to 35th highest. Commercial tax rate rankings rose six places in Anchorage, five places in Kansas City (MO), and four places in Burlington (VT), Charleston (WV), Milwaukee, New Orleans, Phoenix, and Providence.

Preferential Treatment for Homeowners

Many cities have preferences built into their property tax systems that result in lower effective tax rates for certain classes of property, with these features usually designed to benefit homeowners. The "classification ratio" describes these preferences by comparing the effective tax rate on land and buildings for two types of property. For example, if a city has a 3.0% effective tax rate on commercial properties and a 1.5% effective tax rate on homestead properties, then the commercial-homestead classification ratio is 2.0 (3.0% divided by 1.5%).

An analysis of the largest cities in each state shows an average commercial-homestead classification ratio of 1.67, meaning that on average commercial properties experience an effective tax rate that is 67% higher than homesteads. Over a quarter of the cities (15 of 53) have classification ratios above 2.0, meaning that commercial properties face an effective tax rate that is at least double that for homesteads.

Preferential Treatment of Homeowners: Ratio of Effective Tax Rate on Commercial and Apartment Properties to the Rate on Homestead Properties (2018)

Commercial vs. Homestead Ratio			Apartment vs. Homestead Ratio		
1	Boston (MA)	4.42	1	Charleston (SC)	3.12
2	Honolulu (HI)	3.97	2	New York (NY)	2.55
3	Denver (CO)	3.88	3	Indianapolis (IN)	2.42
4	Charleston (SC)	3.12	4	Birmingham (AL)	2.18
5	Chicago (IL)	2.94	5	Charleston (WV)	2.15

Note: Commercial-homestead ratio compares rate on $1 million commercial building to median valued home.
Apartment-homestead ratio compares rate on $600k apartment building to median valued home.
Ratios compare taxes on real property and exclude personal property.
Data for all cities: Figures 6a and 6b (Pages 38-39), Appendix Table 6a (Pg. 102), and Appendix Table 6b (Pg. 104).

The average apartment-homestead classification ratio is significantly lower (1.31), with apartments facing an effective tax rate that is 31% higher than homesteads on average. There are six cities where apartments face an effective tax rate that is nearly double that for homesteads or more, with Charleston (SC) being an outlier with a tax rate on apartments that is over three times higher than the rate on a median valued home. It is important to note that while renters do not pay property tax bills directly, they do pay property taxes indirectly since landlords are able to pass through some or all of their property taxes in the form of higher rents.

There are four types of statutory preferences built into property tax systems that can lead to lower effective tax rates on homesteads than other property types: the assessment ratio, the nominal tax rate, exemptions and credits, and differences in assessment limits. In total, 40 of the 53 cities have statutory preferences that favor homesteads over commercial properties. 20 of these 40 cities benefit homeowners using at least two of these four statutory preferences. In 11 cities preferential treatment for homeowners is delivered through exemptions or credits alone, while in 9 cities preferences are delivered exclusively through differences in assessment ratios or nominal tax rates. Similarly, 35 cities have statutory preferences favoring homesteads relative to apartments, but only 13 offer more than one preference. Six cities have preferential assessment ratios and/or nominal tax rates only, while 16 cities offer homestead exemptions or credits alone.

Property Tax Assessment Limits

Since the late 1970s, an increasing number of states have adopted property tax limits, including constraints on tax rates, tax levies, and assessed values. This report accounts for the impact of limits on tax rates and levies implicitly, because of how these laws impact cities' tax rates, but it is necessary to use an explicit modeling strategy to account for assessment limits.

Assessment limits typically restrict growth in the assessed value for individual parcels and then reset the taxable value of properties when they are sold. Therefore, the level of tax savings provided from assessment limits largely depends on two factors: how long a homeowner has

owned her home and appreciation of the home's *market value* relative to the allowable growth of its *assessed value*. As a result, assessment limits can lead to major differences in property tax bills between owners of nearly identical homes based on how long they have owned their home.

This report estimates the impact of assessment limits by calculating the difference in taxes between newly purchased homes and homes that have been owned for the average duration in each city, for median valued homes. For example, in Los Angeles, the average home has been owned for 14 years and the median home value is $647,000. Because of the state's assessment limit, someone who has owned their home for 14 years would pay 41 percent less in property taxes than the owner of a newly-purchased home, even though both homes are worth $647,000. The largest discrepancy is in New York City, which has an assessment limit that has capped growth in assessed values for residential properties since 1981, and unlike most assessment limits does not reset when the property is sold. As a result, the owner of a newly-built median valued home would face an effective tax rate 57 percent higher than the owner of a home built prior to 1981, even though the two homes have identical values ($609,500). Assessment limits reduce taxes by 30% or more in New York City, the eight California cities studied, the two Florida cities studied, and Portland (OR). Of the 29 cities in this report that are affected by parcel-specific assessment limits, new homeowners face higher property tax bills than existing homeowners in 24 cities. All five cities where no home value was sheltered were in Texas: Austin, Dallas, El Paso, Houston, and San Antonio.

Conclusion

Property taxes range widely across cities in the United States. This report not only shows which cities have high or low effective property tax rates, but also explains why. Cities will tend to have higher property tax rates if they have high property tax reliance, low property values, or high local government expenditures. In addition, some cities use property tax classification, which can result in considerably higher tax rates on business and apartment properties than on homesteads. By calculating the effective property tax rate, this report provides the most meaningful data available to compare cities' property tax burdens. These data have important implications for cities because the property tax is a key part of the package of taxes and public services that affects cities' competitiveness and quality of life.

Introduction

The property tax is one of the largest taxes paid by American households and businesses and funds many essential public services, including K-12 education, police and fire protection, and a wide range of critical infrastructure. Yet it is surprisingly difficult to get good data on property taxes that are comparable across cities. This report provides the necessary data by accounting for several key features of major cities' property tax systems and then calculating the *effective tax rate*: the tax bill as a percent of a property's market value.

High or low effective property tax rates do not in themselves indicate that tax systems are "good" or "bad." Evaluating a property tax system requires a broader understanding of the pros and cons of the property tax, the implications of high or low property tax rates, and the method by which property tax rates are set. These key issues are outlined below.

The property tax has key strengths as a revenue instrument for local governments: it is the most stable tax source, it is more progressive than alternative revenue options, and it promotes local autonomy. Property taxes are more stable over the business cycle than sales and especially income taxes, so greater property tax reliance helps local governments avoid major revenue shortfalls during recessions. It also helps localities maintain revenue stability in the face of fluctuating state and federal aid.[3] In addition, the property tax is relatively progressive compared to the sales tax, which is the other main source of tax revenue for local governments. Whereas the property tax is largely neutral, the sales tax is highly regressive.[4]

The property tax is particularly appropriate for local governments because it is imposed on an immobile tax base. While it is often easy to cross borders in search of a lower sales tax rate, those who wish to live or locate their business in a particular location cannot avoid paying the property tax. Thus, local governments have limited ability to charge different sales tax rates than their neighbors, but have greater control over setting their property tax rate.

A drawback of any local tax is that the tax base can vary widely across communities, but these disparities can be offset with state aid to local governments. For example, there are significant differences in property values across communities, just as there are wide disparities in retail sales and incomes across localities. State government grants to local governments can help offset these differences to ensure everyone has access to necessary services at affordable tax prices regardless of where they live. In addition, state-funded circuit breaker programs can help households whose property taxes are particularly high relative to their income.[5]

Property taxes are one part of the package of taxes and public services that affects competitiveness and quality of life. This report shows that many of the cities with high property tax rates have relatively low sales and income taxes for local governments, so the total local tax

[3] Ronald C. Fisher. 2009. "What Policy Makers Should Know About Property Taxes." *Land Lines*. Cambridge, MA: Lincoln Institute of Land Policy.
[4] Institute on Taxation and Economic Policy. 2015. "Who Pays? A Distributional Analysis of the Tax Systems in All 50 States."
[5] Bowman, John H., Daphne A. Kenyon, Adam Langley, and Bethany P. Paquin. 2009. "Property Tax Circuit Breakers: Fair and Cost-Effective Relief for Taxpayers." Cambridge, MA: Lincoln Institute of Land Policy.

burden for residents and business could still be attractive. Furthermore, state aid may reduce local property taxes, but this reduction may be offset by higher state taxes.

Similarly, if higher property taxes are used to pay for better public services, then high property tax rates may not affect competitiveness or quality of life. Many homeowners are willing to pay higher property taxes to have better public schools and safer neighborhoods. The bottom line is that it is the total state-local tax burden relative to the quality of public services that determines competitiveness and quality of life.

Property tax rates are set differently than other tax rates and reflect decisions about local government spending. Income and sales tax rates usually do not vary much from year-to-year, which leads to significant revenue fluctuations over the business cycle. In contrast, property tax rates are usually established *after* the local government budget is determined by elected officials and/or voters and the rate is then set to raise the targeted revenue level. However, flexibility in setting property tax rates can be constrained by state tax limits or political concerns about property tax burdens. The process for determining property tax rates varies across jurisdictions.

This report allows for meaningful comparisons of cities' property taxes by calculating the effective property tax rate—the tax bill as a percent of a property's market value. For most taxpayers, the effective tax rate will be significantly different from the nominal or official tax rate that appears on their tax bill. There are several reasons for this difference. First, many states only tax a certain percentage of a property's market value. For example, New Mexico assesses all property at 33.3 percent of market value for tax purposes, which means that a $300,000 home would be taxed as if it were worth $100,000. In addition, many states and cities use exemptions and/or credits to reduce property taxes. For example, a $50,000 homestead exemption would mean a $200,000 home would be taxed as if it were worth $150,000. Cities also vary in the accuracy of their assessments of property values for tax purposes. Finally, an analysis of property tax burdens requires consideration of property taxes paid to all local governments, including overlying counties and school districts, rather than simply comparing municipal tax rates. This report accounts for all of these differences in cities' property tax systems, which is essential for meaningful comparisons of their tax rates.

This study calculates effective tax rates by analyzing several key features of each city's property tax system; it is not a parcel-level analysis of property tax liabilities. The Methodology section of this report provides details on how effective tax rates are calculated. First, data are collected for the key elements of property tax systems that determine effective tax rates:

- *Total local property tax rate*: The nominal tax rate that is most prevalent in the city for each class of property (a.k.a. statutory tax rate), including taxes paid to the state, city or township, county, school district, and special taxing districts.
- *Assessment ratio (a.k.a. classification rate):* The percentage of market value used to establish a property's assessed value. For example, a 60 percent assessment ratio means a $100,000 home would be taxed as if it were worth $60,000.
- *Sales ratio:* The sales ratio measures the accuracy of assessments by comparing assessed values to actual sales prices. For example, a 98 percent sales ratio means a $100,000 home would be "on the books" as if it were worth $98,000. This study uses a median or average sales ratio for all properties in each class in each city. The data come primarily

from sales ratio studies and sometimes from state equalization studies. Those studies are performed either by state government agencies or by contractors on behalf of state agencies, and are usually publicly available.

- *Exemptions:* This study accounts for exemptions that reduce the amount of property value subject to taxation for the majority of properties in a class for each city. For example, a $20,000 exemption means a $100,000 home would be taxed as if it were worth $80,000.
- *Credits:* This study accounts for credits that reduce the tax bill for the majority of properties in a class for each city. For example, Arkansas has a $350 credit that reduces the tax bill by $350 for all homesteads in the state. The report also accounts for early payment discounts that can reduce tax bills in some cities.

With this information, it is possible to calculate typical tax bills in each city for four classes of property (residential, commercial, industrial, apartments) and several different market values:

$$\text{Net Tax Bill} = \{[(\text{Market Value x Sales Ratio}) - \text{Exemptions}] \text{ x Assessment Ratio x Tax Rate}\} - \text{Credits}$$

First the taxable value is determined, with the market value of the property adjusted using the sales ratio, then exemptions are subtracted, and then the assessment ratio is applied.[6] Next that taxable value is multiplied by the total property tax rate, and any credits are subtracted. Finally, the effective tax rate is calculated by dividing the net tax bill by the market value of the property.

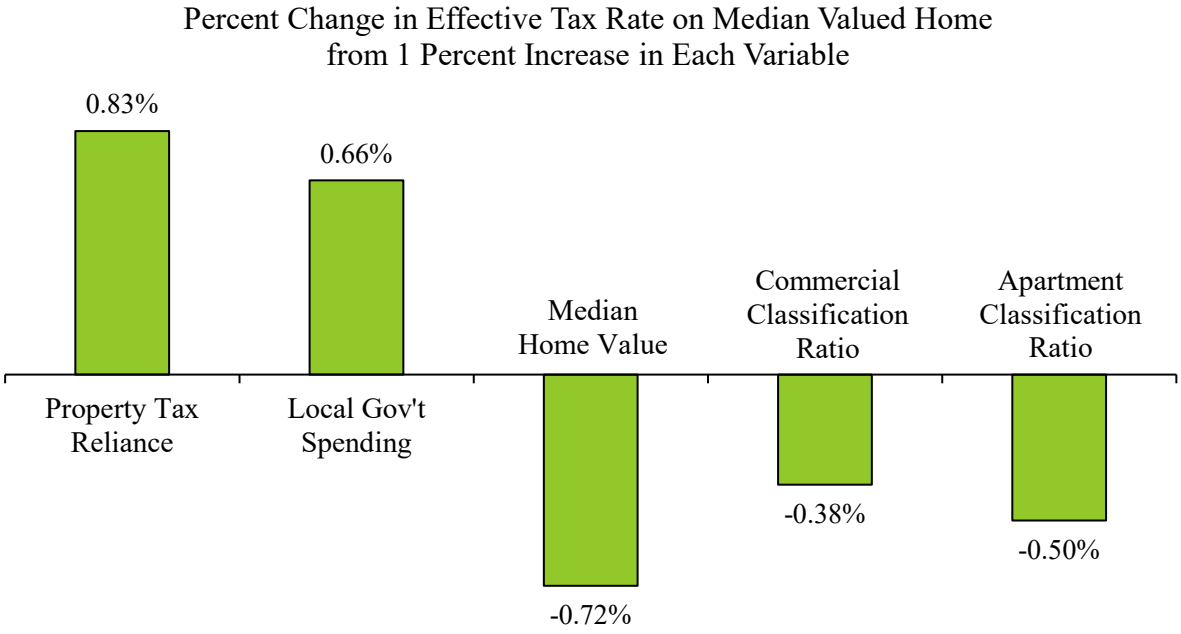
It is important to note that this study provides typical effective tax rates, assuming that the median or average sales ratio represents a typical value for all properties in each class. In practice, the accuracy of assessments varies across properties, so some parcels will have higher effective tax rates than reported in this study and some will have lower tax rates. In addition, this study does not account for exemptions or credits that are available for a minority of taxpayers in a city, such as exemptions available solely for seniors or veterans, or tax incentives available to just some businesses or homeowners.

[6] Note that exemptions based on assessed valued are subtracted after the assessment ratio is applied.

Why Property Tax Rates Vary Across Cities

This report demonstrates that effective property tax rates vary widely across U.S. cities. This section explores why some cities have relatively high property tax rates while others have much lower rates. Statistical analysis shows that four key factors explain nearly three-quarters of the variation in property tax rates. The two most important reasons why tax rates vary across cities are the extent to which cities rely on the property tax as opposed to other revenue sources, and the level of property values in each jurisdiction. Two additional factors that help explain variation in tax rates are the level of local government spending and whether cities tax homesteads at lower rates than other types of property (referred to as "classification").

Figure 1: Key Factors Explaining Differences in Property Tax Rates



Appendix 1 shows how these variables affect tax rates on homestead and commercial properties for each large city included in this report and details the methodology used for this analysis. This section focuses on homestead property taxes, but our analysis shows that tax rates on business and apartment properties are driven by the same four key factors.

Property Tax Reliance

One of the main reasons why tax rates vary across cities is that some cities raise most of their revenue from the property tax, while others rely more on alternative revenue sources.[7] Cities with high local sales or income taxes do not need to raise as much revenue from the property tax,

[7] One way to measure the "importance" of each factor is to look at squared semi-partial correlations, which are analogous to estimating the R-square between the effective tax rate on a median valued home and each factor, controlling for the effect of the other factors. For the first regression of Appendix Table 1c, 24% of the variation in effective tax rates is explained by property tax reliance, 39% is explained by median home values, 8% by local government spending, 6% by the commercial-homestead classification ratio, and 4% by the apartment-homestead classification ratios.

and thus have lower property tax rates on average. Figure 1 shows that a 1 percent increase in the share of revenue raised by local governments that comes from the property tax is associated with a 0.83 percent increase in the effective tax rate on a median valued home.

To see how property tax reliance impacts tax rates, compare Bridgeport (CT) and Birmingham (AL). Bridgeport has the 2nd highest effective tax rate on a median valued home in large part because it has the highest property tax reliance of any large city included in this report. So while Bridgeport has high property taxes ($2,069 per capita), city residents pay no local sales or income taxes. In contrast, Birmingham has the 10th lowest effective tax rate on a median valued home, but also has the fourth lowest reliance on the property tax.[8] As a result, Birmingham residents have low property taxes ($854 per capita), but also pay a host of other taxes to local governments, including sales taxes ($1,041 per capita), income taxes ($400 per capita), and other local taxes ($510 per capita).[9] Consequently, total local taxes are considerably higher in Birmingham despite the fact that it has much lower property taxes than Bridgeport ($2,805 per capita vs. $2,069 per capita).

It is important to note that the ability of local governments to tap alternative revenue sources that would reduce property tax reliance is normally constrained by state law. State governments usually determine which taxes local governments are authorized to use and set the maximum tax rate localities are allowed to impose.[10]

The data on property tax reliance and local government spending that is used for this analysis is for *fiscally standardized cities* (FiSCs) rather than for city municipal governments alone. FiSCs provide estimates of revenues raised from city residents and businesses and spending on their behalf, whether done by the city government or by overlying county governments, independent school districts, or special purpose districts. This approach is similar to the methodology used in this report, which includes property taxes paid to the city government, county government, and the largest independent school district in each city. The FiSC database is available on the website of the Lincoln Institute of Land Policy.[11]

Property Values

Home values are the other crucial factor explaining differences in property tax rates. Cities with high property values can impose a lower tax rate and still raise at least as much property tax revenue as a city with low property values. For example, Figure 1 shows that a 1 percent increase in the median home value is associated with a 0.72 percent decrease in the effective tax rate on a median valued home.

For example, consider San Francisco and Detroit, which have the highest and lowest median home values in this study—$1,104,100 and $50,200 respectively. After accounting for assessment limits, the average property tax bill on a median valued home in the 73 large cities in this report is $3,105. To raise that amount from a median valued home, the effective tax rate

[8] Appendix Table 1a.
[9] Data on per capita tax collections in 2016 is from the Lincoln Institute's *Fiscally Standardized Cities* database.
[10] Michael A. Pagano and Christopher W. Hoene. 2010. "States and the Fiscal Policy Space of Cities." In *The Property Tax and Local Autonomy*, ed. Michael E. Bell, David Brunori, and Joan Youngman, 243-277. Cambridge, MA: Lincoln Institute of Land Policy.
[11] https://www.lincolninst.edu/research-data/data-toolkits/fiscally-standardized-cities

would need to be 22 times higher in Detroit than in San Francisco—6.19 percent versus 0.28 percent. The effective tax rate on a median valued home is actually just 3.8 times higher in Detroit than San Francisco (2.36% vs. 0.62%), which means San Francisco collects nearly six times more in property taxes from a median valued home ($6,849 vs. $1,185). This is typical—higher property values usually lead cities to have both lower tax rates and to raise more revenue for public services. While the difference between San Francisco and Detroit is extreme, it is common for there to be dramatic differences in property wealth across communities within a state or region. State government grants to local governments can be used to offset these differences to help ensure everyone has access to necessary services at affordable property tax prices regardless of where they live.

This analysis uses the median home value in each city, but no one measure fully captures all differences in cities' property wealth. For example, even with identical tax rates on homes and businesses, cities with larger business tax bases will be able to have lower residential property tax rates since it usually costs more to provide public services to households than to businesses.[12] In addition, the median does not provide any information about the distribution of home values. Cities with larger concentrations of high value homes (relative to the median in that city) will be able to have lower tax rates on a median valued home for any given level of public expenditures.

Local Government Spending

The level of local government spending is another reason why property tax rates vary across cities, although its effect is considerably less than property tax reliance or home values. Holding all else equal, cities with higher spending will need to have higher property tax rates. For example, Figure 1 shows that a 1 percent increase in local government spending per capita is associated with a 0.66 percent increase in the effective tax rate on a median valued home.

Just as property tax rates are driven by a number of key variables, there are several factors that influence local government spending. In particular, spending is driven by needs, revenue capacity, costs, and preferences. For example, expenditure needs are higher in cities with larger shares of school age children or higher crime rates, because local governments in those cities will need to spend more on K-12 education and police protection to provide the same quality of education and public safety as cities with fewer children or lower crime. Spending will often be higher in cities with greater revenue capacity since cities with larger tax bases can raise more revenue without needing higher tax rates, as discussed above in the section on property values. Costs also play a role, because cities with higher costs of living and higher private sector wages will need to pay higher salaries to attract qualified teachers, police, and other local government employees. Finally, residents in some cities have a higher preference for public spending—which also means higher taxes—than in other cities.[13]

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[12] Ernst & Young LLP and Council on State Taxation. 2017. "Total State and Local Business Taxes: State-by-State Estimates for Fiscal Year 2016." Pg. 15-18.

[13] For an analysis that looks at the factors that drive differences in spending and revenue across states, see "Assessing Fiscal Capacities of States: A Representative Revenue System-Representative Expenditure System Approach, Fiscal Year 2012" by Tracy Gordon, Richard C. Auxier, and John Iselin published by the Urban Institute (March 8, 2016). For an analysis that looks at cities, see "The Fiscal Health of U.S. Cities" by Howard Chernick and Andrew Reschovsky in *Is Your City Healthy? Measuring Urban Fiscal Health* published by the Institute on Municipal Finance and Governance.

Classification and Preferential Treatment of Homestead Properties

Classification is the fourth factor that helps to explain differences across cities in property tax rates on homesteads. Under classified property tax systems, states and cities build preferences into their tax systems that result in lower effective tax rates for certain classes of property, with these features usually designed to benefit homeowners.

The "classification ratio" describes these preferences by comparing the effective tax rate for two types of property. For example, if a city has a 3.0% effective tax rate on commercial properties and a 1.5% effective tax rate on homestead properties, then the commercial-homestead classification ratio is 2.0 (3.0% divided by 1.5%). An increase in the classification ratio will be associated with a decrease in the tax rate on homestead properties, because it means that homeowners are collectively bearing a smaller share of the property tax burden while businesses and/or renters pay more. For example, Figure 1 shows that a 1 percent increase in the commercial-homestead classification ratio is associated with a 0.38 percent decrease in the effective tax rate on a median valued home, and a 1 percent increase in the apartment-homestead classification ratio is associated with a 0.50 percent decrease.

Charleston (SC) has the highest classification ratio for apartment buildings relative to homesteads, and the fourth highest commercial-homestead classification ratio. This means that commercial buildings and apartments are taxed at a dramatically higher percentage of market value than owner-occupied residences. In Charleston, a $1 million commercial property and a $600,000 apartment building both face effective tax rates on their land and buildings that are 3.1 times higher than a median valued home. As a result, while among the largest cities in each state Charleston has the 38th highest tax rate on apartments and the 33rd highest rate on commercial properties it has a much lower tax rate – the 2nd lowest tax rate – on a median valued home.[14] Such findings demonstrate that in Charleston, homeowners are heavily subsidized at the expense of renters and businesses.

The Charleston example shows the other side of the classification equation: favoring homeowners by definition means higher property taxes on businesses and apartment buildings. Regression analysis shows that a 1 percent increase in the commercial-homestead classification ratio is associated with a 0.45 percent increase in the commercial property tax rate, and a 1 percent increase in the apartment-homestead classification ratio is associated with a 0.28 percent increase in the apartment tax rate.[15]

Note that while renters do not pay property tax bills directly, they do pay property taxes indirectly since landlords are able to pass through some of their property taxes by increasing rents.[16] Since renters have lower incomes than homeowners on average, preferences given to homesteads relative to apartment buildings will tend to make the property tax system more regressive.

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[14] Appendix tables 2b, 5a, and 3a.

[15] Results for commercial properties are shown in Appendix Table 1d. The analysis with effective tax rates on apartments as the dependent variable uses the same set of explanatory variables; each variable has the same level of statistical significance as in Appendix table 1d and the R-square is similar (0.638).

[16] Bowman, John H., Daphne A. Kenyon, Adam Langley, and Bethany P. Paquin. 2009. "Property Tax Circuit Breakers: Fair and Cost-Effective Relief for Taxpayers." Cambridge, MA: Lincoln Institute of Land Policy. Pg. 32.

Other Factors

The four key factors described above explain nearly three-quarters of the variation in cities' effective tax rates on median valued homes and are thus the most important causes of differences in tax rates across cities. However, there are other factors that also play a role. For example, two variables that could affect property tax rates are the level of state and federal aid and local governments' share of total state and local government spending in each state. However, the impact of these variables will depend on how exactly the state government structures aid or takes on service responsibilities otherwise provided by local governments.

It is reasonable to expect that higher state aid will allow local governments to reduce their reliance on property taxes and thus lead to lower property tax rates. But in fact, research shows that the impact of state aid on local property taxes is ambiguous and depends on how state aid is structured. Some state aid formulas can limit local spending, in which case state aid is likely to reduce property taxes. However, other aid formulas like matching grants can encourage higher local spending, and thus state aid may not reduce property taxes in those cases.[17]

Similarly, if the state government bears a larger share of state and local government expenditures, it makes sense that local government spending and the need for property taxes might decline. That would be the case if the state assumes responsibility for public services that would otherwise be provided by local governments, such as in Hawaii where there is a single statewide school district and thus no local expenditures on K-12 education. But it is also possible that state expenditures are higher because the state government spends more on traditional state responsibilities, like higher education or public welfare, in which case higher state spending would not lead to lower local government expenditures.

The regression analysis used for this section considered these two other variables, but they were not found to be related with effective tax rates at a statistically significant level. This finding is not surprising since the expected impact of these variables depends on institutional details that are not captured by a single measure of state aid or state expenditures.

[17] Kenyon, Daphne A. 2007. *The Property Tax-School Funding Dilemma*. Cambridge, MA: Lincoln Institute of Land Policy. Page 50.

Homestead Property Taxes

Figure 2 shows property taxes on a median valued home for the largest city in each state. The analysis looks at homesteads, which are owner-occupied primary residences. The average effective tax rate on median-valued homesteads for the 53 cities in Figure 2 is 1.443 percent. At that rate, a home worth $200,000 would owe $2,886 in property taxes (1.443% x $200,000).

Tax rates vary widely across the 53 cities. The three cities at the top of the chart – Aurora (IL), Bridgeport (CT), and Detroit – have effective tax rates on a median-valued home that are roughly 2.2 to 2.5 times higher than the 53-city average. In six other cities, the effective property tax rate is 1.5 to about 2 times the average. Conversely, the bottom six cities – Honolulu, Charleston (SC), Boston, Denver, Cheyenne (WY), and Birmingham (AL), – all have effective tax rates that are less than half of the study average.

Overall, the average effective tax rate for all cities fell somewhat between 2017 and 2018, from 1.495 percent of value to 1.443 percent. The effective tax rate on the median-valued homestead climbed in 27 cities, fell in 23, and remained unchanged in 1 city.[18] The largest increase was in Providence (RI), where the effective rate rose by 6%, due to changes in assessment quality that eliminated underassessment of homes relative to market values that drives a corresponding increase in rank from 17th to 14th highest. Other cities where effective tax rates climbed by at least 4 percent include: Anchorage, Seattle, Kansas City, and Baltimore (listed from largest increase to the smallest).

Outside of declines attributable to changes in city selection or methodological changes, effective rates on median-valued homesteads fell the farthest in Charleston (SC), which had a 25.9 percent decline, from 0.502 percent of value to 0.372 percent. Other cities with declines of at least 5 percent include: Buffalo, Denver, Detroit, Bridgeport (CT), Salt Lake City, Manchester (NH), Newark (NJ), Boston, and Charlotte (NC) (listed from largest decrease to the smallest).

Note that in addition to effective tax rates, Figure 2 also reports the tax bill on a median valued home for each city. Because of significant variations in home values across these cities, some cities with modest tax *rates* can still have high tax *bills* on a median valued home relative to other cities, and vice versa. For example, Los Angeles and Wichita have similar tax rates on a median valued home, but because the median valued home is worth so much more in Los Angeles ($647k vs. $135k), the tax bill is far higher in Los Angeles (2nd highest) than in Wichita (46th highest). In general, cities with high home values can raise considerable property tax revenue from a median valued home despite modest tax rates, whereas cities with low home values may have fairly low tax bills even with high tax rates.

The table on the next page shows cities with the largest differences in their ranking in terms of effective tax rates versus tax bills on a median valued home. Note that for the most part this

[18] Note: This adds up to 51 cities; not 53. The ranking for Tennessee's largest city fell precipitously, but since the largest city has changed from Memphis to Nashville, year to year changes are not meaningful. The change in New York City's ranking is not shown because of methodological changes – see the text on page 23 for a full explanation.

report uses fixed home values (i.e., $300k home in all cities) to estimate effective tax rates, which forces the ordering of cities in terms of tax rates to match the order for tax bills.

Cities with Largest Differences in Ranking on Effective Tax Rate vs. Tax Bill for a Median Valued Home (2018)

High Home Values Cities with high tax bills despite low tax rates			**Low Home Values** Cities with low tax bills despite high tax rates		
City	**Tax Rate**	**Tax Bill**	**City**	**Tax Rate**	**Tax Bill**
Washington (DC)	47	12	Detroit (MI)	3	45
Seattle (WA)	42	8	Buffalo (NY)	16	47
New York (NY)	30	3	Jackson (MS)	22	50
Boston (MA)	51	26	Wichita (KS)	28	46
Los Angeles (CA)	27	2	Milwaukee (WI)	5	19

Appendix Table 2b is similar to Table 2a except that it accounts for the effect of assessment limits, which restrict growth in the assessed value of individual parcels for property tax purposes. These limits reduce estimates of homestead property taxes for 11 of the 53 cities, with the largest impacts on New York City, Los Angeles, and Jacksonville (FL). Overall, accounting for assessment limits reduces the average property tax bill for the 53 cities by 8 percent. For more details on the impact of assessment limits, see that section of this report.

Appendix Table 2c shows how effective tax rates on homestead properties vary based on their value, showing tax rates for properties worth $150,000 and $300,000 for the largest city in each state. As the table notes, effective tax rates vary with property value about half of the time (27 of 53 cities). Usually, effective tax rates rise with homestead value because of homestead exemptions and property tax credits that are set to a fixed dollar amount. Under these programs, the percentage reduction in property taxes falls as home values rise. For example, a $20,000 exemption provides a 20 percent tax cut on a $100,000 home, a 10 percent cut on a $200,000 home, and a 5 percent cut on a $400,000 home.[19] However, other design elements can create the same effect. For example, Minnesota uses a tiered assessment system, where 1% of a home's market value is taxable up through $500,000 of value, while 1.5% of value above that is taxable.

Value-driven differences in effective tax rates make the biggest difference in Boston, which in 2018 offered a homestead exemption equal to the lesser of $242,220 or 90 percent of a property's market value. This results in ultra-low effective tax rates of 0.10% on a $150,000 home and 0.11% on a $300,000 home, versus 0.48% for a median-valued home. Other cities with the largest differentials in the effective rates between a $150,000-valued and a $300,000-valued home also offer substantial homestead exemptions: Honolulu ($80,000 exemption), Atlanta and New Orleans (which both effectively exempt $75,000 of market value), and Washington, DC ($73,350 exemption). Readers should use some caution when interpreting the results in Appendix Tables 2c, 2f, and 2h; see the box on comparing property taxes calculated with fixed property values (page 22).

[19] For information on homestead exemptions in each state, see "How Do States Spell Relief: A National Study of Homestead Exemptions and Property Tax Credits" by Adam H. Langley in *Land Lines* (April 2015).

Appendix Tables 2d through 2f show effective tax rates on homestead properties for a different set of cities. Whereas Tables 2a through 2c focus on the largest city for each state, Tables 2d through 2f show the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In this set of tables, California has eight cities, Texas has seven, Arizona has three, and five states have two cities each (CO, FL, NC, OK, and TN). There are 21 states without any cities in the top 50. As with the tables for the largest city in each state, there are two sets of tables for median-valued homes; one before and one after accounting for the effects of assessment limitations (Tables 2d and 2e respectively).

The average effective tax rates for homesteads are generally about 1 percent lower for the 50 largest cities than for the largest city in each state. The exception is when comparing median-valued homes after accounting for assessment limitations. For those cities, the discrepancy is bigger (an 8.1% difference), largely because the share of top 50 cities with assessment limits in effect is much larger than the share on a nationwide basis.

Effective tax rates can be rather homogenous across large cities in a single state. For example, consider the effective rates on median-valued homes in the two largest states shown in Table 2d:

- In the eight California cities, the highest effective tax rate is Oakland (19th highest) and the lowest is Sacramento (37th). However, California accounts for six of the 13 cities ranked between 25th and 37th, with effective tax rates clustering in the 1.1 to 1.3 percent range due to the effect of California's Proposition 13 limitations on tax rates.
- In the seven Texas cities, the highest effective tax rate is El Paso (2nd highest) and the lowest is Houston (14th), with Texas accounting for five of the eight cities ranked between 2nd and 9th. It is more difficult to point to a single feature of Texas' property tax system to explain this clustering. However, it likely reflects the fact that local governments in these six Texas cities have relatively high reliance on property taxes and that Texas has a uniform property tax system that does not allow for different tax rates or assessment ratios on different types of property.

However, in other cases there can be considerable differences in effective tax rates between cities within the same state. For example, Table 2d shows some noticeable differences in effective tax rates and rankings for median-valued homes between these sets of same-state cities:

- In Tennessee: Memphis has the 13th highest tax rate (1.811%), while Nashville has the 46th highest (0.789%) – a 33 place differential.
- In Arizona: Phoenix has the 21st highest tax rate (1.272%) and Tucson has the 30th highest tax rate (1.163%), while Mesa has the 45th highest (0.831%) – a 24 place differential between the neighboring cities of Phoenix and Mesa.

Appendix Tables 2g and 2h provide additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 located in nonmetropolitan counties.

The average effective tax rate on median-valued homes in the 50 rural communities in this report is 1.342% for taxes paid in 2018. As with large cities, the rates for rural municipalities vary considerably around that average. In four municipalities – Lancaster (NH), Warsaw (NY),

Maurice River Township (NJ), and Ridgway (PA) – the effective tax rates on median-valued homes are at least 2 times the average. In contrast, eight municipalities feature effective tax rates of less than half of the average, with the lowest rates in Kauai (HI), Pocahontas (AR), Monroeville (AL), Natchitoches (LA), and Elkins (WV).

Comparing Tables 2a and 2g shows that effective tax rates on median-valued homesteads are around 7 percent lower in rural municipalities than in large cities on average. There are two major reasons why rates are lower in rural communities: lower nominal tax rates and homestead exemptions that apply to a fixed amount of value across the state and therefore exempt higher proportions of homestead value from taxation in rural areas, where home values are generally much lower than in large cities.

In 32 states, the effective tax rate on the median-valued home is higher in the largest city[20] than in the rural municipality. Arkansas has the biggest difference; the 1.123% rate in Little Rock is 3.4 times the 0.255% rate in Pocahontas. In three other states the tax rate in the largest city is at least two times higher than in the rural community: Delaware, Louisiana, and Oregon, (listed alphabetically).

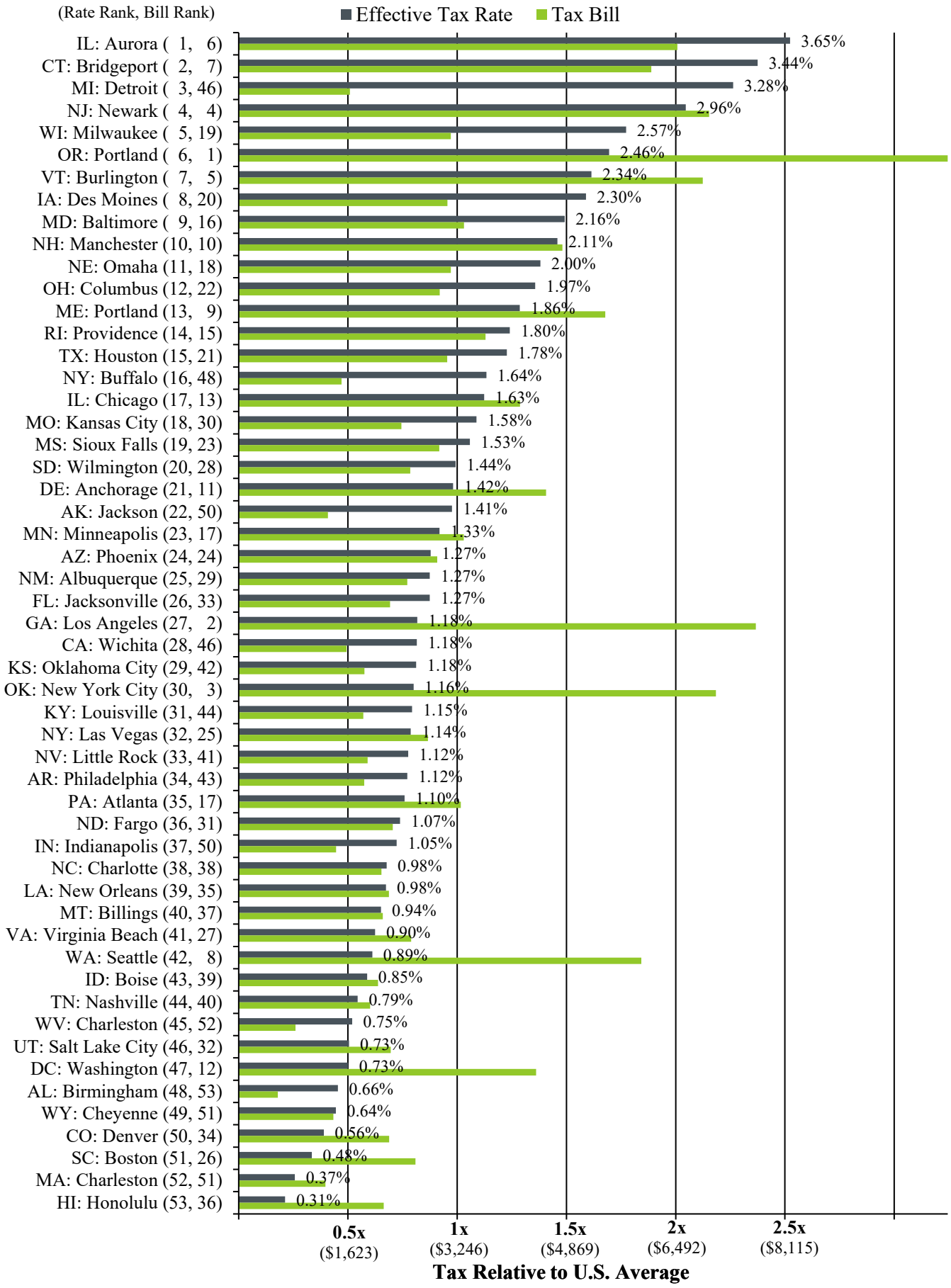
On the other hand, in 18 states the effective tax rate on median-valued homes is higher in the rural municipality than in the largest city in the state. The biggest difference is in Massachusetts, where the effective tax rate in Adams is 4.5 times higher than the rate in Boston (2.18% vs. 0.48%), largely because of Boston's unique (within Massachusetts) homestead exemption. Other states where the tax rate in the rural community is at least 1.5 times higher than the largest city are Kansas, New York, Pennsylvania, South Carolina, and Washington (listed alphabetically).

Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Tables 2d-2f) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the large differences between the two largest cities in Tennessee and Arizona show that caution is needed when extrapolating findings for a single city to an entire state.

Readers wishing to determine whether taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, in six states (Illinois[21], Michigan, New Hampshire, New Jersey, Vermont, and Wisconsin) the effective tax rate on the median-valued home is among the ten highest in both a rural and an urban setting – suggesting that these states are most likely to have the highest homestead property taxes. Alabama, Colorado, Hawaii, Tennessee, and West Virginia are the five states where effective tax rates on median-valued homes are among the ten lowest in both urban and rural settings – suggesting that these states are most likely to have the lowest homestead property taxes.

[20] When averaging Chicago and Aurora, IL; and Buffalo and New York City, NY.
[21] Aurora only.

Figure 2: Property Taxes on Median Valued Home for Largest City in Each State (2018)



Commercial Property Taxes

Figure 3 shows effective property tax rates for commercial properties worth $1 million dollars for the largest city in each state. This analysis looks specifically at taxes on office buildings and other commercial properties without inventory on site. Tax rates for other types of commercial property will often be similar, but will vary in cities where personal property is taxed differently than real property. The analysis assumes each property has an additional $200,000 worth of fixtures, which includes items such as office furniture, equipment, display racks, and tools. Different types of commercial property will have different proportions of real and personal property. Therefore, effective tax rates will change between different types of commercial property in cities where personal property is taxed differently from real property.[22]

The average effective tax rate on commercial properties for the 53 cities in Figure 3 is 1.945 percent. A property worth $1 million with $200,000 in fixtures would thus owe $23,340 in property taxes (1.945% x $1.2m).

Tax rates vary widely across the 53 cities. The top five cities of Providence (RI), Detroit, Chicago, Bridgeport (CT), and Aurora (IL) all have effective tax rates that are at least two-thirds higher than the average for these cities. The bottom four cities of Fargo, Virginia Beach, Seattle, and Cheyenne (WY) all have tax rates that are less than half of the average.

A few of the cities had significant changes in their effective tax rates from 2017 to 2018. Outside of declines attributable to changes in city selection or data sources, the city with the largest decline in its tax rates was Charleston, SC, where growing underassessment of commercial property led the effective tax rate on a $1-million valued commercial property to decline by 17.9%, from 1.77% to 1.45%, with the city's ranking falling three places – from 30th to 33rd. Other cities with significant declines in their effective tax rates include Detroit (from 4.24% to 3.83%; a 9.8% drop) and Minneapolis, MN (from 2.85% to 2.61%, an 8.6% drop). [23]

Wilmington, DE had the largest increase in effective tax rates on commercial properties from 2017 to 2018. Improved assessment quality[24] sharply reduced the underassessment of commercial property, and was the main driver in increasing the city's effective tax rate on a commercial property worth $1 million by almost 33%, from 1.07% to 1.43%, so that Wilmington's ranking has risen from 48th to 35th. From a ranking perspective, Kansas City and

[22] For an analysis that looks at how effective tax rates vary between different types of commercial property, see "The Effects of State Personal Property Taxation on Effective Tax Rates for Commercial Property" by Aaron Twait, published by the Lincoln Institute of Land Policy (April 2018). The paper finds that average effective tax rates for payable 2016 exceeded 1.9% for hospitals, restaurants, and office space while wholesale trade facilities encountered rates roughly half as large. The paper also finds the current study assumptions realistically model the property taxes payable on the most common type of commercial property – office property.

[23] Changes in city selection and data source render year-on-year changes for Tennessee and New York City irrelevant. See footnote 18 on page 14 and the text box on page 23 for further details.

[24] The concept of "improved assessment quality" has a unique meaning in Delaware. The state uses a "base year" system for assessing property where values for all property are pegged to a base year, with assessments factored back to that year based on a variety of formulae. The base year varies by county – for Wilmington (New Castle County) that base year is 1983. In this case, "improved assessment quality" likely reflects just a change in local commercial real estate markets.

Anchorage's ranks rose five places and six places, respectively; while the ranking for six cities (Phoenix, AZ; New Orleans, LA; Providence, RI; Charleston, SC; Burlington, VT: and Milwaukee, WI), climbed by four places.

Appendix Table 3a shows how effective tax rates on commercial properties vary based on their value, showing tax rates for properties worth $100,000, $1 million, and $25 million (all have fixtures worth 20% of the real property value). Effective tax rates for commercial properties generally do not vary based on property values, unlike homestead properties, where exemptions or other tax relief programs often create significantly lower rates on lower valued properties.

Only 11 of the 53 cities have effective tax rates that vary based on their value. Value-driven differences in effective tax rates make the biggest difference in rankings in Philadelphia. Philadelphia has among the lowest tax rates for commercial properties worth $100,000 (1.140%, 44th highest), but is above average for commercial properties worth $25 million (2.118%, 22nd highest). The city offers property owners a credit against the first $2,000 of Business Use and Occupancy Tax (effectively, a property tax imposed only on business properties) assessed against individual properties, and this credit creates this large differential. The credit reduces the tax on a $100,000-valued property by 46%, but by only 0.3% for a property worth $25 million.

Other cities where the rankings vary significantly (by at least ten places between the $100,000-valued and $25 million-valued parcels) because of beneficial tax treatment provided to lower-valued properties through credits, exemptions, or preferential assessment practices include:

- Minneapolis (27th highest for $100k, 9th highest for $25m)
- Washington, DC (39th highest for $100k, 26th highest for $25m)
- Des Moines (15th highest for $100k, 5th highest for $25m)

Appendix Table 3b shows effective tax rates on commercial properties for a different set of cities. Whereas Table 3a has the largest city for each state, Table 3b shows the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In Table 3b, California has eight cities, Texas has seven cities, Arizona has three cities, and six states (CO, FL, NC, OK, and TN) have two cities each. There are 21 states without any cities in the top 50 shown in Table 3b. Appendix Table 3b also shows effective tax rates on commercial properties worth $100,000, $1 million, and $25 million (with fixtures worth 20% of the real property value).

The average effective tax rates for commercial properties are slightly lower for the 50 largest cities shown in Table 3b than the cities shown in Table 3a—about 1 percent lower for the three property values analyzed.

In some states, tax rates do not vary too much across the largest cities. For example, consider tax rates for commercial properties worth $1 million in the two largest states:

- For California's eight cities, the highest tax rate is in Oakland (33rd highest) and the lowest is in Sacramento (46th). California accounts for 7 of the 10 cities ranked between 37th and 46th.
- For Texas's seven cities, the highest tax rate is in El Paso (3rd highest) and the lowest is in Austin (20th). Texas accounts for four of the seven cities ranked between 10th and 16th.

However, in other cases there can be considerable differences in effective tax rates between cities within the same state. There are actually larger differences in tax rates for states with just two or three cities:

- In Arizona: Phoenix has the 17th highest tax rate, while neighboring Mesa has the 29th highest.
- In Tennessee: Memphis has the 6th highest tax rate, while Nashville has the 39th highest.
- In Colorado: Denver has the 18th highest tax rate, while Colorado Springs has the 25th highest.

Appendix Table 3c provides additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 that are located in nonmetropolitan counties.

On average, commercial tax rates are about 10-11 percent lower for the 50 rural communities than the largest cities in each state. For a property worth $1 million, the average effective tax rate is 1.74% for the rural cities versus 1.94% for the urban cities shown in Appendix Table 3a. For 28 states, the effective tax rate on a $1-million valued commercial property is lower in the selected rural municipality than in the state's largest city.[25]

The state with the biggest difference in the tax rate in the largest city and the rural municipality is Delaware, where the tax rate on a commercial property worth $1 million in Georgetown is about a quarter of the rate in Wilmington (0.39% vs. 1.43%). Other states where the tax rate in the rural community is significantly lower than the largest city include Connecticut (60% lower), Oregon (53% lower), Rhode Island (47% lower), and Arkansas (46% lower).

On the other hand, in 22 states the tax rate is higher in the rural municipality than in the largest city in the state. The biggest difference is in South Carolina, where the tax rate on a commercial property worth $1 million in Mullins is 88 percent higher than the rate in Charleston (2.74% vs. 1.45%). Other states where the tax rate in the rural municipality is significantly higher than the largest city include Kansas (63% higher), Washington (51% higher), South Dakota (41% higher), and New Hampshire (38% higher).

Variation in tax rates across the 50 rural cities is very similar to variation across the largest cities in each state.

Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Table 3b) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the large differences between the largest cities in Tennessee, Arizona, and Colorado show that caution is needed when extrapolating findings for a single city to an entire state.

[25] Excluding Washington (DC), which has no rural analogue, and Chicago (IL) and New York (NY), which have property tax systems that differ substantially from those in the remainder of the state. In Illinois and New York, the differentials are calculated between the rural municipality and the state's second-largest city.

Readers wishing to determine whether taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, four states (Iowa, Kansas, Michigan, and Minnesota) have at least one top ten ranking in both an urban and rural setting – suggesting that these states are most likely to have the highest commercial property taxes. Conversely, four states (California, Hawaii, Virginia, and Wyoming) have multiple bottom ten rankings in both urban and rural settings.

Comparing Property Taxes Calculated with Fixed Property Values

This report uses fixed property values (i.e. $1 million in all cities) to control for the impact local real estate conditions have on relative tax burdens. However, differences in property values – driven largely by differences in land values – mean identically valued properties often look very different across the country. For example, a $1 million property in Detroit is very different from a $1 million parcel in New York City. For two properties with different values but identical characteristics (i.e. similar square footage, amenities, etc.) in two cities with the same effective tax rates, the property tax bill will be higher in dollar terms in the city with high property values than the city with low values.

For taxes on commercial, industrial, and apartment properties, the report solely uses fixed property values. As a result, if the goal is to compare taxes due on properties with similar characteristics (i.e. 5,000 square feet in the central business district), the net tax *bills* (i.e. $3,000) will be underestimated in cities with high property values and overestimated in cities with low property values. In contrast, data on effective tax *rates* (i.e. 1.5 percent) will be largely unaffected by the property value chosen for the analysis, because effective tax rates usually do not increase with property values for business properties. For this reason, it is better to use data on effective tax *rates* when making cross-city comparisons for taxes on commercial, industrial, and apartment properties.

In addition, fixed property values are not problematic from the perspective of a real estate investor looking to invest a certain amount of money—whether it's a $1 million condo in New York or a $1 million apartment complex in Detroit.

Note that the use of fixed property values also makes year-to-year comparisons of effective tax rates or tax bills challenging because property values change over time. A $1 million property in 1995 looks very different than a $1 million property in 2018 in most cities.

For homestead property taxes, the report analyzes property taxes on median valued homes, which adjusts for differences in property values, and thus allows for comparisons of property taxes on a "typical" home across cities and over time.

Changes to Tax Rate Estimates for New York City

Astute readers will notice significant decreases in effective tax rates for commercial, industrial, and apartment buildings in New York City since last year's report. These changes have come about because this year's report uses a new data source to measure assessment quality in New York City, which shows that these three types of properties are significantly underassessed relative to their market values.

New York City uses unique assessment methods that are different from any of the other cities in this report. For Class 1 properties (1-3 unit residential buildings), the city employs the standard practice of using comparable sales to estimate market values, and has a sales ratio near 100 percent. However, state law requires the City to use the income approach for Class 2 properties (3+ unit residential, including condos/coops and apartment buildings), and the City also uses the income approach for Class 4 properties (commercial, industrial, and other non-utility properties). The income approach assumes a property is worth the present value of the cashflow stream it will generate over time and can generate accurate estimates of market values in many cases.

However, the new sales ratio data show that the income approach in New York City significantly underestimates market values for Class 2 and Class 4 properties. These problems could be caused by rent restrictions that constrain income for property owners, the requirement that assessment changes are phased in over five years, or other factors (NYC IBO 2006). It may be necessary to make changes to the City's methodology to improve accuracy, possibly including changes to the capitalization rates used to translate annual income into an estimate of market value (Citizens Budget Commission 2018). Note that sales ratios are also very low for condos and coops, although we do not present estimates of effective tax rates for those types of properties in this report, as they are uncommon outside of New York City.

In prior years, we used the only publicly available sales ratio data for New York City, which are the Assessment Equity Statistics provided by the state's Office of Real Property Tax Services.[26] This report shows a 74% equalization ratio for Class 2 properties and an 87% equalization ratio for Class 4 properties in New York City. However, this is not the same measure of assessment quality we use for other states, because it measures the accuracy of assessments based on the valuation methodologies used in New York City rather than actual sales prices.

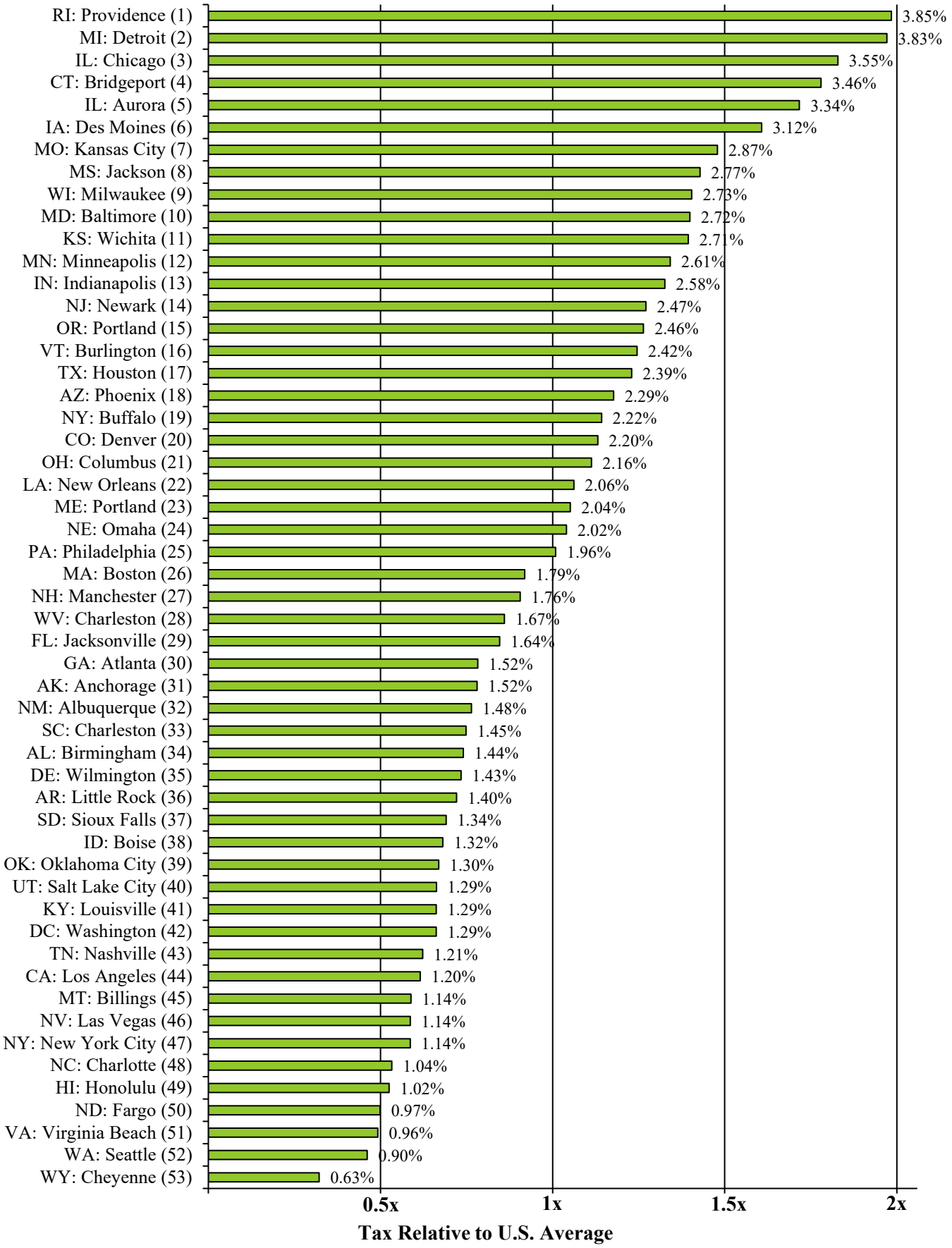
This year, the New York City Independent Budget Office (IBO) provided us with information from an internal sales ratio study it performs annually. The IBO's study compares assessed values to actual sales values, which is the standard approach used for other sales ratio studies nationwide. For commercial, industrial, and apartment buildings, these ratios all fall between 20% and 30%. This new sales ratio data results in more accurate measures of effective tax rates in New York City. We had these new estimates reviewed by the IBO and the Citizens Budget Commission to verify their accuracy.

We do not expect to find similar discrepancies in sales ratios in other locations, because the assessment methodologies used in New York City are unique. We did, however, take extra steps this year to verify the sales ratio data used in this report for other cities, and did not find any issues in other locations.

[26] http://orps1.orpts.ny.gov/cfapps/MuniPro/muni_theme/county/county.cfm?swis=65

Figure 3: Commercial Property Taxes for Largest City in Each State (2018)

Effective Tax Rate for $1-Million Valued Property (plus $200k in Fixtures)



Industrial Property Taxes

Figure 4 shows effective property tax rates for industrial properties with $1 million worth of real property for the largest city in each state. This analysis looks specifically at taxes on manufacturing properties. We assume that each property has an additional $1 million of personal property, consisting of $500,000 of machinery and equipment, $400,000 of inventories, and $100,000 of fixtures. Differences in personal property taxation have significant impacts on effective tax rates for industrial properties, as described in the box on the next page. Readers should use some caution when interpreting these results; see the box on comparing property taxes calculated with fixed property values for guidance (page 22).

The average effective tax rate on industrial properties at this value for the 53 cities in Figure 4 is 1.418 percent. A parcel with a real property value of $1 million that has an additional $1 million in personal property would thus owe $28,360 in property taxes (1.418% x $2m total parcel value). For shorthand, this section refers to parcels based on their real property values.

Tax rates vary widely across the 53 cities. The top four cities of Jackson (MS), Detroit, Houston, and Kansas City all have effective tax rates that are at least 60% higher than the average for these cities. The bottom five cities of Virginia Beach, New York City, Fargo, Honolulu, and Cheyenne all have tax rates that are less than half of the average.

Some cities had significant changes in their effective tax rates from 2017 to 2018. Outside of declines attributable to changes in city selection or data sources[27], the city with the largest decline in its industrial property tax rates was Charleston (SC), where growing underassessment of industrial property relative to market values dropped the effective tax rate by 15%, from 2.28% to 1.94%, so that the city's ranking dropped from 6th to 13th. Other cities with significant ranking declines include Bridgeport (CT), which fell four places from 10th highest to 14th in the rankings; Minneapolis, which fell from 17th highest to 20th; and Buffalo, which fell from 28th highest to 30th.

Similar to commercial properties, Wilmington (DE) had the largest increase in effective tax rates on industrial properties from 2017 to 2018. A reduction in the underassessment of industrial properties increased the effective tax rate on an industrial property in the city worth $1 million by 33%, from 0.64% to 0.86%, so that the city's ranking rose from 50th to 45th. Industrial property tax rankings rose by seven places in Providence (RI), from 15th to 9th highest; while two cities experienced six-place increases in their rankings: Indianapolis rose from 12th highest to 6th; and Des Moines rose from 18th highest to 12th.

Appendix Table 4a shows how effective tax rates on industrial properties vary based on their value, showing tax rates for properties worth $100,000, $1 million, and $25 million (all have personal property worth 100% of the real property value). As the table notes, effective tax rates for industrial properties generally do not vary based on property values, unlike homestead properties, where exemptions or other tax relief programs often create significantly lower rates on lower valued properties.

[27] Changes in city selection and data source render year-on-year changes for Tennessee and New York City irrelevant. See footnote 18 on page 14 and the text box on page 23 for further details.

Taxes on Personal Property

Property taxes are often imposed differently on real property (the value of land and buildings) versus personal property (the value of machinery and equipment, inventories, and fixtures). For example, Appendix Table 4g shows how three categories of personal property are taxed in the largest cities in each state:

- **Machinery and equipment**, which includes things like assembly robots and milling machines, is fully exempt from taxation in 21 cities. In another 10 cities, the property tax system provides preferential treatment to machinery and equipment over real property. In contrast, real property is treated preferentially relative to personal property in at least once instance in five cities.
- **Manufacturers' inventories**, which include raw materials, supplies, unfinished products, and similar items, are fully exempt from taxation in 43 cities. In another 4 cities, inventories receive preferential treatment relative to real property, while the reverse is true in 2 cities.
- **Fixtures**, which include office furniture, equipment, display racks, and tools, are fully exempt from taxation in 15 cities. In another 8 cities, the property tax system provides preferential treatment to fixtures relative to real property, while fixtures are taxed more heavily than real property in at least one instance in 10 cities.

Because personal property is often taxed at a lower rate than real property, the effective tax rate on business properties usually depends on the share of a parcel's total value (i.e. real property + personal property) that comes from personal property. That means estimates of effective tax rates depend on assumptions about the split of total parcel value between real and personal property.

However, the split between real and personal property varies by industry and location. Our modeling indicates that personal property's share of total parcel value ranges from a low of 29.8% for apparel manufacturers to a high of 69.1% for motor vehicle manufacturers. After applying state-specific weights for each manufacturing type, the median state has 54% of total industrial parcel value in personal property with the minimum amount being 50% (Massachusetts) and the maximum being 59% (Michigan).[28]

Because estimates of effective tax rates are sensitive to assumptions about personal property's share of total parcel value, we present two sets of estimates for industrial properties: personal property accounts for 50% of total parcel value in one set of estimates and 60% in the other set. The first set will be a better reflection of effective tax rates for industries and states where personal property accounts for a smaller share of total parcel value (like apparel manufacturers and Massachusetts), while the second set will be better when personal property accounts for a larger share of total parcel value (like motor vehicle manufacturers and Michigan).

Only 12 of the 53 cities have effective tax rates that vary based on their value. Value-driven differences in effective tax rates make the biggest difference in rankings in Washington, D.C. The District of Columbia has one of the lowest tax rates for industrial properties worth $100,000

[28] To determine personal property's share of total parcel value, we replicate the methodology used by the Minnesota Department of Revenue's Research Division in their biennial *Tax Incidence Study*. These studies are available on their website: http://www.revenue.state.mn.us/research_stats/Pages/Tax_Incidence_Studies.aspx.

(0.771%, 43rd highest), but is substantially above average for industrial properties worth $25 million (1.858%, 15th highest). The city exempts the first $225,000 of business personal property, which is effectively a complete personal property exemption for the $100,000-valued parcel but only exempts 0.9% of the personal property associated with the $25 million-valued parcel. The exemption reduces the total tax on a $100,000-valued property by nearly 60% but by less than 1% for a property worth $25 million.

Other cities where rankings vary notably because of beneficial tax treatment provided to lower-valued properties through credits, exemptions, or preferential assessment practices include:

- Phoenix (27th highest for $100k, 5th highest for $25m)
- Minneapolis (37th highest for $100k, 20th highest for $25m)
- Billings (MT) (49th highest for $100k, 33rd highest for $25m)
- Philadelphia (47th highest for $100k, 32nd highest for $25m)

Appendix Table 4c shows effective tax rates on industrial properties for a different set of cities. Whereas Table 4a has the largest city for each state, Table 4c shows the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In Table 4c, California has eight cities, Texas has seven cities, Arizona has three cities, and five states (CO, FL, NC, OK, and TN) have two cities each. There are 21 states without any cities in the top 50 shown in Table 4c. Appendix Table 4c also shows effective tax rates on industrial properties worth $100,000, $1 million, and $25 million (again with personal property equal to 100% of the real property value).

The average effective tax rate for industrial properties is higher for the 50 largest cities shown in Table 4c than the cities shown in Table 4a—roughly 9 percent higher, regardless of which of the three property values is analyzed.

In some states, tax rates do not vary too much across the largest cities. For example, consider tax rates for industrial properties worth $1 million in the two largest states:

- For California's eight cities, the highest tax rate is in Oakland (35th highest) and the lowest is in Sacramento (44th). California accounts for 8 of the 10 cities ranked between 35th and 44th.
- For Texas's seven cities, the highest tax rate is in El Paso (highest among the 50) and the lowest is in Austin (10th). Texas accounts for four of the five top cities and six of the top eight.

However, in other cases there can be considerable differences in effective tax rates between cities within the same state. Consider these noticeable differences in ranking (with the associated effective tax rates) for the $1 million-valued industrial properties in states with two or three cities among the nation's largest fifty:

- In Tennessee: Memphis has the 6th highest tax rate (2.536%), while Nashville has the 34th highest (1.104%).
- In Florida: Miami has the 21st highest tax rate (1.510%), while Jacksonville has the 30th highest (1.332%).
- In Arizona: Phoenix has the 14th highest tax rate (2.002%), while neighboring Mesa has the 27th highest (1.408%).

Appendix Table 4e provides additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 that are located in nonmetropolitan counties.

On average, industrial tax rates are about 8 to 10 percent lower for the 50 rural communities than the largest cities in each state. For a property worth $1 million, the average effective tax rate is 1.285% for the rural cities shown in Appendix Table 4e versus 1.418% for the urban cities shown in Appendix Table 4a. For 27 states, the effective tax rate on a $1-million valued industrial property is lower in the selected rural municipality than in the state's largest city.[29]

The state with the biggest difference in the tax rate in the largest city and the rural municipality is Delaware, where the tax rate on an industrial property worth $1 million in Georgetown is about a quarter of the rate in Wilmington (0.24% vs. 0.86%). Other states where the tax rate in the rural municipality is significantly lower than the largest city include Connecticut (61% lower), Oregon (53% lower), Arkansas (47% lower), and Rhode Island (45% lower).

On the other hand, in 23 states the tax rate is higher in the rural municipality than in the largest city in the state. The biggest difference is in South Carolina, where the tax rate on an industrial property worth $1 million in Mullins is 85 percent higher than the rate in Charleston (3.59% vs. 1.94%). Other states where the tax rate in the rural municipality is significantly higher than the largest city include Kansas (64% higher), Virginia (52% higher), Washington (51% higher), and South Dakota (41% higher).

Variation in industrial tax rates across the 50 rural cities is very similar to variation across the largest cities in each state.

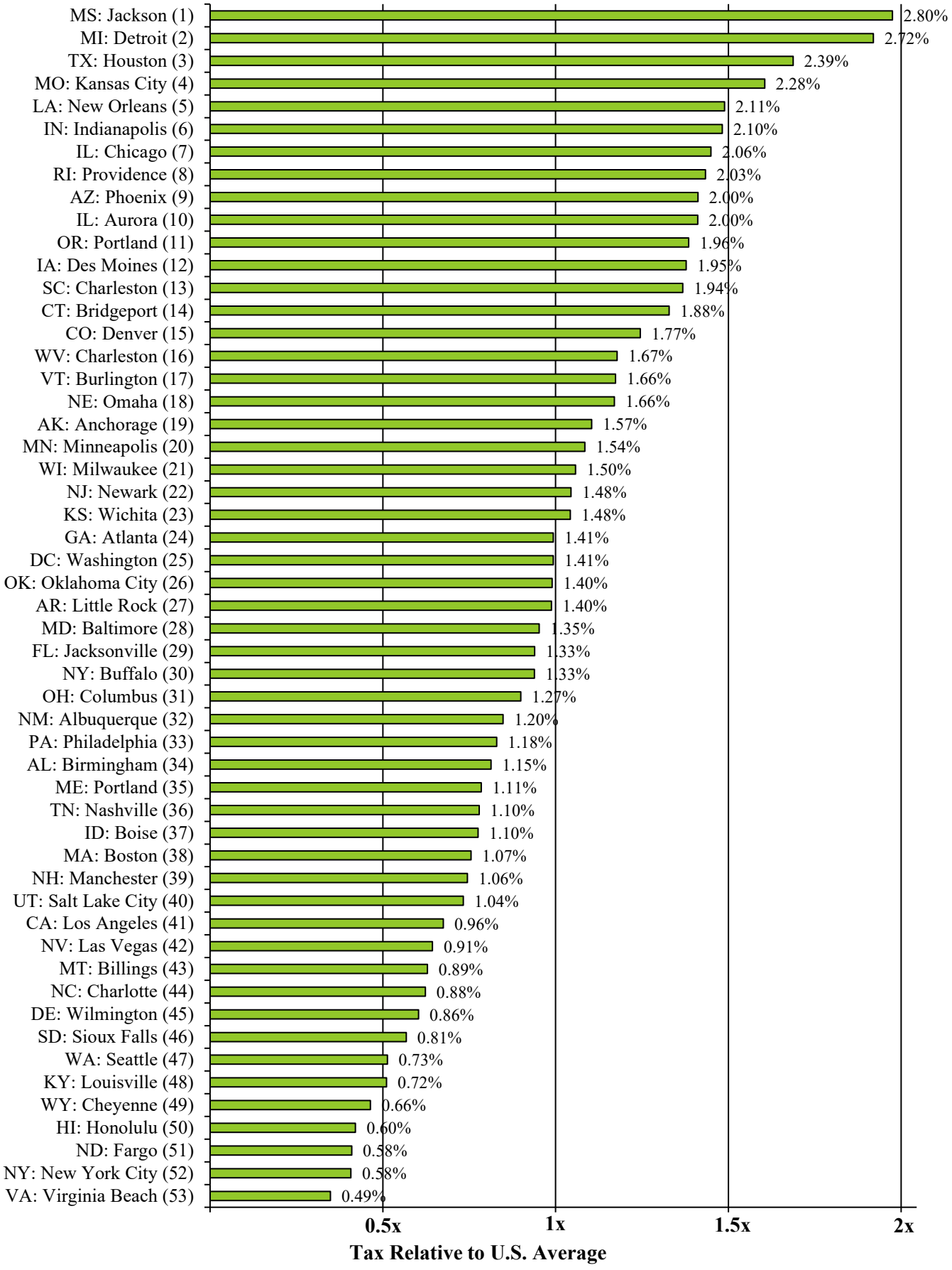
Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Table 4c) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the large differences between the two or three largest cities in Tennessee, Arizona, and Colorado show that caution is needed when extrapolating findings for a single city to an entire state.

Readers wishing to determine whether taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, five states (Indiana, Mississippi, Missouri, South Carolina, and Texas) have multiple top ten rankings in both an urban and rural setting under both sets of assumptions – suggesting that these states are most likely to have the highest industrial property taxes. Delaware, Hawaii, Kentucky, North Dakota, Virginia, and Wyoming are the six states that most often have bottom ten rankings in both urban and rural settings.

[29] Excluding Washington (DC), which has no rural analogue, and Chicago (IL) and New York (NY), which have property tax systems that differ substantially from those in the remainder of the state. In Illinois and New York, the differentials are calculated between the rural municipality and the state's second-largest city.

Figure 4: Industrial Property Taxes for Largest City in Each State (2018)

Effective Tax Rate for $1-Million Valued Property (plus $1 Million in Personal Property)



Apartment Property Taxes

Figure 5 shows effective property tax rates for apartment buildings worth $600,000 for the largest city in each state. The analysis assumes each property has an additional $30,000 worth of fixtures, which includes items such as stoves, refrigerators, garbage disposals, air conditioners, drapes, and lawn care equipment. Readers should use some caution when interpreting these results; see the box on comparing property taxes calculated with fixed property values for guidance (page 22).

The average effective tax rate on apartment properties for the 53 cities in Figure 5 is 1.680 percent. A property worth $600,000 with $30,000 in personal property would thus owe $10,584 in property taxes (1.680% x $630,000 total parcel value).

Tax rates vary widely across the 53 cities. The top two cities of Detroit and Aurora (IL) have effective tax rates that are more than 2 times higher than the average for these cities. The next two cities (Bridgeport, CT; and Des Moines, IA) have effective tax rates that are 90 percent higher than the average for these cities. Conversely, there are six cities where tax rates on apartments are less than half the average, with the lowest rates in Honolulu, Cheyenne, Denver, Salt Lake City, and Washington (DC).

Some cities had significant changes in their effective tax rates from 2017 to 2018. Outside of declines attributable to changes in city selection or data sources[30], the cities where property tax rates on apartment properties declined by at least 15% were Denver, Bridgeport (CT), and Charleston (SC). A reduction in the assessment ratio for apartment properties drove down the effective tax rate for apartments in Denver; while growing underassessment of apartment properties drove the decline in Bridgeport and Charleston. However, while these changes led to a 13-place decline in Charleston's ranking (from 25th highest to 38th highest), they had no real effect on either Denver's already-low ranking (which fell to 51st highest), or Bridgeport's already high ranking, (which rose to 3rd highest. In fact, when excluding Tennessee because of the change in cities and New York City because of the discovery of sales ratio data, the only city outside of Charleston whose ranking fell more than two places was Boise (ID, which fell from 28th to 31st highest.

The effective tax rate on apartments increased by 24% between 2017 and 2018 in Chicago as the underassessment of apartment properties declined, moving the city's ranking up 17 places, from 39th to 22nd highest. Two other cities had notable increases in the effective tax rankings for apartments: Anchorage rose from 32nd to 26th and Kansas City rose from 30th to 24th.

Appendix Table 5b shows effective tax rates on apartment properties for a different set of cities. Whereas Table 5a has the largest city for each state, Table 5b shows the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In Table 5b, California has eight cities, Texas has seven cities, Arizona has three cities, and five states (CO, FL, NC, OK, and TN) have two cities each. There are 21 states without any cities in the top 50 shown in Table 5b.

[30] Changes in city selection and data source render year-on-year changes for Tennessee and New York City irrelevant. See footnote 18 on page 14 and the text box on page 23 for further details.

The average effective tax rates for apartment properties is about 3 percent lower for the 50 largest cities shown in Table 5b than the cities shown in Table 5a. In some states, tax rates do not vary too much across the largest cities. For example, consider tax rates for apartment properties worth $600,000 in the two largest states:

- For California's eight cities, the highest tax rate is in Oakland (24th highest) and the lowest is in Sacramento (39th highest). There is a clustering effect as California accounts for 6 of the 7 cities ranked between 33rd and 39th.
- For Texas's seven cities, the highest tax rate is in El Paso (2nd highest) and the lowest is in Austin (13th). Texas accounts for five of the seven cities ranked between 2nd and 8th.

However, in some states there are considerable differences in effective tax rates between different cities. Consider these notable differences in rankings and effective tax rates between the cities in these states:

- In Tennessee: Memphis has the 4th highest tax rate (2864%), while Nashville has the 32nd highest (1.247%).
- In Oklahoma: Tulsa has the 20th highest tax rate (1.504%), while Oklahoma City has the 30th highest (1.263%).
- In Arizona: Phoenix and Tucson have the 25th and 31st highest rates (1.356% and 1.256%, respectively), while Mesa has the 44th highest (0.933%).

Appendix Table 5c provides additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 that are located in nonmetropolitan counties.

On average, apartment tax rates are about 3 percent lower for the 50 rural communities than the largest cities in each state. For the $600,000-valued apartment property, the average effective tax rate is 1.634% for the rural cities versus 1.680% for the large cities shown in Appendix Table 5a. For 26 states, the effective tax rate on a $600,000-valued apartment property is lower in the selected rural municipality than in the state's largest city.[31]

The state where the tax rate in the largest city is the lowest vis-à-vis the rate for the rural municipality is Delaware, where the tax rate on a $600,000-valued apartment property in Georgetown is about 40% of the rate in Wilmington (0.56% vs. 1.37%). Other states where the tax rate in the rural municipality is significantly lower than the largest city include Oregon (53% lower), Arkansas (46% lower) and Alabama (43% lower).

On the other hand, in 24 states the tax rate is higher in the rural municipality than in the largest city in the state. The biggest difference is in Massachusetts, where the tax rate on an apartment property worth $600,000 in Adams is nearly 130 percent higher than the rate in Boston (2.07% vs. 0.91%). Other states where the tax rate in the rural municipality is significantly higher than in the largest city include Pennsylvania (118% higher), South Carolina (108% higher), Hawaii (75% higher), and Kansas (64% higher).

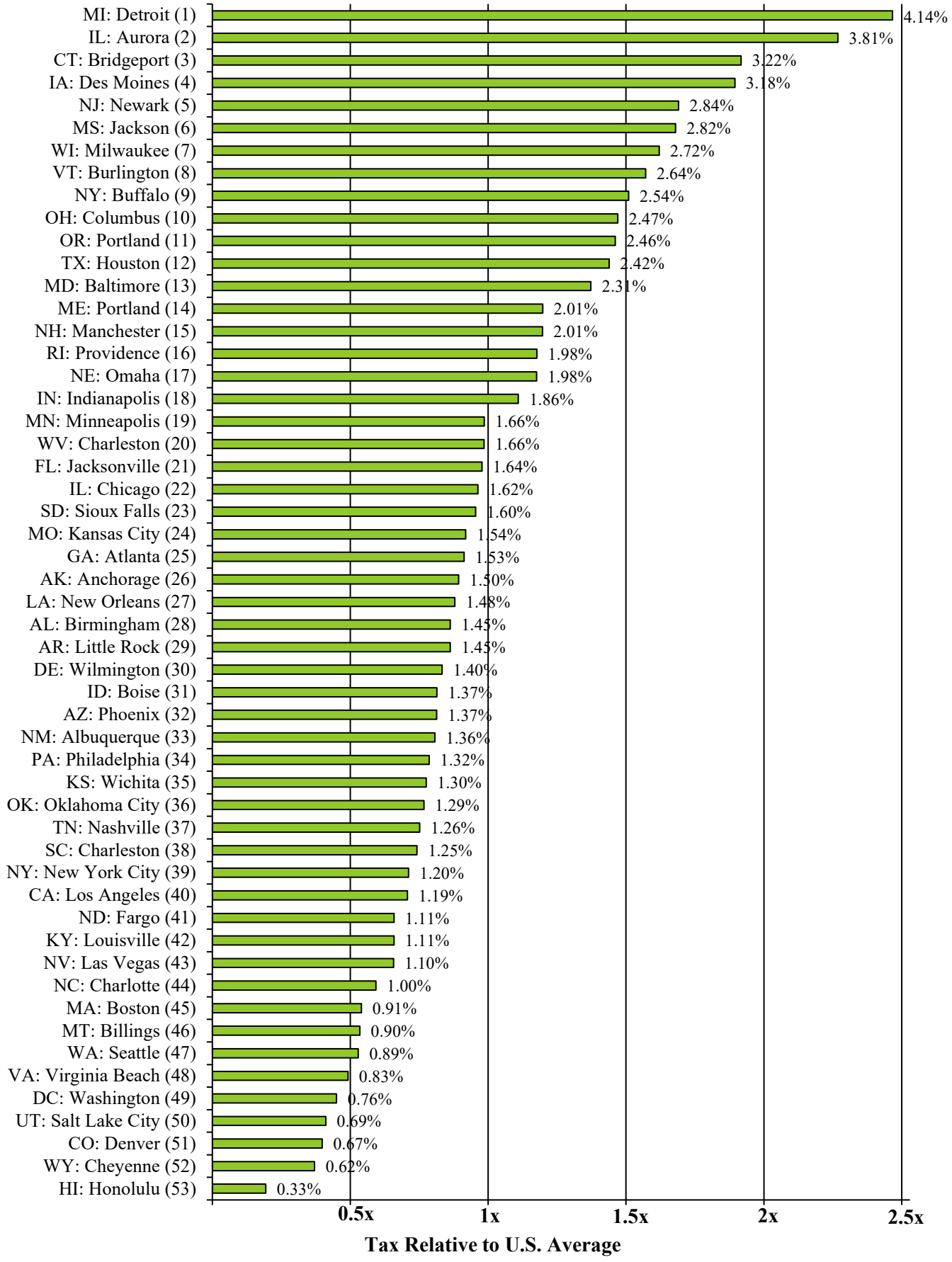
[31] Excluding Washington (DC), which has no rural analogue. In Illinois and New York, the differentials are calculated between the rural municipality and the state's second-largest city.

Variation in apartment tax rates across the 50 rural municipalities is very similar to variation across the largest cities in each state.

Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Table 5b) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the larger differences between the largest cities in Tennessee, Oklahoma, and Arizona show that caution is needed when extrapolating findings for a single city to an entire state.

Readers wishing to determine whether taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, six states (Illinois, Iowa, Michigan, New Jersey, New York, and Vermont) have top ten rankings in both an urban and rural setting – suggesting that these states are most likely to have the highest apartment property taxes. Colorado, Hawaii, Utah, Virginia, and Wyoming are the five states that have bottom ten rankings in both urban and rural settings.

Figure 5: Apartment Property Taxes for Largest City in Each State (2018)
Effective Tax Rate for $600,000 Valued Property (plus $30,000 of Fixtures)



Classification and Preferential Treatment of Homestead Properties

Many cities have preferences built into their property tax systems that result in lower effective tax rates for certain classes of property, with these features usually designed to benefit homeowners. The "classification ratio" describes these preferences by comparing the effective tax rate for two types of property. For example, if a city has a 3.0% effective tax rate on commercial properties and a 1.5% effective tax rate on homestead properties, then the commercial-homestead classification ratio is 2.0 (3.0% divided by 1.5%).

In a property tax system that treats all properties similarly, the classification ratio would be 1.0, because the effective rates on all properties would be the same. Therefore, the classification ratio provides a summary measure of the degree to which one type of property subsidizes lower property taxes on another class of properties. There are four main features of property tax systems that lead to different effective tax rates for different classes of property: the assessment ratio, the nominal tax rate, exemptions and credits, and the sales ratio.[32]

First, states may have different assessment ratios for different classes of property, which is the percentage of market value used to determine taxable values. For example, a state may have a 100% assessment ratio for commercial property and a 70% assessment ratio for residential property, which means a $100,000 commercial property would be taxed on its full market value but a $100,000 residential property would be taxed as if it were worth $70,000.

Second, cities may have different nominal tax rates for different classes of property, which is the tax rate applied to the taxable value to determine the tax bill. The nominal tax rate is also known as the statutory tax rate or millage rate.

Third, states or cities may have exemptions or credits that are only available to certain types of properties. The most common are homestead exemptions, which reduce the amount of property value subject to taxation, but are usually restricted to owner-occupied homes and unavailable to businesses or renters. For example, a $50,000 homestead exemption would mean a $200,000 home would be taxed as if it were worth $150,000, assuming there is a 100% assessment ratio.[33]

Fourth, the sales ratio may vary across property classes. The sales ratio measures the accuracy of assessments by comparing assessments to actual sales. For example, if the sales ratio for homesteads is 95%, then a home worth $100,000 would be "on the books" as if it were worth $95,000. Unlike the three other causes of classification, differences in sales ratios across classes are not written into law and are normally unintentional. Nonetheless, differences in the quality of assessments across property classes can produce a *de facto* classification system.

[32] For details on classification in each state, see the Property Tax Classification table on the Lincoln Institute of Land Policy's *Significant Features of the Property Tax* website (https://www.lincolninst.edu/subcenters/significant-features-property-tax/Report_Property_Tax_Classification.aspx).

[33] For information on homestead exemptions in each state, see "How Do States Spell Relief: A National Study of Homestead Exemptions and Property Tax Credits" by Adam H. Langley in *Land Lines* (April 2015).

Commercial-Homestead Classification Ratio

Figure 6a shows the commercial-homestead classification ratio for the largest city in each state, by comparing the effective tax rate on a $1 million commercial property to the effective tax rate on a median-value homestead property.[34] Note that because homeowners' household goods are not taxable, we exclude commercial fixtures and instead compare only the effective rates on real property (land and buildings).

The average classification ratio for the 53 cities shown in Figure 6a is 1.657, which means that on average commercial properties experience an effective tax rate that is 66% higher than homesteads.

The commercial-homestead classification ratio varies widely across the 53 cities. The top four cities of Boston, Honolulu, Denver, and Charleston (SC) all have classification ratios greater than 3.0. Over a quarter of all cities (15 of 53) have classification ratios above 2.0, meaning that commercial properties face an effective tax rate that is at least double that for homesteads.

There are five cities where the classification ratio is below one, meaning that their classification system favors commercial properties over homesteads: Las Vegas, Baltimore, Bridgeport, Cheyenne (WY), and Virginia Beach. The property tax systems in these cities are not structured to favor commercial properties, but the sales ratio results in a *de facto* classification system since commercial properties are under-assessed relative to homestead properties.

Appendix Table 6a provides additional information about the commercial-homestead classification ratio in each city. Of the 53 cities, 16 have a higher assessment ratio for commercial properties, 14 have a higher nominal tax rate on commercial properties, 29 have exemptions or credits that favor homesteads over commercial properties, and five offer homesteads parcel-specific assessment limits not available to commercial properties. Property tax systems often combine these features – in 20 of these cities homeowners benefit from at least two of these four features (in Albuquerque, Minneapolis, and New York City, homeowners benefit from three of the four). In 11 cities preferential treatment for homeowners is delivered through exemptions or credits alone, while in 9 cities preferences are delivered exclusively through differences in assessment ratios or nominal tax rates.

On average, tax disparities between commercial and homestead properties rose somewhat in 2018: increasing to 1.662 from 1.640 in 2017. The commercial-homestead classification ratio declined in 21 cities[35], with the largest drops in Boise, ID (-0.179); Minneapolis (-0.143); Atlanta (-0.079); Baltimore (-0.079); and Sioux Falls (-0.075). Relative changes in sales ratios for commercial versus homestead properties tend to have the biggest impact on short-term changes in classification ratios. However, policy decisions that change the underlying property tax structure can sometimes come into play – for example, policymakers' decision in Minnesota to reduce the property tax levy the state imposes on business properties and to exempt a portion of value from the levy plays a large role in Minneapolis' lower classification ratio. From a rankings

[34] See the methodology section for more detail on how these calculations are performed.

[35] Excluding Tennessee and New York City, changes in city selection and data source render year-on-year changes irrelevant. See footnote 18 on page 14 and the text box on page 23 for further details.

perspective, Baltimore fell 11 places, from 39th to 50th highest, and Sioux Falls (SD) fell 8 places (from 32nd to 40th highest).

The classification ratio increased in 23 cities, with the largest rises in Honolulu (0.413), Denver (0.386); Wilmington, DE (0.312); Boston (0.188); and Buffalo (0.159).[36] Here also, the increases are largely driven by sales ratio changes, although the decrease in the assessment ratio for Colorado homesteads and the increase in Boston's homestead exemption result in the higher classification ratios for Denver and Boston, respectively.

Figure 6c shows the longer-term picture, with trends in the commercial-homestead classification ratio going back to 1998. The 1.662 figure for 2018 is 1% higher than the 1.640 from last year's report, but still 1% lower than the 1.678 we reported in 2016 and the 1.680 reported in 2002. There was an even slightly smaller increase, on a proportional basis, from 2017 to 2018 when looking solely at locations where residential and commercial properties are treated differently in statute. For cities with this "statutory classification,"[37] the average rose from 1.854 to 1.876.

Apartment-Homestead Classification Ratio

Figure 6b shows the apartment-homestead classification ratio for the largest city in each state, by comparing the effective tax rate on a $600,000 apartment building to the effective tax rate on a median-value homestead.[38] This classification ratio shows the degree of subsidy provided to homeowners at the expense of renters. The apartment-homestead classification ratio shows that apartments subsidize homestead property taxes at about half the rate that commercial properties do, with apartments facing an effective tax rate that is 31% higher than homesteads on average. In nearly all locations studied, the apartment-homestead classification ratio is smaller than or equal to the commercial-homestead classification ratio, with the exceptions of (in alphabetical order): Burlington (VT), Cheyenne (WY), Detroit, and Houston.

Charleston (SC) is an outlier in the apartment-homestead classification ratio, with an effective tax rate on apartments that is nearly three times higher than the median valued home. There are six other cities with classification ratios above or near 2.0: New York (NY), Indianapolis, Birmingham, Charleston (WV), Jacksonville, and Boston. On the other hand, there are seven cities with a classification ratio below 1.0, with the lowest ratios in Salt Lake City, Bridgeport (CT), and Virginia Beach. The preference given to apartments in these cities is not the result of statutory provisions, but is simply the result of greater underassessment for apartments relative to homesteads.

Appendix Table 6b provides more details about the apartment-homestead classification ratio in each city. As with commercial properties, a large majority of cities have higher effective tax rates on apartments than homesteads. However, the preferences given to homesteads relative to apartments are caused more by homestead exemptions and credits than by differences in assessment ratios or nominal tax rates. In total, 35 of the 53 cities have statutory preferences for

[36] The relatively large increases for Jacksonville, Florida and Chicago, Illinois are not listed since they are largely driven by a methodological change outlined in the methodology section.
[37] To identify cities with statutory classification, we ignore the sales ratio. This group only includes cities where classification is written into law with the assessment ratio, nominal tax rate, or exemptions/credits.
[38] See the methodology section for more detail on how these calculations are performed.

homesteads relative to apartments, but only 13 offer more than one preference. Six cities have preferential assessment ratios and/or nominal tax rates only, while 16 cities offer homestead exemptions or credits alone.

On average, tax disparities between apartments and homesteads fell about 2% in 2018; declining to 1.308 from 1.332 in 2017. The decline is in very large part the result of our discovery this year of reliable sales ratio data for New York City (discussed in the text box on page 23) whereby the apartment-homestead classification ratio fell from 4.800 to 2.550. Otherwise, the apartment-homestead classification ratio declined in 22 cities[39], with the largest drops in Boise, ID (-0.179); Charleston, WV (-0.106); Des Moines, IA (-0.097); Atlanta (-0.079); and Baltimore (also -0.079). The classification ratio increased in 18 cities, with the largest rises in Chicago (0.324); Buffalo (0.159); Jackson, MS (0.126); Indianapolis (0.072); and Burlington, VT (0.071).[40] As with the commercial-homestead ratios, relative changes in sales ratio have the biggest impact in year-to-year changes in the apartment-homestead ratios. However, policymakers' decisions influenced some changes in the apartment-homestead classification ratios; in Fargo, the same factors affecting changes in the commercial-homestead classification ratio come into play. **Figure 6d** provides information on how the apartment-homestead classification ratio has changed since 1998.

[39] Excluding both New York City for reasons discussed in the text and also Tennessee, where the largest city in the state changed between 2017 and 2018. In both cases, these changes make year-on-year comparisons misleading.
[40] The relatively large increases for Jacksonville, Florida and Little Rock, Arkansas are not listed since they are largely driven by a methodological change outlined in the methodology section. The change for Chicago, Illinois is also affected by this change but would still have the largest year-on-year increase in the apartment-homestead classification ratio without it.

Figure 6a: Commercial-Homestead Classification Ratio for Largest City in Each State (2018)

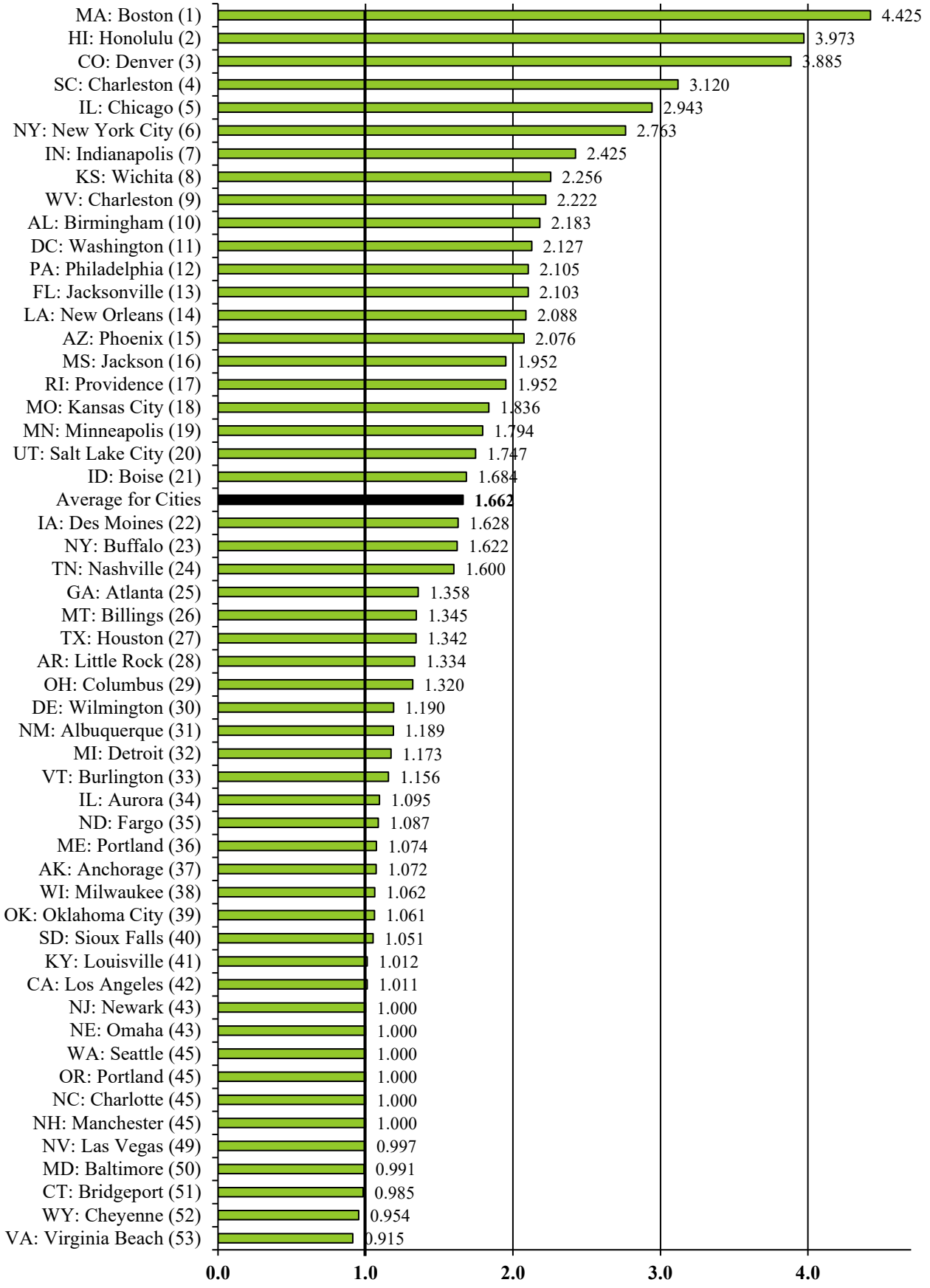


Figure 6b: Apartment-Homestead Classification Ratio for Largest City in Each State (2018)

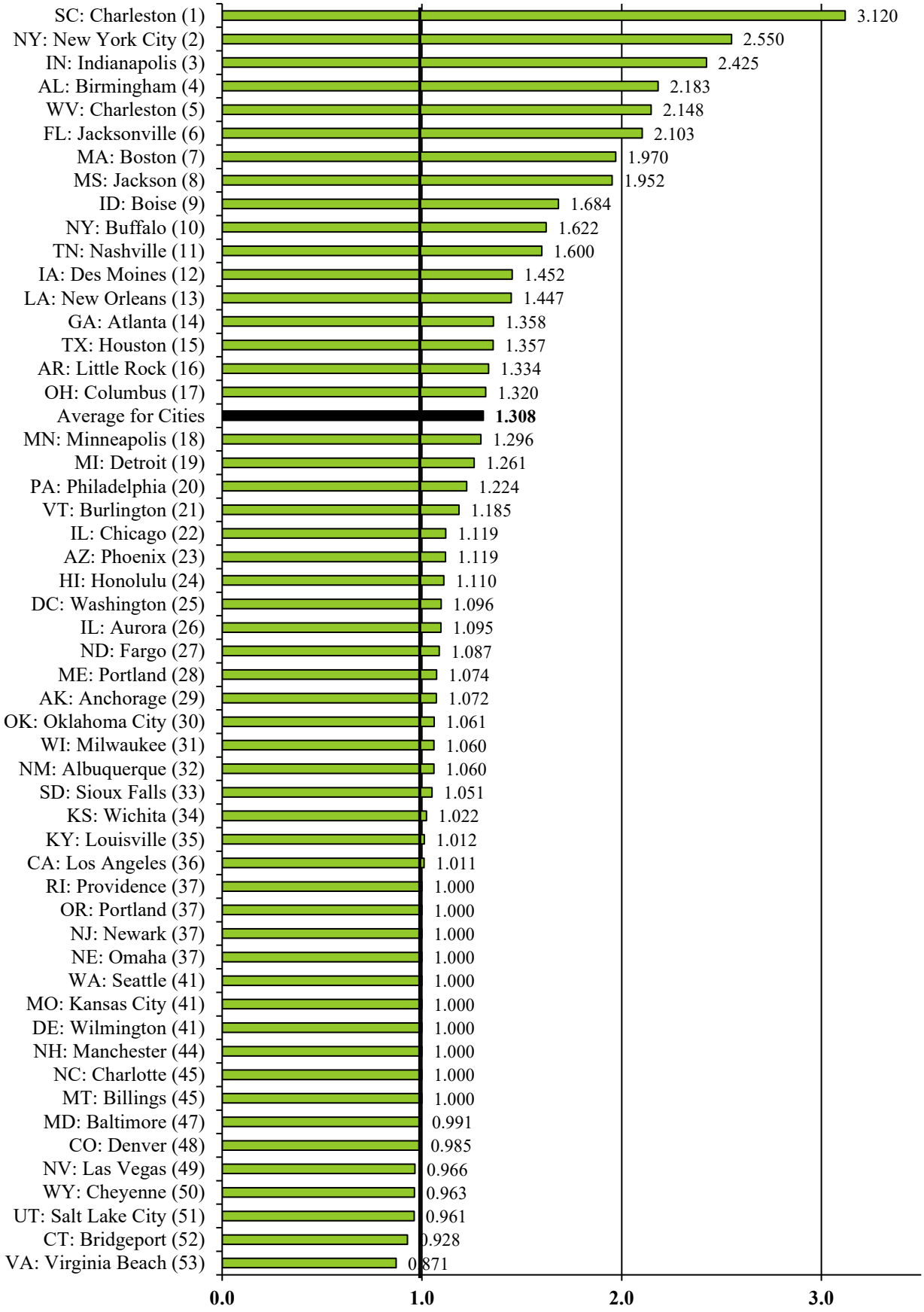
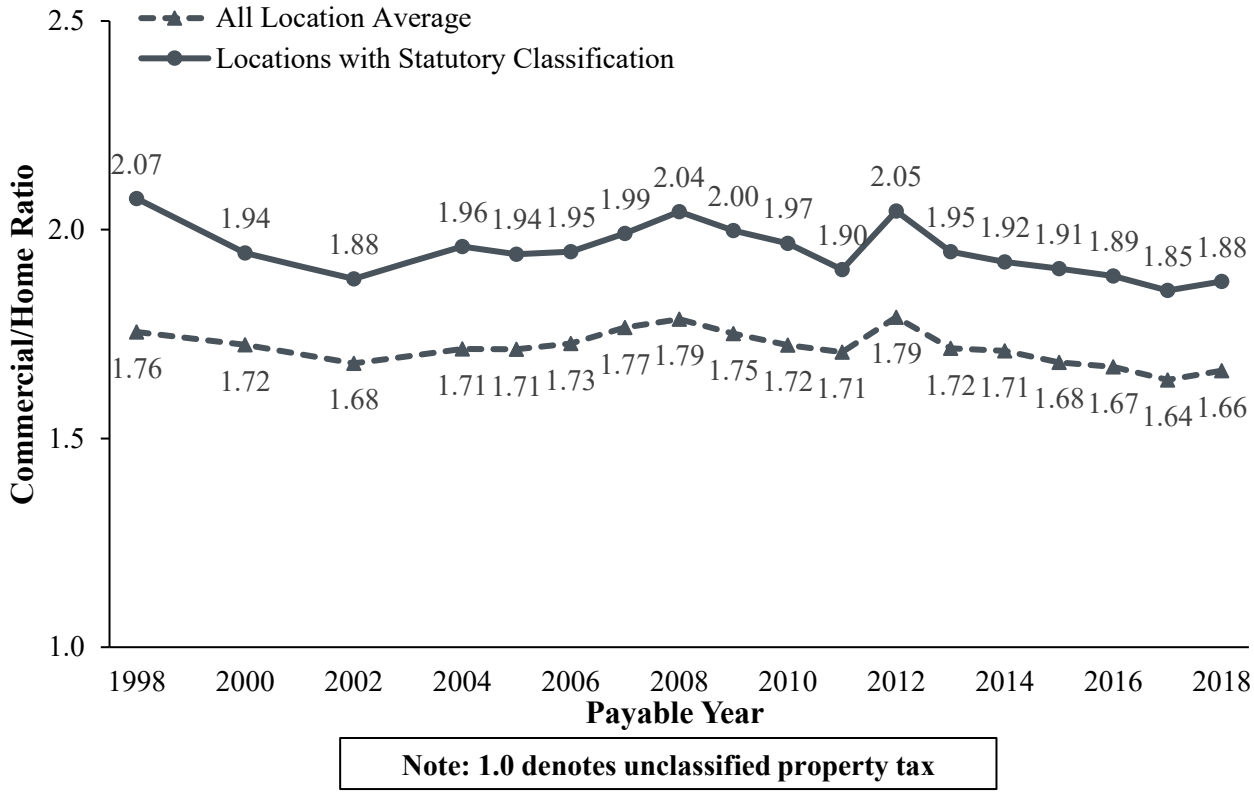
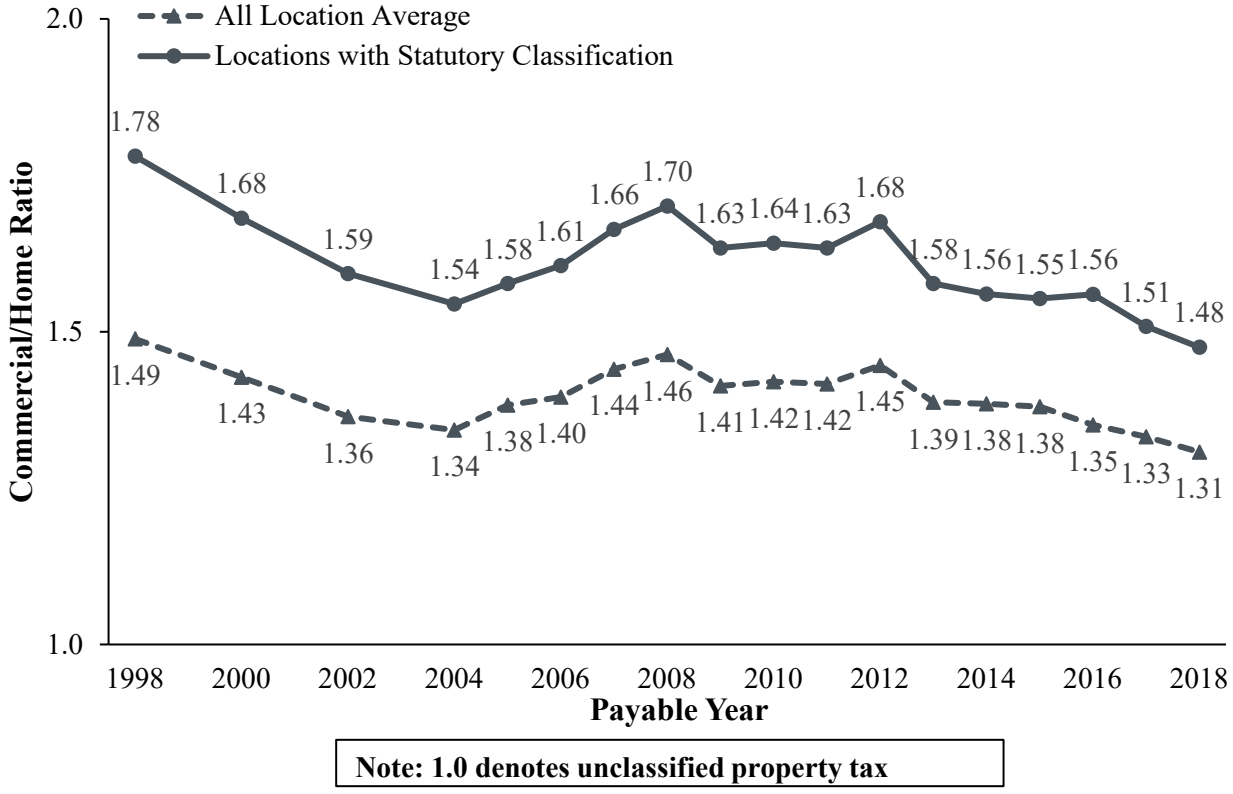


Figure 6c: Commercial-Homestead Classification Ratio for Largest City in Each State (1998 – 2018)



Note: "Statutory classification" is the group of cities where classification is written into law with the assessment ratio, nominal tax rate, or exemptions/credits. Identification of this group ignores the sales ratio.

Figure 6d: Apartment-Homestead Classification Ratio for Largest City in Each State (1998 – 2018)



Property Tax Assessment Limits

Property tax limitations have become an increasingly important feature of the local government finance landscape since the late 1970s, when rapid property value growth provoked Californians to adopt the now-iconic Proposition 13. Since that time, limitations on property taxes have become increasingly popular, especially during the late 1990s and early 2000s, when property values again appreciated significantly.[41]

There are many different types of property tax limits, including constraints on tax rates, tax levies, and assessed values.[42] This report accounts for the impact of limits on tax rates and levies implicitly, because of how these laws impact cities' tax rates. However, accounting for the impact of assessment limits requires an explicit modeling strategy.

Assessment limits typically restrict growth in the assessed value for individual parcels and then reset the taxable value of properties when they are sold. Therefore, the level of tax savings provided from assessment limits largely depends on two factors: how long a homeowner has owned her home and appreciation of the home's *market value* relative to the allowable growth of its *assessed value*.[43]

This report estimates the amount of tax relief provided by assessment limits for the average homeowner in a particular city by estimating the amount of value growth these limits exclude from taxation over an average tenure of ownership (See Methodology section for details).[44] One key difference between assessment limits and other types of property tax limits, however, is that tax savings from assessment limits vary widely across individual taxpayers within the same city. Tax savings will be greater than average for homeowners whose home values have grown faster than average for the city and have owned their homes longer than average. States with parcel-specific assessment limits include Arizona, Arkansas, California, Florida, Illinois (Cook County only), Michigan, New Mexico, New York (New York City and Nassau County only), Oklahoma, Oregon, South Carolina, and Texas.

Figure 7 shows the impact of assessment limits for a median valued home in the 29 cities modeled. The impact of assessment limits varies widely across cities. The largest effect is in New York City, which has an assessment limit that has capped growth in assessed values for residential properties since 1981, even when a property is sold. Because most homes in New York were built prior to 1981, the average home in New York City has been subject to assessment limits for 37 years. However, effective tax rates on newly built homes are far higher,

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[41] Paquin, Bethany P. 2015. "Chronicle of the 161-Year History of State-Imposed Property Tax Limitations." Cambridge, MA: Lincoln Institute of Land Policy.

[42] The Lincoln Institute of Land Policy maintains a comprehensive database of property tax limits on its website: https://www.lincolninst.edu/subcenters/significant-features-property-tax/Report_Tax_Limits.aspx.

[43] Haveman, Mark and Terri A. Sexton. 2008. *Property Tax Assessment Limits: Lessons from Thirty Years of Experience*. Cambridge, MA: Lincoln Institute of Land Policy.

[44] Unlike most locales, assessment limits effective in New York City and Portland (OR) do not reset upon sale of a property. Therefore, for those two cities the duration of the assessment limitation is set to the lesser of the average age of an owner-occupied home (i.e. number of years since average home was constructed, which is 67 years in New York City and 65 years in Portland) or the period during which assessment limits have been in place (since 1981 in New York City and 1996 in Portland).

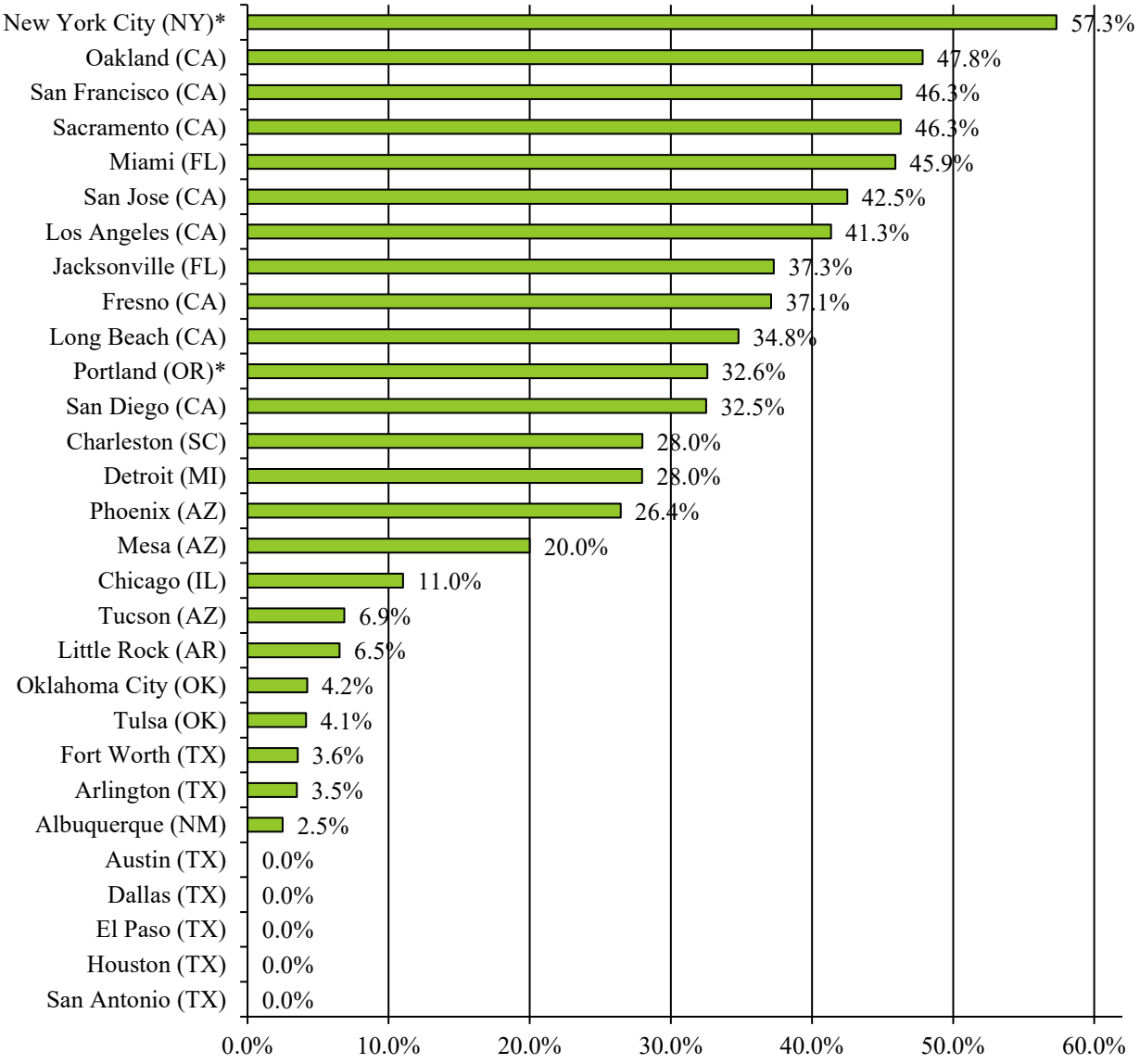
because they do not benefit from the assessment limit. In fact, the owner of a median valued home in New York City ($569,700) built prior to 1981 would face less than half the effective tax rate than the owner of a newly built median valued home despite them having identical values. Assessment limits also have large impacts in Oakland, San Francisco, Sacramento, Miami, and San Jose, where effective tax rates are 42-48% lower for homes that have been owned for the average duration in each city than for newly purchased homes. In contrast, in five cities (all located in Texas) assessment limits have no impact on taxes for the average homeowner, because growth in market values is less than allowable growth under the assessment limit.

Appendix Table 7 also shows the impact of assessment limits in terms of the dollar difference in taxes between newly purchased homes and homes subject to the average assessment limitation in each city, for median valued homes. In 11 cities, the difference in tax bills is at least $1,000.

Accounting for assessment limits can lead to major differences in city's tax rate rankings. For example, consider effective tax rates for median valued homes in the largest city in each state (See Appendix Tables 2a and 2b). New York City has the 30th highest effective tax rate for new homeowners, but drops to 50th highest once adjusting for assessment limits. Other cities with large changes include Los Angeles (27th to 46th); Jacksonville (26th to 41st); Phoenix (24th to 37th); and Portland, OR (6th to 15th).

Figure 7: Impact of Assessment Limits

Difference in Property Taxes between a Newly Purchased Home and a Home that Has Been Owned for the Average Duration for the City (For Median Valued Home)



Notes: See Methodology section for details on calculation.

* New York City and Portland (OR) have unique assessment limits, because they do not reset when a property is sold like in other cities. For these cities, figure 7 shows the difference in property taxes on a newly-built home and a home built prior to the implementation of assessment limits (1981 in New York City; 1996 in Portland). (See footnote 48 on page 50 for details on the methodology for these two cities).

Methodology

This study updates the *50-State Property Tax Comparison Study: Payable Year 2017*. It examines four distinct classes of property using a standard set of assumptions about their "true" market values and the split between real and personal property. The report calculates property taxes for parcels with a range of property values in three sets of cities:

- the largest city in each state and the District of Columbia along with Aurora, Illinois and Buffalo, New York;
- the largest fifty cities in the United States; and
- a rural municipality in each state.

This section first describes how property taxes are calculated, then describes data collection and the selection of cities, next defines the four property classes included in this study, and finally describes the methodology used to estimate the impact of assessment limits.

A. Components of the Property Tax Calculation

As an aid in reviewing the remaining assumptions of this study, it is helpful to think of the property tax calculation as having six distinct components:

(1) a "true" market value (TMV),
(2) a local sales ratio (SR),
(3) applicable exemptions that reduce taxable value (E),
(4) a statutory classification system (classification rate) or other provisions that effectively determine the proportion of the assessor's estimated market value that is taxable (CR),
(5) the total local property tax rate (TR), and
(6) applicable property tax credits (C).

Accordingly, the net local property tax for a given parcel of property is written:

$$\textbf{Net Property Tax} = \{[(TMV \times SR) - E] \times CR \times TR\} - C$$

Component 1: True Market Value (TMV)

The calculations for this study start with an assumption about the true market value of the four classes of property. This is the market value of a parcel of property as determined in a local real estate market consisting of arm-length transactions between willing buyers and sellers. This is in contrast to "assessed value" or "estimated market value," which is generally the starting point for tax calculations.

This study assumes the true market values are consistent across all locations in the study. For example, the ranking of property taxes on a residential homestead parcel with a true market value of $150,000 assumes that the parcel is actually worth $150,000 in the local real estate market in each location in each state, regardless of what the local assessor may think the property is worth.

For some locations the assumed true market value may be very atypical (a $150,000 home in Boston, for example). Nevertheless, this study assumes the property exists there. Essentially, this study is meant to compare the effects of property tax structures. Using fixed values allows the isolated effects of tax structures to be observed. That is, the report compares property taxes, not local real estate markets. However, as previously discussed the report does include tables that show the residential tax burdens where the home value is set equal to local median values.

Component 2: Sales Ratios (SR)

A unique aspect of this study is that it includes the effects of assessment practices on relative tax burdens. It would be much simpler to start the calculations by fixing the assessor's "estimated market value" for each property. However, in every state, the quality of property tax assessments is a significant aspect of the local property tax scene. Omission of this aspect of the property tax calculation would make this study much less useful.

Sales ratios are simply a measure of the accuracy of assessments. The sales ratio is determined by comparing assessments to actual sales. A sales ratio of 100% indicates that assessments are equal to market value. Sales ratios of less than 100% indicate that assessments are less than market value; sales ratios of over 100% indicate that assessments are higher than market value. In some states, state aid formulas use sales ratios to adjust assessors' values when local property wealth is used as a measure of local fiscal capacity. While sales ratios are generally not used in calculating an individual's actual property tax bill, some states do use sales data to equalize values as part of the property tax process.

By applying sales ratios, this study recognizes that our $150,000 residential homestead may be "on the books" at $155,000 in one location, and $140,000 in another, and that the actual tax on the property will be based on these "estimates" of market value. For example, if the relevant sales ratio in a given location is 93%, we convert the $150,000 true market value to $139,500 ($150,000 x .93) before applying the provisions of the local property tax. In this way, the study presents tax liabilities that represent the actual experience of property owners.

Sales ratio data is provided either at the city or county level, depending on the state. We use city-level data where appropriate; otherwise we default to county data. Our preference is to use sales ratio data that differentiates between different types of property. However, in many locations only one ratio is reported, covering all types of property. In those cases, we apply the same ratio to all of that location's examples in the study.

In the case of personal property, sales ratios are generally not used. Many states do not have sales ratios for personal property or assume they are 100%. Where states report personal property sales ratios, we include them in this study.

Component 3: Exemptions (E)

Many states provide exemptions that reduce the amount of property value subject to taxation. In some cases, these exemptions are provided on a blanket basis across a state; in other cases, the exemptions are local-option. Because exemptions are subtracted from assessed value, we apply

them after first applying the sales ratio to true market value, since the exemption will not incorporate any of the assessment error that properties can be subject to.

Note: in some cases, the exemption is subtracted from taxable value instead of assessed value. In those cases, we apply the exemption after applying the classification rate.

Component 4: Classification Rates (CR)

The fourth component of the property tax calculation involves subjecting the parcel's taxable value to classification (or assessment) rates, which convert assessed value to taxable value. In many cases, these classification rates are 100%, meaning that taxable value is equal to assessed value. However, governments often use differential rates to affect the distribution of property tax levies – to provide tax relief for a selected class of classes of properties at the expense of others.

In most states, state legislatures set the classification schemes. In a few states, local governments have some autonomy over classification rates.

Because of the wide variation in the quality of assessments across the states, particularly across classes of property, many states have no classification scheme in statute may in fact have significant classification via uneven assessments across classes of property. (In some cases, this may violate state constitutional provisions on uniform assessments.) Some states, like Minnesota, enforce strict standards of assessment quality (sales ratio studies, state orders adjusting values, state certification of assessors, etc.) and put their classification policy in statute.

Component 5: Total Local Tax Rate (TR)

The study defines "payable 2018 tax rate" as the rate used to calculate the property taxes with a lien date in 2018, regardless of the date(s) on which payments are due. In some cities, there are multiple combinations of taxing jurisdictions (namely, the state, cities, counties, school districts, and special taxing districts). For instance, a city may be located in multiple school districts and therefore rates will differ based on which school district a parcel is located in. This study uses the rate that is most prevalent in a city.

This study excludes special assessments since they are more in the nature of user charges, do not affect a majority of parcels, and are usually not sources of general revenue.

Component 6: Credits (C)

The final step in the tax calculation is to recognize any general deductions from the gross property tax calculations (credits). The study includes any credits that apply to a majority of parcels of the specified type. Certain states provide credits based on early payment; the study assumes that taxpayers take advantage of the credit by making the early payment.

Effective Tax Rates (ETRs)

Effective tax rates are used to express the relationship between net property taxes and the true market value of a property. This contrasts with the millage rates or other rates that are applied to

taxable value to determine a parcel's tax burden. By including the effects of all statutory tax provisions as well as the effects of local assessment practices, effective tax rates have the virtue of allowing more meaningful comparisons across states and property types.

B. Data Collection

Data for the property tax calculations was collected in one of two ways. Where possible, we collect property tax data directly from various state and local websites. Otherwise, we collect data using a contact-verification approach in which we ask state and local tax experts to provide information. In both cases, this information served as the basis for calculations by the Minnesota Center for Fiscal Excellence.

Selection of Additional Urban Cities

In Cook County (Chicago) and in New York City, the property tax system (notably, the assessment ratios) is substantially different from the system used in the remainder of Illinois and New York, respectively. We include the second-largest cities in those states (Buffalo and Aurora) to represent the property tax structures in the remainder of those states. In essence, the Urban analysis is a comparison of 53 different property tax structures.

Selection of Rural Cities

Rural cities generally must meet three criteria to be included in the study:

- the city has a population of between 2,500 and 10,000 (controlling for size);
- the city is a county seat (controlling, as best as possible, for economic conditions and type of services delivered); and
- the city is located in a county coded as a "6" or "7"[45] on the U.S. Department rural-urban measurement continuum (controlling for geographical relationships to urban areas)

In five states (Connecticut, Delaware, Hawaii, New Jersey, and Rhode Island), there were no counties coded 6 or 7 on the USDA's continuum. In the case of Massachusetts, the only code 6 or 7 county included Nantucket Island, which does not seem comparable to rural counties in other states. In these six cases, we selected the county seat in the most rural county available.

Data on Median-Valued Homes

This study compares homeowner property taxes using a "median value analysis", which sets the home value in each city equal to the median value of owner-occupied housing units in the city, or for smaller cities, in the relevant county. This data comes from the one-year or five-year data in the Census Bureau's *American Community Survey* for 2017, as appropriate. We intend this comparison to show how differences in local real estate markets affect residential property taxes.

[45] Counties coded "6" are nonmetro counties with urban population of 2,500 to 19,999 that are adjacent to a metro area; counties coded "7" are nonmetro counties within the same population range that are not adjacent to a metro area.

Note that the payable 2014 edition of this study was the first to use ACS data on median home values. Prior to that, median home value data came from metropolitan-area data provided by the National Association of Realtors. Readers should make time-trend comparisons of tax burdens on median-valued homes before and after this methodological change with care.

Special Property Tax Provisions

"Special property tax provisions" are provisions that, in practice, apply to less than half of all taxpayers for a given class of property. Special provisions are normally triggered by special circumstances or attributes of the taxpayer or property. Examples include senior tax deferrals, and special valuation exclusions based on age, health or special use.

Because the goal of this study is to compare the actual tax experience of the largest number of taxpayers in the selected jurisdictions, this study excludes special property tax provisions.

C. Property Classes and Assumptions About Value

This report studies hypothetical properties in four property classes (1) residential homesteads, (2) commercial property, (3) industrial property, and (4) apartments. Except for apartments, the study calculates taxes for all properties based on multiple values that are fixed across states. All classes of business property (commercial, industrial, and apartments) have a corresponding set of assumptions regarding the amount of personal property each parcel has.

These four classes were selected for a variety of reasons. First, they represent the vast majority of property value across the country. In Minnesota, these four classes represent nearly 70% of market value. It is likely that this figure is similar to other states, and may be even higher in states that do not have substantial agricultural operations. Second, these are the classes of property that policymakers tend to focus time and attention on. Third, most omitted classes of property are either not relevant to all fifty states (cabin properties, for example) or require more complex work to develop assumptions about value (public utilities and farms, for example).

Selection of Fixed Values

This report compares the tax burdens various property tax systems across the nation impose on a fixed amount of value. Holding property values constant across all jurisdictions controls for the effects differences in property values have on effective tax rates. The specific fixed values the study uses for homes, commercial, and industrial properties were largely chosen between 1995 and 2000 to represent a low-valued[46], medium-valued, and high-valued parcel.

Over time we have added or eliminated property values when appropriate. However, to preserve the usefulness of time-trend comparisons we have not changed any fixed values after their first appearance in the report.

[46] Note that the study no longer includes the $70,000 "low-valued" home.

Importantly, in most locations the effective tax rates for commercial and industrial properties do not vary much with value. Therefore, with few exceptions the specific fixed values selected for inclusion in the report are not of major consequence.

Real and Personal Property

The treatment of personal property is a significant part of each state's property tax regime. Because personal property exemptions (or lack thereof) vary from state to state, creating accurate property tax comparisons will depend in large part on making accurate assumptions about personal property. This is especially true with regard to industrial parcels, which have much higher proportions of personal property than do commercial properties in general.

Making these assumptions is challenging because the specific mix of real and personal property obviously varies by industry and location. With the permission of the Minnesota Department of Revenue's Research Division, we have borrowed the methodology they use to determine shares of real and personal business property in their biennial *Tax Incidence Study*.[47] Using that methodology, we have calculated state-specific real property, machinery and equipment, fixtures, and inventory shares for industrial parcels. The findings this model generates indicate that the median split for industrial parcels nationwide is 45.6% land and buildings (real property) and 54.4% personal property. Overall, the split ranges from 41.3% real/58.7% personal (Michigan) to 49.6% real/50.4% personal (Massachusetts).

PROPERTY CLASSES AND TRUE MARKET VALUES

Class	Values of Property				
	Real	**Mach. & Equip.**	**Inventories**	**Fixtures**	**Total**
Homestead	$150,000	$0	$0	$0	**$150,000**
	$300,000	$0	$0	$0	**$300,000**
Apartments	$600,000	$0	$0	$30,000	**$630,000**
Commercial	$100,000	$0	$0	$20,000	**$120,000**
	$1,000,000	$0	$0	$200,000	**$1,200,000**
	$25,000,000	$0	$0	$5,000,000	**$30,000,000**
Industrial (50% Personal)	$100,000	$50,000	$40,000	$10,000	**$200,000**
	$1,000,000	$500,000	$400,000	$100,000	**$2,000,000**
	$25,000,000	$12,500,000	$10,000,000	$2,500,00	**$50,000,000**
Industrial (60% Personal)	$100,000	$75,000	$60,000	$15,000	**$250,000**
	$1,000,000	$750,000	$600,000	$150,000	**$2,500,000**
	$25,000,000	$18,750,000	$15,000,000	$3,750,000	**$62,500,000**

These results suggest a two-assumption approach, with one set of rankings assuming 40% real property/60% personal property and a second set of rankings assuming 50% real property/50% personal property. The following table summarizes the assumed true market values and assessed value of personal property used for each property class.

[47] *Tax Incidence Studies* are available on the website of the Minnesota Department of Revenue: http://www.revenue.state.mn.us/research_stats/Pages/Tax_Incidence_Studies.aspx.

This study does not include intangibles such as bank balances or financial securities in the property tax calculations.

Definitions of Real and Personal Property

The types of property found in this study are defined as follows:

- **Real Property:** consists of land and buildings not classified as personal property for tax purposes.
- **Machinery and Equipment:** includes large and ponderous equipment, generally not portable and often mounted on special foundations. Examples include large printing presses and assembly robots.
- **Inventories:** includes raw materials, unfinished products, supplies and similar items used by manufacturers. Does not include any inventory retailers hold for sale.
- **Fixtures:** includes items such as office furnishings, display racks, tools and similar items, but not motor vehicles. In the case of apartments, it includes such things as stoves, refrigerators, garbage disposals, air conditioners, drapes, and lawn care equipment.

D. Estimates of Assessment Limitation Effects

This study estimates the effect that provisions have which deliver property tax relief for homeowners by limiting increases in home value or property taxes at the parcel level. Generally, the value of parcel-specific assessment limitations results from a combination of the length of homeowner tenure and changes in the market value of the parcel relative to the provisions of the applicable limitation. This study uses data from the Census Bureau's *American Community Survey* to estimate that average length of homeowner tenure for locations where assessment limitation provisions are in effect. ZIP5 data from the Federal Housing Finance Agency's *House Price Index for All Transactions* is used to estimate the average change in residential property value each individual city where assessment limitation provisions are in effect. We then model the average change in residential property value over the average length of homeowner tenure in each of these locations and compare that change to the allowable growth in homestead value and/or taxes during that period to determine the amount of excluded value or property tax relief these provisions afford.

One final key assumption: in most instances the model represents the experience of a homeowner with an "average" length of tenure.[48] Therefore, if the model returns no excluded value, then we assume that the provision does not apply to half or more of homeowners and thus does not apply.

MCFE prepared a working paper for the Lincoln Institute of Land Policy on this subject where there is considerably more detailed information on the methodology underlying this analysis.[49]

[48] Except for New York City and Portland (OR), which have unique assessment limits that do not reset assessed values when a property is sold. To measure the impact of assessment limits in these cities, we compare the difference in effective tax rates on a newly-built home and a home built prior to the implementation of assessment limits (1981 in New York City; 1996 in Portland). The average home was built 67 years ago in New York City and 65 years ago in Portland, and thus have had growth in their assessed value constrained since the limits were implemented. The analysis compares a newly-built and older home with identical market values (the median valued home is $609,500 in New York City and $427,500 in Portland).

[49] Twait, Aaron. 2012. "Property Assessment Limits: Effects on Homestead Property Tax Burdens and National Property Tax Rankings." Cambridge, MA: Lincoln Institute of Land Policy. April.

E. Classification Ratios

This report measures two "classification ratios" – the ratio of the effective tax rates between a median-valued home and the real portion of a $1 million commercial property ("commercial-homestead classification ratio") and between a median-valued home and the real portion of a $600,000 apartment property ("apartment-homestead classification ratio"). Both measures are designed to offer perspective on the level of homeowner tax preferences that are built into a property tax system. For example, a city with a 3% effective tax rate on commercial property and a 1.5% effective tax rate on homesteads will have a classification ratio of 2.0 – meaning that commercial property is taxed at twice the rate as homes are. A property tax system with no homeowner preferences will have a classification ratio of 1.0; in other words, the effective tax rates for homes will be the same as the rates for other types of properties.

In most of the property tax jurisdictions this report studies and reports on, parcel-specific assessment limitations either do not exist or else do not apply equally to all classes of property; such as California's Proposition 13 limit which restrict growth for any parcel in the state to 2% per year. For these properties, we calculate the classification ratio using homestead property tax burdens based on full market value taxation (Appendix Table 2a) to ensure similar assessment limitation treatment across properties in the same property tax systems.

However, there are six property tax systems – Arkansas; Florida; Cook County, Illinois; New Mexico; New York, New York; and Texas – where assessment limitations either affect homesteads only, or are applied differently to different types of property. For cities located in these jurisdictions, for the payable 2018 report we are calculating the classification ratio using the assessment limited homestead tax burdens (Appendix Table 2b) to reflect the reality that homesteads are subject to different value capping requirements than other types of property.

Appendix Table 1a: Factors Correlated with Homestead Property Tax Rates in Large U.S. Cities

(Effective Tax Rate for Median Valued Home, with Assessment Limits)

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio		
State	City	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Commercial Rank (1-73)	Apartments Rank (1-73)	Impact on Tax Rate
Alabama	Birmingham	64	0.66	71	-0.55	72	0.80	29	0.02	13	4	-0.48
Alaska	Anchorage	28	1.42	7	0.73	18	-0.31	40	-0.05	48	39	0.18
Arizona	Mesa	63	0.66	46	-0.20	37	-0.01	65	-0.23	11	28	-0.12
Arizona	Phoenix	47	0.94	43	-0.16	33	-0.03	58	-0.18	20	32	-0.06
Arizona	Tucson	39	1.08	36	-0.03	60	0.34	64	-0.23	19	30	-0.07
Arkansas	Little Rock	41	1.05	67	-0.50	50	0.23	56	-0.17	33	18	0.02
California	Fresno	56	0.76	49	-0.22	32	-0.04	35	0.01	53	45	0.20
California	Long Beach	55	0.78	59	-0.39	10	-0.79	6	0.33	55	48	0.21
California	Los Angeles	62	0.69	53	-0.26	6	-0.91	5	0.43	58	51	0.21
California	Oakland	61	0.71	56	-0.33	4	-0.96	4	0.62	59	52	0.21
California	Sacramento	67	0.59	62	-0.44	15	-0.35	11	0.24	54	47	0.21
California	San Diego	54	0.78	31	0.05	9	-0.85	22	0.07	56	49	0.21
California	San Francisco	66	0.62	55	-0.29	1	-1.37	2	1.04	61	54	0.21
California	San Jose	59	0.73	40	-0.07	2	-1.15	15	0.14	60	53	0.21
Colorado	Colorado Springs	70	0.49	52	-0.26	24	-0.15	46	-0.10	3	68	-0.42
Colorado	Denver	68	0.56	69	-0.55	13	-0.49	12	0.24	4	67	-0.42
Connecticut	Bridgeport	2	3.44	2	1.17	46	0.19	32	0.01	71	72	0.25
DC	Washington	60	0.73	64	-0.45	8	-0.86	1	1.60	15	35	-0.07
Delaware	Wilmington	27	1.44	33	-0.01	48	0.20	19	0.11	36	55	0.18
Florida	Jacksonville	52	0.79	39	-0.06	47	0.20	41	-0.06	17	7	-0.43

How to Interpret Each Factor's Impact on a City's Tax Rate

The columns labeled "Impact on Tax Rate" shows how each factor is expected to affect the tax rate in that city relative to a scenario where the city had the average value for that variable—a positive value means that factor increases the city's tax rate, while a negative value means that factor decreases the city's tax rate.

For example, consider Birmingham, Alabama. The city has the 71st highest property tax reliance (3rd lowest), which is predicted to decrease the city's tax rate on a median valued home by 0.55 percentage points relative to a city with average property tax reliance. An alternative way to interpret this data is that if Birmingham had the average property tax reliance and all other characteristics of the city were unchanged (home values, government spending, etc.), then the city's tax rate would be 0.55 percentage points higher, which at 1.21% would be 32nd highest. Birmingham also has the 72nd highest median home value (2nd lowest), which is expected to increase their tax rate by 0.80 percentage points relative to a scenario where the city had the average home value for all cities in this analysis. Local government spending per capita is slightly above average in Birmingham (29th highest), which is expected to increase the city's tax rate by 0.02 percentage points relative to a city with average spending. Finally, Birmingham has significantly higher tax rates for commercial properties and apartments than for homestead properties; the classification ratio is 13th highest for commercial properties and 4th highest for apartments. The city's classification ratios are predicted to decrease the property tax rate on a median valued home by 0.48 percentage points compared to a city with the average classification ratio.

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio		
State	City	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Commercial	Apartments	Impact
Florida	Miami	50	0.87	32	0.00	17	-0.32	25	0.05	14	5	-0.46
Georgia	Atlanta	38	1.10	29	0.08	20	-0.25	10	0.28	30	16	0.01
Hawaii	Honolulu*	72	0.31	13	0.35	3	-0.98	73	-0.38	2	34	-0.48
Idaho	Boise	51	0.85	11	0.36	29	-0.07	72	-0.35	25	10	-0.18
Illinois	Aurora	1	3.65	4	0.88	45	0.19	57	-0.18	45	36	0.16
Illinois	Chicago	26	1.45	38	-0.04	25	-0.12	9	0.30	6	31	-0.26
Indiana	Indianapolis	42	1.05	48	-0.21	63	0.41	34	0.01	8	3	-0.62
Iowa	Des Moines	9	2.30	15	0.32	65	0.43	47	-0.10	26	14	-0.09
Kansas	Wichita	33	1.18	28	0.09	64	0.43	63	-0.22	10	46	-0.07
Kentucky	Louisville	34	1.15	47	-0.20	54	0.28	67	-0.24	57	50	0.21
Louisiana	New Orleans	44	0.98	58	-0.36	34	-0.02	43	-0.08	18	15	-0.19
Maine	Portland	18	1.86	9	0.69	22	-0.23	48	-0.10	47	38	0.18
Maryland	Baltimore	10	2.16	30	0.08	57	0.31	18	0.11	70	66	0.22
Massachusetts	Boston	71	0.48	3	1.11	11	-0.76	36	0.01	1	8	-0.90
Michigan	Detroit	7	2.36	60	-0.39	73	1.27	27	0.02	38	23	0.08
Minnesota	Minneapolis	31	1.33	37	-0.04	26	-0.10	21	0.11	9	22	-0.19
Mississippi	Jackson	29	1.41	8	0.69	70	0.74	70	-0.29	21	9	-0.34
Missouri	Kansas City	24	1.58	68	-0.52	58	0.32	26	0.02	23	55	0.03
Montana	Billings	46	0.94	19	0.22	36	-0.01	69	-0.28	31	55	0.14
Nebraska	Omaha	15	2.00	24	0.16	56	0.30	37	0.01	62	55	0.22
Nevada	Las Vegas	35	1.14	57	-0.34	28	-0.08	49	-0.12	69	69	0.23
New Hampshire	Manchester	13	2.11	6	0.76	35	-0.02	52	-0.16	62	55	0.22
New Jersey	Newark*	3	2.96	1	1.20	31	-0.05	44	-0.09	62	55	0.22
New Mexico	Albuquerque	32	1.24	42	-0.15	42	0.11	71	-0.29	37	43	0.15
New York	Buffalo	23	1.64	70	-0.55	71	0.75	17	0.11	27	11	-0.15
New York	New York City	69	0.49	51	-0.23	7	-0.86	3	0.81	7	2	-0.74
North Carolina	Charlotte	43	0.98	66	-0.48	39	0.03	14	0.19	62	55	0.22
North Carolina	Raleigh	45	0.97	17	0.26	30	-0.06	61	-0.20	62	55	0.22
North Dakota	Fargo	40	1.07	44	-0.18	40	0.04	59	-0.19	46	37	0.17
Ohio	Columbus	16	1.97	45	-0.19	59	0.33	33	0.01	34	20	0.03

*Honolulu and Newark do not have data on property tax reliance or local government spending in the Fiscally Standardized Cities database, so statewide data on all local governments is used instead (Source: U.S. Census Bureau, 2016 Census of Government Finances).

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio		
State	**City**	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Commercial	Apartments	Impact
Oklahoma	Oklahoma City	36	1.13	54	-0.28	55	0.29	68	-0.25	51	41	0.18
Oklahoma	Tulsa	30	1.35	50	-0.23	62	0.40	66	-0.23	49	40	0.18
Oregon	Portland	22	1.66	25	0.15	12	-0.56	28	0.02	62	55	0.22
Pennsylvania	Philadelphia	37	1.12	72	-0.67	53	0.25	13	0.20	16	25	-0.11
Rhode Island	Providence	20	1.80	5	0.88	41	0.08	39	-0.05	22	55	0.01
South Carolina	Charleston	73	0.27	34	-0.01	14	-0.37	45	-0.09	5	1	-1.03
South Dakota	Sioux Falls	25	1.53	26	0.13	43	0.12	62	-0.21	52	44	0.19
Tennessee	Memphis	19	1.81	41	-0.08	69	0.70	16	0.11	28	12	-0.13
Tennessee	Nashville	53	0.79	23	0.18	27	-0.09	30	0.02	28	12	-0.13
Texas	Arlington	14	2.06	12	0.35	52	0.24	60	-0.20	44	19	0.07
Texas	Austin	17	1.88	10	0.44	16	-0.34	24	0.06	43	26	0.12
Texas	Dallas	12	2.16	27	0.10	44	0.13	31	0.02	35	24	0.08
Texas	El Paso	4	2.64	18	0.24	66	0.48	53	-0.17	42	33	0.15
Texas	Fort Worth	11	2.16	14	0.34	51	0.23	50	-0.13	40	21	0.07
Texas	Houston	21	1.78	16	0.29	49	0.21	42	-0.07	32	17	0.01
Texas	San Antonio	6	2.44	22	0.18	61	0.35	23	0.06	39	29	0.12
Utah	Salt Lake City	58	0.73	35	-0.02	19	-0.28	54	-0.17	24	71	0.07
Vermont	Burlington	8	2.34	65	-0.46	21	-0.24	20	0.11	41	27	0.12
Virginia	Virginia Beach	48	0.90	20	0.22	23	-0.20	55	-0.17	73	73	0.28
Washington	Seattle	49	0.89	63	-0.44	5	-0.95	8	0.30	62	55	0.22
West Virginia	Charleston	57	0.75	61	-0.40	68	0.59	51	-0.14	12	6	-0.47
Wisconsin	Milwaukee	5	2.57	21	0.19	67	0.51	38	-0.01	50	42	0.18
Wyoming	Cheyenne	65	0.64	73	-0.84	38	0.02	7	0.31	72	70	0.24

Appendix Table 1b: Factors Correlated with Commercial Property Tax Rates in Large U.S. Cities

(Effective Tax Rate for $1-Million Valued Commercial Property, with $200k in Fixtures)

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio*	
State	City	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate
Alabama	Birmingham	46	1.45	71	-0.55	72	0.99	29	0.04	13	0.23
Alaska	Anchorage	43	1.52	7	0.73	18	-0.39	40	-0.08	48	-0.17
Arizona	Mesa	42	1.61	46	-0.20	37	-0.01	65	-0.36	11	0.25
Arizona	Phoenix	24	2.29	43	-0.16	33	-0.04	58	-0.28	20	0.19
Arizona	Tucson	29	2.10	36	-0.03	60	0.42	64	-0.35	19	0.19
Arkansas	Little Rock	48	1.40	67	-0.50	50	0.29	56	-0.27	32	-0.08
California	Fresno	57	1.24	49	-0.22	32	-0.06	35	0.01	53	-0.19
California	Long Beach	59	1.21	59	-0.39	10	-0.97	6	0.51	55	-0.19
California	Los Angeles	60	1.20	53	-0.26	6	-1.13	5	0.67	58	-0.20
California	Oakland	49	1.37	56	-0.33	4	-1.20	4	0.96	59	-0.20
California	Sacramento	66	1.13	62	-0.44	15	-0.44	11	0.38	54	-0.19
California	San Diego	61	1.17	31	0.05	9	-1.05	22	0.11	56	-0.19
California	San Francisco	62	1.16	55	-0.29	1	-1.70	2	1.61	61	-0.20
California	San Jose	56	1.28	40	-0.07	2	-1.43	15	0.22	60	-0.20
Colorado	Colorado Springs	34	1.93	52	-0.26	24	-0.19	46	-0.15	2	0.85
Colorado	Denver	26	2.20	69	-0.54	13	-0.61	12	0.37	3	0.84
Connecticut	Bridgeport	4	3.46	2	1.17	46	0.24	32	0.02	71	-0.20
DC	Washington	55	1.29	64	-0.45	8	-1.07	1	2.46	15	0.21
Delaware	Wilmington	47	1.43	33	-0.01	48	0.24	19	0.16	36	-0.13
Florida	Jacksonville	41	1.64	39	-0.06	47	0.24	41	-0.09	17	0.20

*Table shows impact of the commercial-homestead classification ratio

How to Interpret Each Factor's Impact on a City's Tax Rate

The columns labeled "Impact on Tax Rate" shows how each factor is expected to affect the tax rate in that city relative to a scenario where the city had the average value for that variable—a positive value means that factor increases the city's tax rate, while a negative value means that factor decreases the city's tax rate.

For example, consider Birmingham, Alabama. The city has the 71st highest property tax reliance (3rd lowest), which is predicted to decrease the city's commercial property tax rate by 0.55 percentage points relative to a city with average property tax reliance. An alternative way to interpret this data is that if Birmingham had the average property tax reliance and all other characteristics of the city were unchanged (home values, government spending, etc.), then the city's commercial tax rate would be 0.55 percentage points higher. Birmingham also has the 72nd highest median home value (2nd lowest), which is expected to increase their tax rate by 0.99 percentage points relative to a scenario where the city had the average home value for all cities in this analysis. Local government spending per capita is slightly above average in Birmingham (29th highest), and thus is expected to increase the city's tax rate by 0.04 percentage points relative to a city with average spending. Finally, Birmingham has the 13th highest commercial-homestead classification ratio, which is predicted to increase the commercial property tax rate by 0.23 percentage points compared to a city with the average classification ratio.

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio*	
State	**City**	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Tax Rate
Florida	Miami	35	1.85	32	0.00	17	-0.39	25	0.08	14	0.22
Georgia	Atlanta	40	1.66	29	0.08	20	-0.31	10	0.43	34	-0.09
Hawaii	Honolulu**	71	0.91	13	0.35	3	-1.21	73	-0.58	4	0.72
Idaho	Boise	51	1.32	11	0.36	29	-0.09	72	-0.54	25	0.05
Illinois	Aurora	5	3.34	4	0.88	45	0.24	57	-0.28	45	-0.16
Illinois	Chicago	3	3.55	38	-0.04	25	-0.15	9	0.46	6	0.50
Indiana	Indianapolis	17	2.58	48	-0.21	63	0.51	34	0.02	8	0.32
Iowa	Des Moines	6	3.12	15	0.32	65	0.54	47	-0.15	26	0.03
Kansas	Wichita	14	2.71	28	0.09	64	0.53	63	-0.34	10	0.25
Kentucky	Louisville	54	1.29	47	-0.20	54	0.35	67	-0.37	57	-0.19
Louisiana	New Orleans	30	2.06	58	-0.36	34	-0.02	43	-0.12	18	0.19
Maine	Portland	31	2.04	9	0.69	22	-0.29	48	-0.16	47	-0.17
Maryland	Baltimore	13	2.72	30	0.08	57	0.39	18	0.17	70	-0.20
Massachusetts	Boston	37	1.79	3	1.11	11	-0.94	36	0.01	1	1.04
Michigan	Detroit	2	3.83	60	-0.39	73	1.58	27	0.04	38	-0.14
Minnesota	Minneapolis	16	2.61	37	-0.04	26	-0.12	21	0.16	9	0.29
Mississippi	Jackson	9	2.84	8	0.69	70	0.92	70	-0.44	23	0.09
Missouri	Kansas City	8	2.87	68	-0.52	58	0.40	26	0.04	22	0.10
Montana	Billings	63	1.14	19	0.22	36	-0.02	69	-0.43	30	-0.07
Nebraska	Omaha	32	2.02	24	0.16	56	0.37	37	0.01	62	-0.20
Nevada	Las Vegas	64	1.14	57	-0.34	28	-0.10	49	-0.19	69	-0.20
New Hampshire	Manchester	38	1.76	6	0.76	35	-0.02	52	-0.25	62	-0.20
New Jersey	Newark**	19	2.47	1	1.20	31	-0.06	44	-0.13	62	-0.20
New Mexico	Albuquerque	45	1.48	42	-0.15	42	0.13	71	-0.45	37	-0.13
New York	Buffalo	25	2.22	70	-0.55	71	0.93	17	0.17	27	0.03
New York	New York City	65	1.14	51	-0.23	7	-1.07	3	1.26	7	0.44
North Carolina	Charlotte	67	1.04	66	-0.48	39	0.03	14	0.29	62	-0.20
North Carolina	Raleigh	68	0.99	17	0.26	30	-0.08	61	-0.31	62	-0.20
North Dakota	Fargo	69	0.97	44	-0.18	40	0.05	59	-0.29	46	-0.17
Ohio	Columbus	27	2.16	45	-0.19	59	0.41	33	0.02	33	-0.08

*Table shows impact of the commercial-homestead classification ratio

**Honolulu and Newark do not have data on property tax reliance or local government spending in the Fiscally Standardized Cities database, so statewide data on all local governments is used instead (Source: U.S. Census Bureau, 2016 Census of Government Finances).

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio*	
State	**City**	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Tax Rate
Oklahoma	Oklahoma City	52	1.30	54	-0.28	55	0.36	68	-0.38	51	-0.18
Oklahoma	Tulsa	44	1.49	50	-0.22	62	0.49	66	-0.36	49	-0.17
Oregon	Portland	20	2.46	25	0.15	12	-0.69	28	0.04	62	-0.20
Pennsylvania	Philadelphia	33	1.96	72	-0.67	53	0.31	13	0.31	16	0.20
Rhode Island	Providence	1	3.85	5	0.88	41	0.10	39	-0.08	21	0.14
South Carolina	Charleston	36	1.81	34	-0.01	14	-0.46	45	-0.14	5	0.57
South Dakota	Sioux Falls	50	1.34	26	0.13	43	0.15	62	-0.32	52	-0.18
Tennessee	Memphis	11	2.78	41	-0.08	69	0.86	16	0.18	28	0.02
Tennessee	Nashville	58	1.21	23	0.18	27	-0.11	30	0.04	28	0.02
Texas	Arlington	23	2.36	12	0.35	52	0.30	60	-0.30	44	-0.16
Texas	Austin	28	2.11	10	0.44	16	-0.43	24	0.09	43	-0.16
Texas	Dallas	15	2.67	27	0.10	44	0.16	31	0.03	35	-0.12
Texas	El Paso	7	3.00	18	0.24	66	0.59	53	-0.26	42	-0.15
Texas	Fort Worth	18	2.56	14	0.34	51	0.29	50	-0.20	40	-0.14
Texas	Houston	22	2.39	16	0.29	49	0.26	42	-0.11	31	-0.08
Texas	San Antonio	10	2.84	22	0.18	61	0.43	23	0.09	39	-0.14
Utah	Salt Lake City	53	1.29	35	-0.02	19	-0.34	54	-0.26	24	0.07
Vermont	Burlington	21	2.42	65	-0.46	21	-0.29	20	0.16	41	-0.14
Virginia	Virginia Beach	70	0.96	20	0.22	23	-0.25	55	-0.26	73	-0.23
Washington	Seattle	72	0.90	63	-0.44	5	-1.17	8	0.47	62	-0.20
West Virginia	Charleston	39	1.67	61	-0.40	68	0.73	51	-0.22	12	0.24
Wisconsin	Milwaukee	12	2.73	21	0.19	67	0.64	38	-0.02	50	-0.18
Wyoming	Cheyenne	73	0.63	73	-0.84	38	0.02	7	0.47	72	-0.22

*Table shows impact of the commercial-homestead classification ratio

Appendix Table 1c: Correlates of Cities' Effective Tax Rates on Homestead Properties

	(1)	(2)	Mean	St. Dev.	Data
Tax Rate on Median Valued Home	N/A	N/A	1.354	0.706	Effective tax rate on median valued home, with assessment limits Source: *50-State Property Tax Comparison Study* (Appendix Tables 2b, 2e)
Median Home Value	-0.723*** (0.070)	-0.855*** (0.101)	264,999	187,518	Median home value in city Source: 2017 American Community Survey (U.S. Census Bureau)
Business Classification Ratio	-0.377*** (0.094)	-0.222*** (0.063)	1.551	0.757	Commercial-homestead classification ratio, with taxes on personal property excluded for commercial properties Source: *50-State Property Tax Comparison Study*
Apartments Classification Ratio	-0.500*** (0.166)	-0.366*** (0.134)	1.263	0.421	Apartment-homestead classification ratio, with taxes on personal property excluded for apartments Source: *50-State Property Tax Comparison Study*
Property Tax Reliance	0.835*** (0.115)	0.0311*** (0.005)	40.7	13.7	Property taxes as a percent of own source revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2016).
Local Gov't Spending Per Capita (1000s)	0.665*** (0.135)	0.112*** (0.029)	6.274	2.051	Direct expenditures per capita for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2016).
State and Federal Aid as % Local Gov't Budget	-0.0433 (0.121)	0.000629 (0.006)	34.7	10.4	Intergovernmental revenue as a percent of general revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2016).
Local as % State-Local Spending	-0.126 (0.305)	0.00366 (0.010)	49.4	7.9	Local government direct expenditures as a percent of state and local direct expenditures (State-level variable) Source: 2016 Survey of State and Local Gov't Finances (U.S. Census Bureau)
Constant	-0.428 (1.349)	10.52*** (1.109)			
N	69	69			
R-sq	0.731	0.681			
adj. R-sq	0.7	0.644			
F	34.36	21.83			

* p < 0.10, ** p < 0.05, *** p < 0.01; robust standard errors in parenthesis.

Regression #1 shows elasticities with all variables measured in natural logs; these coefficients are reported in figure 1.

Regression #2 measures all variables in levels except for median home value, which is measured as the natural log; these coefficients are used in appendix table 1a.

Notes: Washington, DC and New York City were excluded from the regression because they have very atypical revenue structures, and as major outliers they significantly altered the coefficient estimates and weakened the overall fit for the model. Honolulu and Newark were excluded because they do not have data in the FiSC database on property tax reliance or state and federal aid as a percent of the local government budget. The means and standard deviations shown in the table also exclude these four cities.

Appendix Table 1d: Correlates of Cities' Effective Tax Rates on Commercial Properties

	(1)	(2)	Mean	St. Dev.	Data
Tax Rate on Commercial Property	N/A	N/A	1.942	0.777	Effective tax rate on $1-Million Commercial Property Source: *50-State Property Tax Comparison Study* (Appendix Tables 3a, 3b)
Median Home Value	-0.521*** (0.066)	-1.062*** (0.162)	264,999	187,518	Median home value in city Source: 2017 American Community Survey (U.S. Census Bureau)
Business Classification Ratio	0.451*** (0.086)	0.361*** (0.111)	1.551	0.757	Commercial-homestead classification ratio, with taxes on personal property excluded for commercial properties Source: *50-State Property Tax Comparison Study*
Apartments Classification Ratio	-0.335*** (0.118)	-0.400** (0.162)	1.263	0.421	Apartment-homestead classification ratio, with taxes on personal property excluded for apartments Source: *50-State Property Tax Comparison Study*
Property Tax Reliance	0.725*** (0.116)	0.0311*** (0.006)	40.7	13.7	Property taxes as a percent of own source revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2016).
Local Gov't Spending Per Capita (1000s)	0.695*** (0.137)	0.173*** (0.040)	6.274	2.051	Direct expenditures per capita for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2016).
State and Federal Aid as % Local Gov't Budget	0.0777 (0.097)	0.00553 (0.006)	34.7	10.4	Intergovernmental revenue as a percent of general revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2016).
Local as % State-Local Spending	0.0625 (0.276)	0.00836 (0.011)	49.4	7.9	Local government direct expenditures as a percent of state and local direct expenditures (State-level variable) Source: 2016 Survey of State and Local Gov't Finances (U.S. Census Bureau)
Constant	-2.924** (1.250)	12.00*** (2.015)			
N	69	69			
R-sq	0.643	0.601			
adj. R-sq	0.602	0.555			
F	26.16	13.67			

* p < 0.10, ** p < 0.05, *** p < 0.01; robust standard errors in parenthesis.

Regression #1 shows elasticities with all variables measured in natural logs.

Regression #2 measures all variables in levels except for median home value, which is measured as the natural log; these coefficients are used in appendix table 1b.

Notes: Washington, DC and New York City were excluded from the regression because they have very atypical revenue structures, and as major outliers they significantly altered the coefficient estimates and weakened the overall fit for the model. Honolulu and Newark were excluded because they do not have data in the FiSC database on property tax reliance or state and federal aid as a percent of the local government budget. The means and standard deviations shown in the table also exclude these four cities.

Appendix Table 2a: Homestead Property Taxes for Largest City in Each State: Median Valued Homes

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Alabama	Birmingham	0.658%	48	-	578	53	-	87,800
Alaska	Anchorage	1.422%	21	3 ↑	4,549	11	-	320,000
Arizona	Phoenix	1.272%	24	3 ↑	2,939	24	-	231,000
Arkansas	Little Rock	1.123%	33	1 ↑	1,908	41	-	169,900
California	Los Angeles	1.183%	27	4 ↑	7,655	2	1 ↑	647,000
Colorado	Denver	0.564%	50	1 ↓	2,227	34	5 ↓	395,100
Connecticut	Bridgeport	3.440%	2	1 ↓	6,109	7	2 ↓	177,600
DC	Washington	0.725%	47	-	4,404	12	-	607,200
Delaware	Wilmington	1.437%	20	2 ↑	2,541	28	5 ↑	176,800
Florida	Jacksonville	1.266%	26	-	2,241	33	5 ↑	177,000
Georgia	Atlanta	1.099%	35	1 ↑	3,290	17	4 ↑	299,400
Hawaii	Honolulu	0.308%	53	-	2,146	36	1 ↑	696,800
Idaho	Boise	0.852%	43	1 ↑	2,062	39	1 ↑	242,000
Illinois	Aurora*	3.655%	1	1 ↑	6,494	6	1 ↑	177,700
Illinois	Chicago	1.628%	17	1 ↑	4,165	13	-	255,900
Indiana	Indianapolis	1.047%	37	2 ↑	1,441	48	3 ↑	137,600
Iowa	Des Moines	2.302%	8	-	3,091	20	-	134,300
Kansas	Wichita	1.180%	28	-	1,595	46	2 ↑	135,100
Kentucky	Louisville	1.149%	31	2 ↓	1,845	44	1 ↓	160,500
Louisiana	New Orleans	0.976%	39	1 ↑	2,223	35	3 ↓	227,800
Maine	Portland	1.863%	13	1 ↑	5,426	9	1 ↓	291,200
Maryland	Baltimore	2.161%	9	1 ↑	3,336	15	1 ↓	154,400
Massachusetts	Boston	0.484%	51	-	2,617	26	-	540,600
Michigan	Detroit	3.277%	3	-	1,645	45	1 ↑	50,200
Minnesota	Minneapolis	1.331%	23	-	3,333	16	1 ↓	250,400
Mississippi	Jackson	1.414%	22	3 ↓	1,321	50	1 ↓	93,400
Missouri	Kansas City	1.576%	18	3 ↑	2,410	30	1 ↑	152,900
Montana	Billings	0.943%	40	1 ↑	2,133	37	1 ↓	226,100
Nebraska	Omaha	2.000%	11	1 ↑	3,141	18	1 ↓	157,100
Nevada	Las Vegas	1.141%	32	1 ↑	2,801	25	-	245,500
New Hampshire	Manchester	2.112%	10	1 ↓	4,793	10	-	226,900
New Jersey	Newark	2.963%	4	-	6,964	4	2 ↓	235,000
New Mexico	Albuquerque	1.267%	25	-	2,494	29	1 ↓	196,900
New York	Buffalo*	1.642%	16	3 ↓	1,522	47	2 ↓	92,700
New York	New York City	1.159%	30	-	7,063	3	3 ↑	609,500
AVERAGE		**1.443%**			**3,246**			**254,385**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
North Carolina	Charlotte	0.980%	38	-	2,112	38	4 ↓	215,500
North Dakota	Fargo	1.070%	36	1 ↑	2,282	31	4 ↑	213,300
Ohio	Columbus	1.966%	12	1 ↓	2,976	22	-	151,400
Oklahoma	Oklahoma City	1.176%	29	3 ↑	1,861	42	3 ↓	158,200
Oregon	Portland	2.455%	6	-	10,497	1	-	427,500
Pennsylvania	Philadelphia	1.118%	34	1 ↑	1,858	43	1 ↑	166,200
Rhode Island	Providence	1.797%	14	3 ↑	3,654	14	2 ↑	203,300
South Carolina	Charleston	0.372%	52	-	1,283	51	4 ↓	344,600
South Dakota	Sioux Falls	1.532%	19	1 ↑	2,970	23	-	193,900
Tennessee	Nashville**	0.789%	44	29 ↓	1,947	40	2 ↑	246,800
Texas	Houston	1.778%	15	1 ↑	3,086	21	2 ↓	173,600
Utah	Salt Lake City	0.731%	46	1 ↓	2,251	32	2 ↓	307,900
Vermont	Burlington	2.338%	7	-	6,870	5	1 ↓	293,800
Virginia	Virginia Beach	0.905%	41	1 ↑	2,554	27	-	282,300
Washington	Seattle	0.885%	42	1 ↑	5,960	8	1 ↑	673,100
West Virginia	Charleston	0.752%	45	1 ↑	841	52	-	111,900
Wisconsin	Milwaukee	2.567%	5	-	3,140	19	1 ↓	122,300
Wyoming	Cheyenne	0.644%	49	1 ↑	1,401	49	1 ↑	217,500
AVERAGE		**1.443%**			**3,246**			**254,385**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
** Nashville is now the largest city in the Tennessee and replaces Memphis.
Source for median home values: *2017 American Community Survey*, 1-year data

Appendix Table 2b: Homestead Property Taxes for Largest City in Each State: Median Valued Homes, with Assessment Limits

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Alabama	Birmingham	0.658%	47	1 ↓	578	53	-	87,800
Alaska	Anchorage	1.422%	21	3 ↑	4,549	9	-	320,000
Arizona	Phoenix	0.936%	37	1 ↓	2,162	34	2 ↓	231,000
Arkansas	Little Rock	1.050%	32	-	1,783	42	-	169,900
California	Los Angeles	0.694%	46	1 ↑	4,490	10	1 ↑	647,000
Colorado	Denver	0.564%	49	1 ↓	2,227	32	4 ↓	395,100
Connecticut	Bridgeport	3.440%	2	1 ↓	6,109	5	2 ↓	177,600
DC	Washington	0.725%	45	-	4,404	11	1 ↓	607,200
Delaware	Wilmington	1.437%	20	2 ↑	2,541	27	6 ↑	176,800
Florida	Jacksonville	0.794%	41	-	1,405	47	2 ↑	177,000
Georgia	Atlanta	1.099%	30	1 ↑	3,290	16	5 ↑	299,400
Hawaii	Honolulu	0.308%	52	1 ↑	2,146	35	2 ↑	696,800
Idaho	Boise	0.852%	40	2 ↑	2,062	38	-	242,000
Illinois	Aurora*	3.655%	1	1 ↑	6,494	4	-	177,700
Illinois	Chicago	1.448%	19	1 ↑	3,706	12	-	255,900
Indiana	Indianapolis	1.047%	33	2 ↑	1,441	46	2 ↑	137,600
Iowa	Des Moines	2.302%	7	-	3,091	19	1 ↑	134,300
Kansas	Wichita	1.180%	25	1 ↑	1,595	44	1 ↑	135,100
Kentucky	Louisville	1.149%	26	1 ↑	1,845	41	1 ↓	160,500
Louisiana	New Orleans	0.976%	35	2 ↑	2,223	33	2 ↓	227,800
Maine	Portland	1.863%	12	1 ↑	5,426	7	1 ↓	291,200
Maryland	Baltimore	2.161%	8	1 ↑	3,336	14	1 ↓	154,400
Massachusetts	Boston	0.484%	51	-	2,617	25	-	540,600
Michigan	Detroit	2.361%	5	1 ↓	1,185	50	1 ↑	50,200
Minnesota	Minneapolis	1.331%	23	-	3,333	15	1 ↓	250,400
Mississippi	Jackson	1.414%	22	4 ↓	1,321	49	3 ↓	93,400
Missouri	Kansas City	1.576%	17	4 ↑	2,410	29	1 ↑	152,900
Montana	Billings	0.943%	36	2 ↑	2,133	36	-	226,100
Nebraska	Omaha	2.000%	10	1 ↑	3,141	17	-	157,100
Nevada	Las Vegas	1.141%	27	1 ↑	2,801	24	-	245,500
New Hampshire	Manchester	2.112%	9	1 ↓	4,793	8	-	226,900
New Jersey	Newark	2.963%	3	-	6,964	2	1 ↓	235,000
New Mexico	Albuquerque	1.235%	24	1 ↑	2,432	28	1 ↓	196,900
New York	Buffalo*	1.642%	16	4 ↓	1,522	45	1 ↓	92,700
New York	New York City	0.495%	50	-	3,015	21	6 ↓	609,500
AVERAGE		**1.365%**			**2,986**			**254,385**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
North Carolina	Charlotte	0.980%	34	-	2,112	37	3 ↓	215,500
North Dakota	Fargo	1.070%	31	2 ↑	2,282	30	5 ↑	213,300
Ohio	Columbus	1.966%	11	1 ↓	2,976	22	-	151,400
Oklahoma	Oklahoma City	1.126%	28	1 ↑	1,782	43	2 ↓	158,200
Oregon	Portland	1.656%	15	2 ↑	7,077	1	4 ↑	427,500
Pennsylvania	Philadelphia	1.118%	29	1 ↑	1,858	40	3 ↑	166,200
Rhode Island	Providence	1.797%	13	3 ↑	3,654	13	3 ↑	203,300
South Carolina	Charleston	0.268%	53	1 ↓	924	51	1 ↓	344,600
South Dakota	Sioux Falls	1.532%	18	1 ↑	2,970	23	-	193,900
Tennessee	Nashville**	0.789%	42	28 ↓	1,947	39	-	246,800
Texas	Houston	1.778%	14	1 ↑	3,086	20	1 ↓	173,600
Utah	Salt Lake City	0.731%	44	1 ↓	2,251	31	2 ↓	307,900
Vermont	Burlington	2.338%	6	-	6,870	3	1 ↓	293,800
Virginia	Virginia Beach	0.905%	38	1 ↑	2,554	26	-	282,300
Washington	Seattle	0.885%	39	1 ↑	5,960	6	1 ↑	673,100
West Virginia	Charleston	0.752%	43	1 ↑	841	52	-	111,900
Wisconsin	Milwaukee	2.567%	4	1 ↑	3,140	18	-	122,300
Wyoming	Cheyenne	0.644%	48	1 ↑	1,401	48	1 ↓	217,500
AVERAGE		**1.365%**			**2,986**			**254,385**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
** Nashville is now the largest city in the Tennessee and replaces Memphis.
Source for median home values: *2017 American Community Survey*, 1-year data

Appendix Table 2c: Homestead Property Taxes for Largest City in Each State: Homes worth $150,000 and $300,000

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	
Alabama	Birmingham	0.683%	1,025	47	-	0.701%	2,102	47	-	X
Alaska	Anchorage	1.372%	2,058	22	1 ↑	1.415%	4,245	23	2 ↑	X
Arizona	Phoenix	1.272%	1,908	23	2 ↑	1.272%	3,817	26	1 ↑	
Arkansas	Little Rock	1.096%	1,644	32	1 ↑	1.212%	3,637	28	2 ↑	X
California	Los Angeles	1.140%	1,710	31	1 ↑	1.168%	3,504	31	2 ↑	X
Colorado	Denver	0.564%	846	49	1 ↓	0.564%	1,691	50	2 ↓	
Connecticut	Bridgeport	3.440%	5,160	2	1 ↓	3.440%	10,320	2	-	
DC	Washington	0.412%	618	50	1 ↑	0.620%	1,860	49	1 ↑	X
Delaware	Wilmington	1.437%	2,156	20	2 ↑	1.437%	4,311	21	2 ↑	
Florida	Jacksonville	1.194%	1,790	26	-	1.432%	4,295	22	-	X
Georgia	Atlanta	0.698%	1,048	46	-	1.100%	3,299	35	-	X
Hawaii	Honolulu	0.162%	242	52	-	0.255%	765	52	-	X
Idaho	Boise	0.742%	1,113	44	-	0.974%	2,923	40	1 ↑	X
Illinois	Aurora*	3.590%	5,386	1	1 ↑	3.796%	11,389	1	-	X
Illinois	Chicago	1.427%	2,141	21	1 ↓	1.669%	5,008	17	2 ↑	X
Indiana	Indianapolis	1.050%	1,574	35	3 ↑	1.062%	3,185	38	1 ↑	X
Iowa	Des Moines	2.320%	3,480	7	-	2.397%	7,192	7	-	X
Kansas	Wichita	1.184%	1,776	27	1 ↑	1.199%	3,598	30	1 ↓	X
Kentucky	Louisville	1.149%	1,724	29	-	1.149%	3,448	32	-	
Louisiana	New Orleans	0.750%	1,124	43	-	1.081%	3,244	36	1 ↑	X
Maine	Portland	1.734%	2,601	16	-	1.867%	5,602	13	1 ↑	X
Maryland	Baltimore	2.161%	3,241	8	2 ↑	2.161%	6,483	9	1 ↑	
Massachusetts	Boston	0.095%	143	53	-	0.108%	323	53	-	X
Michigan	Detroit	3.277%	4,916	3	-	3.277%	9,832	3	-	
Minnesota	Minneapolis	1.199%	1,798	25	2 ↑	1.364%	4,091	24	-	X
Mississippi	Jackson	1.535%	2,303	18	1 ↓	1.635%	4,905	18	1 ↓	X
Missouri	Kansas City	1.576%	2,364	17	4 ↑	1.576%	4,728	19	2 ↑	
Montana	Billings	0.943%	1,415	38	1 ↑	0.943%	2,830	41	1 ↑	
Nebraska	Omaha	2.000%	2,999	11	1 ↑	2.000%	5,999	11	2 ↑	
Nevada	Las Vegas	1.141%	1,711	30	1 ↑	1.141%	3,422	33	3 ↑	
New Hampshire	Manchester	2.112%	3,168	9	1 ↓	2.112%	6,337	10	2 ↓	
New Jersey	Newark	2.963%	4,445	4	-	2.963%	8,890	4	-	
New Mexico	Albuquerque	1.254%	1,880	24	-	1.281%	3,844	25	1 ↑	X
New York	Buffalo*	1.764%	2,646	14	1 ↓	1.863%	5,589	14	3 ↓	X
New York	New York City	0.999%	1,498	36	2 ↓	1.105%	3,315	34	-	X
AVERAGE		**1.397%**	**2,095**			**1.459%**	**4,378**			**N = 27**

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	
North Carolina	Charlotte	0.980%	1,470	37	-	0.980%	2,941	39	1 ↑	
North Dakota	Fargo	1.070%	1,605	34	2 ↑	1.070%	3,209	37	1 ↑	
Ohio	Columbus	1.966%	2,948	12	1 ↓	1.966%	5,897	12	-	
Oklahoma	Oklahoma City	1.172%	1,758	28	2 ↑	1.210%	3,630	29	2 ↑	X
Oregon	Portland	2.455%	3,683	6	-	2.455%	7,366	6	-	
Pennsylvania	Philadelphia	1.091%	1,636	33	2 ↑	1.229%	3,688	27	1 ↑	X
Rhode Island	Providence	1.797%	2,696	13	5 ↑	1.797%	5,392	16	2 ↑	
South Carolina	Charleston	0.372%	559	51	1 ↓	0.372%	1,117	51	-	
South Dakota	Sioux Falls	1.532%	2,298	19	-	1.532%	4,596	20	-	
Tennessee	Nashville**	0.789%	1,183	41	27 ↓	0.789%	2,366	44	28 ↓	
Texas	Houston	1.750%	2,626	15	-	1.851%	5,553	15	-	X
Utah	Salt Lake City	0.731%	1,097	45	3 ↓	0.731%	2,193	46	1 ↓	
Vermont	Burlington	2.106%	3,158	10	1 ↓	2.167%	6,500	8	1 ↑	X
Virginia	Virginia Beach	0.905%	1,357	39	1 ↑	0.905%	2,714	42	1 ↑	
Washington	Seattle	0.885%	1,328	40	1 ↑	0.885%	2,656	43	1 ↑	
West Virginia	Charleston	0.752%	1,128	42	3 ↑	0.752%	2,256	45	1 ↑	
Wisconsin	Milwaukee	2.598%	3,897	5	-	2.666%	7,998	5	-	X
Wyoming	Cheyenne	0.644%	966	48	1 ↑	0.644%	1,932	48	1 ↑	
AVERAGE		**1.397%**	**2,095**			**1.459%**	**4,378**			**N = 27**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
** Nashville is now the largest city in the Tennessee and replaces Memphis.

Appendix Table 2d: Homestead Property Taxes for the Largest Fifty U.S. Cities: Median Valued Homes

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Arizona	Mesa	0.831%	45	1 ↓	1,867	41	2 ↑	224,700
Arizona	Phoenix	1.272%	21	3 ↑	2,939	27	1 ↑	231,000
Arizona	Tucson	1.163%	30	5 ↓	1,749	46	2 ↓	150,400
California	Fresno	1.207%	25	1 ↑	2,831	28	1 ↓	234,500
California	Long Beach	1.192%	26	1 ↑	6,648	8	-	557,700
California	Los Angeles	1.183%	27	4 ↑	7,655	5	-	647,000
California	Oakland	1.353%	19	1 ↑	9,289	4	-	686,700
California	Sacramento	1.106%	37	1 ↓	3,715	16	1 ↓	335,900
California	San Diego	1.161%	31	3 ↑	6,969	7	-	600,300
California	San Francisco	1.156%	33	-	12,759	1	-	1,104,100
California	San Jose	1.270%	22	1 ↓	10,857	2	-	854,700
Colorado	Colorado Springs	0.488%	49	1 ↑	1,296	50	-	265,400
Colorado	Denver	0.564%	48	-	2,227	36	2 ↓	395,100
DC	Washington	0.725%	47	-	4,404	12	-	607,200
Florida	Jacksonville	1.266%	24	1 ↓	2,241	35	3 ↑	177,000
Florida	Miami	1.602%	16	-	5,160	11	-	322,100
Georgia	Atlanta	1.099%	38	-	3,290	22	3 ↑	299,400
Illinois	Chicago	1.628%	15	-	4,165	13	-	255,900
Indiana	Indianapolis	1.047%	39	1 ↑	1,441	49	-	137,600
Kansas	Wichita	1.180%	28	-	1,595	48	-	135,100
Kentucky	Louisville	1.149%	34	5 ↓	1,845	44	2 ↓	160,500
Louisiana	New Orleans	0.976%	41	-	2,223	37	1 ↓	227,800
Maryland	Baltimore	2.161%	7	1 ↑	3,336	20	-	154,400
Massachusetts	Boston	0.484%	50	1 ↓	2,617	30	-	540,600
Michigan	Detroit	3.277%	1	-	1,645	47	-	50,200
Minnesota	Minneapolis	1.331%	20	1 ↓	3,333	21	-	250,400
Missouri	Kansas City	1.576%	17	-	2,410	33	2 ↑	152,900
Nebraska	Omaha	2.000%	10	1 ↑	3,141	23	1 ↓	157,100
Nevada	Las Vegas	1.141%	35	-	2,801	29	-	245,500
New Mexico	Albuquerque	1.267%	23	1 ↓	2,494	32	-	196,900
New York	New York City	1.159%	32	2 ↓	7,063	6	-	609,500
North Carolina	Charlotte	0.980%	40	1 ↓	2,112	38	1 ↓	215,500
North Carolina	Raleigh	0.972%	42	-	2,331	34	1 ↓	239,700
Ohio	Columbus	1.966%	11	1 ↓	2,976	26	-	151,400
Oklahoma	Oklahoma City	1.176%	11	1 ↓	1,861	42	3 ↓	158,200
AVERAGE		**1.426%**			**3,856**			**303,980**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Oklahoma	Tulsa	1.412%	18	-	1,973	39	1 ↑	139,700
Oregon	Portland	2.455%	4	-	10,497	3	-	427,500
Pennsylvania	Philadelphia	1.118%	36	1 ↑	1,858	43	2 ↑	166,200
Tennessee	Memphis	1.811%	13	-	1,788	45	4 ↓	98,700
Tennessee	Nashville	0.789%	46	-	1,947	40	6 ↑	246,800
Texas	Arlington	2.137%	9	2 ↓	3,587	18	2 ↓	167,800
Texas	Austin	1.884%	12	-	6,267	9	-	332,700
Texas	Dallas	2.155%	8	1 ↑	4,108	14	5 ↑	190,600
Texas	El Paso	2.640%	2	-	3,372	19	2 ↓	127,700
Texas	Fort Worth	2.237%	6	-	3,789	15	1 ↓	169,400
Texas	Houston	1.778%	14	-	3,086	25	1 ↓	173,600
Texas	San Antonio	2.438%	5	-	3,613	17	1 ↑	148,200
Virginia	Virginia Beach	0.905%	43	-	2,554	31	-	282,300
Washington	Seattle	0.885%	44	1 ↑	5,960	10	-	673,100
Wisconsin	Milwaukee	2.567%	3	-	3,140	24	1 ↓	122,300
AVERAGE		**1.426%**			**3,856**			**303,980**

Source for median home values: *2017 American Community Survey*, 1-year data

Appendix Table 2e: Homestead Property Taxes for the Largest Fifty U.S. Cities: Median Valued Homes, with Assessment Limits

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Arizona	Mesa	0.665%	44	1 ↓	1,494	46	1 ↓	224,700
Arizona	Phoenix	0.936%	31	2 ↓	2,162	34	-	231,000
Arizona	Tucson	1.083%	26	6 ↓	1,629	44	2 ↓	150,400
California	Fresno	0.759%	39	3 ↓	1,780	43	6 ↓	234,500
California	Long Beach	0.777%	38	3 ↑	4,335	10	-	557,700
California	Los Angeles	0.694%	43	1 ↑	4,490	8	1 ↑	647,000
California	Oakland	0.706%	42	2 ↓	4,845	6	-	686,700
California	Sacramento	0.594%	46	-	1,995	36	-	335,900
California	San Diego	0.784%	37	2 ↓	4,703	7	-	600,300
California	San Francisco	0.620%	45	2 ↑	6,849	2	1 ↓	1,104,100
California	San Jose	0.730%	40	2 ↓	6,242	4	2 ↓	854,700
Colorado	Colorado Springs	0.488%	49	1 ↑	1,296	49	1 ↑	265,400
Colorado	Denver	0.564%	47	2 ↓	2,227	32	1 ↓	395,100
DC	Washington	0.725%	41	1 ↑	4,404	9	1 ↓	607,200
Florida	Jacksonville	0.794%	35	2 ↑	1,405	48	-	177,000
Florida	Miami	0.867%	34	2 ↓	2,792	26	1 ↑	322,100
Georgia	Atlanta	1.099%	25	1 ↑	3,290	19	4 ↑	299,400
Illinois	Chicago	1.448%	16	1 ↓	3,706	12	1 ↓	255,900
Indiana	Indianapolis	1.047%	27	1 ↑	1,441	47	-	137,600
Kansas	Wichita	1.180%	20	1 ↑	1,595	45	1 ↑	135,100
Kentucky	Louisville	1.149%	21	1 ↑	1,845	40	1 ↓	160,500
Louisiana	New Orleans	0.976%	29	1 ↑	2,223	33	-	227,800
Maryland	Baltimore	2.161%	5	2 ↑	3,336	17	1 ↓	154,400
Massachusetts	Boston	0.484%	50	1 ↓	2,617	27	1 ↓	540,600
Michigan	Detroit	2.361%	4	3 ↓	1,185	50	1 ↓	50,200
Minnesota	Minneapolis	1.331%	18	-	3,333	18	1 ↓	250,400
Missouri	Kansas City	1.576%	15	1 ↑	2,410	30	2 ↑	152,900
Nebraska	Omaha	2.000%	9	1 ↑	3,141	20	-	157,100
Nevada	Las Vegas	1.141%	22	1 ↑	2,801	25	-	245,500
New Mexico	Albuquerque	1.235%	19	-	2,432	29	-	196,900
New York	New York City	0.495%	48	-	3,015	23	4 ↓	609,500
North Carolina	Charlotte	0.980%	28	1 ↓	2,112	35	-	215,500
North Carolina	Raleigh	0.972%	30	1 ↑	2,331	31	1 ↓	239,700
Ohio	Columbus	1.966%	10	1 ↓	2,976	24	-	151,400
Oklahoma	Oklahoma City	1.126%	23	1 ↑	1,782	42	1 ↓	158,200
AVERAGE		**1.254%**			**3,080**			**303,980**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Oklahoma	Tulsa	1.354%	17	-	1,891	38	2 ↑	139,700
Oregon	Portland	1.656%	14	-	7,077	1	2 ↑	427,500
Pennsylvania	Philadelphia	1.118%	24	1 ↑	1,858	39	4 ↑	166,200
Tennessee	Memphis	1.811%	12	-	1,788	41	3 ↓	98,700
Tennessee	Nashville	0.789%	36	3 ↑	1,947	37	7 ↑	246,800
Texas	Arlington	2.062%	8	2 ↓	3,461	15	2 ↓	167,800
Texas	Austin	1.884%	11	-	6,267	3	1 ↑	332,700
Texas	Dallas	2.155%	7	1 ↑	4,108	11	7 ↑	190,600
Texas	El Paso	2.640%	1	1 ↑	3,372	16	2 ↓	127,700
Texas	Fort Worth	2.158%	6	1 ↓	3,655	13	1 ↓	169,400
Texas	Houston	1.778%	13	-	3,086	22	-	173,600
Texas	San Antonio	2.438%	3	1 ↑	3,613	14	1 ↑	148,200
Virginia	Virginia Beach	0.905%	32	1 ↑	2,554	28	-	282,300
Washington	Seattle	0.885%	33	1 ↑	5,960	5	-	673,100
Wisconsin	Milwaukee	2.567%	2	1 ↑	3,140	21	-	122,300
AVERAGE		**1.254%**			**3,080**			**303,980**

Source for median home values: *2017 American Community Survey*, 1-year data

Appendix Table 2f: Homestead Property Taxes for the Largest Fifty U.S. Cities: Homes worth $150,000 and $300,000

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	
Arizona	Mesa	0.831%	1,246	43	1 ↓	0.831%	2,492	45	1 ↓	
Arizona	Phoenix	1.272%	1,908	20	1 ↑	1.272%	3,817	23	1 ↑	
Arizona	Tucson	1.163%	1,745	28	3 ↓	1.163%	3,489	31	5 ↓	
California	Fresno	1.186%	1,779	25	2 ↑	1.215%	3,646	26	1 ↑	X
California	Long Beach	1.151%	1,726	29	1 ↑	1.179%	3,537	29	1 ↑	X
California	Los Angeles	1.140%	1,710	32	-	1.168%	3,504	30	2 ↑	X
California	Oakland	1.303%	1,954	18	1 ↑	1.335%	4,004	21	-	X
California	Sacramento	1.077%	1,615	36	1 ↑	1.103%	3,309	37	2 ↑	X
California	San Diego	1.120%	1,680	33	1 ↑	1.147%	3,442	33	3 ↑	X
California	San Francisco	1.109%	1,663	34	1 ↓	1.136%	3,408	35	1 ↓	X
California	San Jose	1.221%	1,832	22	-	1.251%	3,753	24	1 ↓	X
Colorado	Colorado Springs	0.488%	733	48	-	0.488%	1,465	49	-	
Colorado	Denver	0.564%	846	47	-	0.564%	1,691	48	1 ↓	
DC	Washington	0.412%	618	49	-	0.620%	1,860	47	1 ↑	X
Florida	Jacksonville	1.194%	1,790	24	1 ↓	1.432%	4,295	19	1 ↓	X
Florida	Miami	1.301%	1,952	19	1 ↓	1.583%	4,748	16	-	X
Georgia	Atlanta	0.698%	1,048	46	-	1.100%	3,299	38	3 ↓	X
Illinois	Chicago	1.427%	2,141	16	1 ↓	1.669%	5,008	15	-	X
Indiana	Indianapolis	1.050%	1,574	37	2 ↑	1.062%	3,185	40	-	X
Kansas	Wichita	1.184%	1,776	26	-	1.199%	3,598	28	-	X
Kentucky	Louisville	1.149%	1,724	30	2 ↓	1.149%	3,448	32	1 ↓	
Louisiana	New Orleans	0.750%	1,124	45	-	1.081%	3,244	39	1 ↓	X
Maryland	Baltimore	2.161%	3,241	7	1 ↑	2.161%	6,483	9	-	
Massachusetts	Boston	0.095%	143	50	-	0.108%	323	50	-	X
Michigan	Detroit	3.277%	4,916	1	-	3.277%	9,832	1	-	
Minnesota	Minneapolis	1.199%	1,798	23	1 ↑	1.364%	4,091	20	-	X
Missouri	Kansas City	1.576%	2,364	15	1 ↑	1.576%	4,728	17	-	
Nebraska	Omaha	2.000%	2,999	10	1 ↑	2.000%	5,999	10	1 ↑	
Nevada	Las Vegas	1.141%	1,711	31	-	1.141%	3,422	34	3 ↑	
New Mexico	Albuquerque	1.254%	1,880	21	1 ↓	1.281%	3,844	22	-	X
New York	New York City	0.999%	1,498	38	3 ↓	1.105%	3,315	36	3 ↓	X
North Carolina	Charlotte	0.980%	1,470	39	1 ↓	0.980%	2,941	41	-	
North Carolina	Raleigh	0.972%	1,459	40	-	0.972%	2,917	42	-	
Ohio	Columbus	1.966%	2,948	11	1 ↓	1.966%	5,897	11	1 ↓	
Oklahoma	Oklahoma City	1.172%	1,758	27	2 ↑	1.210%	3,630	27	2 ↑	X
AVERAGE		**1.372%**	**2,059**			**1.440%**	**4,319**			**N = 31**

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	
Oklahoma	Tulsa	1.419%	2,129	17	-	1.465%	4,395	18	1 ↑	X
Oregon	Portland	2.455%	3,683	4	-	2.455%	7,366	5	-	
Pennsylvania	Philadelphia	1.091%	1,636	35	1 ↑	1.229%	3,688	25	-	X
Tennessee	Memphis	1.811%	2,717	12	-	1.811%	5,434	14	-	
Tennessee	Nashville	0.789%	1,183	44	-	0.789%	2,366	46	-	
Texas	Arlington	2.113%	3,170	8	1 ↓	2.227%	6,682	7	-	X
Texas	Austin	1.773%	2,659	13	-	1.874%	5,621	12	-	X
Texas	Dallas	2.108%	3,162	9	-	2.219%	6,656	8	-	X
Texas	El Paso	2.686%	4,029	2	-	2.817%	8,450	2	-	X
Texas	Fort Worth	2.211%	3,317	6	-	2.324%	6,972	6	-	X
Texas	Houston	1.750%	2,626	14	-	1.851%	5,553	13	-	X
Texas	San Antonio	2.441%	3,661	5	-	2.572%	7,715	4	-	X
Virginia	Virginia Beach	0.905%	1,357	41	-	0.905%	2,714	43	-	
Washington	Seattle	0.885%	1,328	42	1 ↑	0.885%	2,656	44	1 ↑	
Wisconsin	Milwaukee	2.598%	3,897	3	-	2.666%	7,998	3	-	X
AVERAGE		**1.372%**	**2,059**			**1.440%**	**4,319**			**N = 31**

Appendix Table 2g: Homestead Property Taxes for Selected Rural Municipalities: Median Valued Homes

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Alabama	Monroeville	0.370%	48	1 ↓	401	49	-	108,400
Alaska	Ketchican	1.097%	28	-	2,600	12	1 ↑	237,000
Arizona	Safford	0.810%	36	4 ↑	1,107	31	2 ↑	136,600
Arkansas	Pocahontas	0.255%	49	-	197	50	-	77,100
California	Yreka	1.006%	32	-	1,492	24	1 ↓	148,300
Colorado	Walsenburg	0.537%	45	1 ↓	501	46	1 ↑	93,300
Connecticut	Litchfield	1.995%	13	1 ↓	6,696	1	-	335,600
Delaware	Georgetown	0.584%	44	1 ↓	1,178	30	-	201,800
Florida	Moore Haven	0.709%	39	6 ↓	456	48	6 ↓	64,400
Georgia	Fitzgerald	1.463%	19	1 ↓	1,261	28	1 ↓	86,200
Hawaii	Kauai	0.204%	50	-	1,015	34	2 ↑	497,700
Idaho	Saint Anthony	0.674%	41	5 ↓	761	39	2 ↓	112,900
Illinois	Galena	2.205%	6	2 ↑	3,332	6	-	151,100
Indiana	North Vernon	0.889%	33	1 ↑	765	38	1 ↑	86,100
Iowa	Hampton	1.849%	15	2 ↑	1,505	23	2 ↑	81,400
Kansas	Iola	1.945%	14	4 ↓	1,558	21	1 ↓	80,100
Kentucky	Morehead	1.052%	31	4 ↓	1,794	18	1 ↓	170,500
Louisiana	Natchitoches	0.443%	47	1 ↑	669	42	6 ↑	150,800
Maine	Rockland	2.027%	12	2 ↑	3,328	7	1 ↑	164,200
Maryland	Denton	1.774%	17	2 ↑	3,235	9	-	182,300
Massachusetts	Adams	2.177%	7	2 ↑	3,265	8	1 ↓	150,000
Michigan	Manistique	2.092%	9	2 ↑	1,308	27	1 ↑	62,500
Minnesota	Glencoe	1.239%	22	-	1,584	20	1 ↑	127,800
Mississippi	Philadelphia	1.077%	30	-	993	35	-	92,200
Missouri	Boonville	1.107%	27	2 ↓	1,244	29	-	112,400
Montana	Glasgow	1.090%	29	2 ↑	1,535	22	3 ↓	140,800
Nebraska	Sidney	2.086%	10	3 ↓	2,627	11	1 ↓	125,900
Nevada	Fallon	1.266%	21	-	1,798	17	1 ↑	142,000
New Hampshire	Lancaster	2.919%	1	2 ↑	4,184	5	1 ↓	143,300
New Jersey	Maurice River Twp	2.772%	3	1 ↑	4,668	4	1 ↑	168,400
New Mexico	Santa Rosa	0.872%	34	3 ↑	753	40	-	86,400
New York	Warsaw	2.917%	2	1 ↓	3,083	10	1 ↑	105,700
North Carolina	Edenton	1.135%	25	1 ↑	1,434	25	6 ↑	126,400
North Dakota	Devils Lake	1.132%	26	3 ↑	1,093	33	1 ↑	96,600
Ohio	Bryan	1.581%	18	2 ↑	1,402	26	2 ↓	88,700
AVERAGE		**1.342%**			**1,852**			**137,562**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '17**	**Rate**	**Rank**	**Change from '17**	
Oklahoma	Mangum	0.758%	37	1 ↑	491	47	4 ↓	64,700
Oregon	Tillamook	1.162%	24	-	2,052	15	-	176,600
Pennsylvania	Ridgway	2.731%	4	2 ↓	1,975	16	-	72,300
Rhode Island	Hopkinton	2.033%	11	2 ↑	5,203	3	-	255,900
South Carolina	Mullins	0.814%	35	-	559	45	1 ↓	68,700
South Dakota	Vermillion	1.841%	16	1 ↓	2,506	14	2 ↓	136,100
Tennessee	Savannah	0.673%	42	-	601	43	2 ↑	89,300
Texas	Fort Stockton	1.167%	23	7 ↓	973	37	15 ↓	83,300
Utah	Richfield	0.699%	40	1 ↓	1,099	32	-	157,300
Vermont	Hartford	2.584%	5	-	5,876	2	-	227,400
Virginia	Wise	0.589%	43	2 ↑	689	41	-	117,100
Washington	Okanogan	1.343%	20	3 ↑	1,649	19	7 ↑	122,800
West Virginia	Elkins	0.523%	46	-	595	44	2 ↑	113,900
Wisconsin	Rice Lake	2.118%	8	2 ↓	2,541	13	1 ↑	120,000
Wyoming	Worland	0.710%	38	3 ↑	978	36	2 ↑	137,800
AVERAGE		**1.342%**			**1,852**			**137,562**

Source for median home values: *2017 American Community Survey*, 5-year data

Appendix Table 2h: Homestead Property Taxes for Selected Rural Municipalities: Homes worth $150,000 and $300,000

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	
Alabama	Monroeville	0.381%	571	49	1 ↓	0.395%	1,186	49	-	X
Alaska	Ketchican	1.097%	1,646	30	-	1.097%	3,291	30	1 ↑	
Arizona	Safford	0.810%	1,215	38	2 ↑	0.810%	2,431	39	1 ↑	
Arkansas	Pocahontas	0.476%	714	47	-	0.592%	1,777	44	1 ↑	X
California	Yreka	1.007%	1,510	33	-	1.031%	3,093	33	1 ↑	X
Colorado	Walsenburg	0.537%	805	45	1 ↓	0.537%	1,610	47	1 ↓	
Connecticut	Litchfield	1.995%	2,993	13	1 ↓	1.995%	5,986	13	-	
Delaware	Georgetown	0.584%	876	44	1 ↓	0.584%	1,752	46	3 ↓	
Florida	Moore Haven	1.571%	2,357	19	-	1.896%	5,688	15	1 ↑	X
Georgia	Fitzgerald	1.566%	2,349	20	2 ↓	1.636%	4,907	19	-	X
Hawaii	Kauai	0.050%	75	50	-	0.139%	418	50	-	X
Idaho	St. Anthony	0.674%	1,011	41	4 ↓	0.814%	2,441	38	8 ↓	X
Illinois	Galena	2.203%	3,305	6	2 ↑	2.353%	7,060	5	-	X
Indiana	North Vernon	0.957%	1,436	34	-	0.957%	2,871	34	1 ↑	
Iowa	Hampton	1.952%	2,928	15	2 ↑	2.013%	6,040	12	6 ↑	X
Kansas	Iola	1.972%	2,958	14	4 ↓	1.988%	5,963	14	5 ↓	X
Kentucky	Morehead	1.052%	1,578	32	3 ↓	1.052%	3,156	32	3 ↓	
Louisiana	Natchitoches	0.441%	662	48	1 ↑	0.663%	1,988	43	1 ↑	X
Maine	Rockland	2.000%	3,000	12	2 ↑	2.154%	6,462	8	3 ↑	X
Maryland	Denton	1.774%	2,662	17	3 ↑	1.774%	5,323	17	3 ↑	
Massachusetts	Adams	2.177%	3,265	7	2 ↑	2.177%	6,530	7	1 ↑	
Michigan	Manistique	2.092%	3,138	9	2 ↑	2.092%	6,276	9	3 ↑	
Minnesota	Glencoe	1.303%	1,955	23	1 ↓	1.487%	4,462	21	1 ↑	X
Mississippi	Philadelphia	1.203%	1,804	25	1 ↓	1.303%	3,908	24	1 ↓	X
Missouri	Boonville	1.107%	1,660	29	2 ↓	1.107%	3,320	29	2 ↓	
Montana	Glasgow	1.090%	1,636	31	1 ↑	1.090%	3,271	31	2 ↑	
Nebraska	Sidney	2.086%	3,130	10	3 ↓	2.086%	6,259	10	3 ↓	
Nevada	Fallon	1.266%	1,900	24	1 ↓	1.266%	3,799	25	1 ↓	
New Hampshire	Lancaster	2.919%	4,379	2	1 ↑	2.919%	8,758	3	-	
New Jersey	Maurice River Twp	2.772%	4,158	4	-	2.772%	8,315	4	-	
New Mexico	Santa Rosa	0.900%	1,350	35	1 ↑	0.919%	2,756	35	1 ↑	X
New York	Warsaw	3.091%	4,637	1	-	3.299%	9,897	1	-	X
North Carolina	Edenton	1.135%	1,702	27	1 ↑	1.135%	3,404	27	1 ↑	
North Dakota	Devils Lake	1.132%	1,698	28	3 ↑	1.132%	3,395	28	4 ↑	
Ohio	Bryan	1.581%	2,371	18	3 ↑	1.581%	4,742	20	1 ↑	
AVERAGE		**1.377%**	**2,065**			**1.409%**	**4,226**			**N = 21**

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '17**	
Oklahoma	Mangum	0.822%	1,233	36	2 ↑	0.846%	2,539	36	1 ↑	X
Oregon	Tillamook	1.162%	1,743	26	-	1.162%	3,486	26	-	
Pennsylvania	Ridgway	2.864%	4,297	3	1 ↓	2.926%	8,778	2	-	X
Rhode Island	Hopkinton	2.033%	3,050	11	2 ↑	2.033%	6,099	11	4 ↑	
South Carolina	Mullins	0.814%	1,221	37	2 ↓	0.814%	2,443	37	1 ↑	
South Dakota	Vermillion	1.841%	2,762	16	1 ↓	1.841%	5,524	16	1 ↑	
Tennessee	Savannah	0.673%	1,009	42	-	0.673%	2,018	42	-	
Texas	Fort Stockton	1.335%	2,002	22	6 ↓	1.439%	4,318	22	8 ↓	X
Utah	Richfield	0.699%	1,048	40	1 ↓	0.699%	2,096	41	2 ↓	
Vermont	Hartford	2.325%	3,488	5	1 ↑	1.765%	5,295	18	8 ↓	X
Virginia	Wise	0.589%	883	43	2 ↑	0.589%	1,766	45	2 ↑	
Washington	Okanogan	1.343%	2,014	21	4 ↑	1.343%	4,028	23	2 ↑	
West Virginia	Elkins	0.523%	784	46	-	0.523%	1,568	48	-	
Wisconsin	Rice Lake	2.151%	3,227	8	3 ↓	2.219%	6,657	6	-	X
Wyoming	Worland	0.710%	1,065	39	2 ↑	0.710%	2,130	40	1 ↑	
AVERAGE		**1.377%**	**2,065**			**1.409%**	**4,226**			**N = 21**

Appendix Table 3a: Commercial Property Taxes for Largest City in Each State

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Alabama	Birmingham	1.439%	1,727	31 (3 ↑)	1.439%	17,270	34 (2 ↑)	1.439%	431,738	36 (3 ↑)		
Alaska	Anchorage	1.270%	1,524	40 (2 ↑)	1.516%	18,194	31 (6 ↑)	1.542%	462,726	31 (6 ↑)	X	X
Arizona	Phoenix	2.201%	2,641	18 (5 ↑)	2.287%	27,443	18 (4 ↑)	2.708%	812,471	12 (4 ↑)	X	X
Arkansas	Little Rock	1.400%	1,680	33 (3 ↑)	1.400%	16,803	36 (3 ↑)	1.400%	420,074	38 (2 ↑)		
California	Los Angeles	1.196%	1,435	42 (1 ↑)	1.196%	14,353	44 (-)	1.196%	358,814	45 (-)		
Colorado	Denver	2.198%	2,637	19 (-)	2.198%	26,373	20 (1 ↑)	2.198%	659,322	20 (2 ↑)		
Connecticut	Bridgeport	3.457%	4,149	4 (1 ↓)	3.457%	41,490	4 (1 ↓)	3.457%	1,037,244	4 (1 ↓)		
DC	Washington	1.286%	1,543	39 (-)	1.286%	15,428	42 (-)	1.963%	588,788	26 (2 ↑)	X	X
Delaware	Wilmington	1.426%	1,711	32 (15 ↑)	1.426%	17,108	35 (13 ↑)	1.426%	427,709	37 (11 ↑)		X
Florida	Jacksonville	1.391%	1,670	34 (1 ↑)	1.644%	19,724	29 (2 ↑)	1.678%	503,493	29 (3 ↑)	X	X
Georgia	Atlanta	1.520%	1,824	28 (3 ↑)	1.520%	18,237	30 (3 ↑)	1.520%	455,918	32 (2 ↑)		
Hawaii	Honolulu	1.020%	1,224	49 (2 ↑)	1.020%	12,239	49 (2 ↑)	1.020%	305,970	49 (2 ↑)		X
Idaho	Boise	1.196%	1,435	43 (3 ↓)	1.323%	15,878	38 (-)	1.446%	433,690	35 (-)	X	X
Illinois	Aurora*	3.335%	4,002	5 (1 ↑)	3.335%	40,021	5 (1 ↑)	3.335%	1,000,526	6 (-)		X
Illinois	Chicago	3.552%	4,262	3 (1 ↑)	3.552%	42,623	3 (1 ↑)	3.552%	1,065,585	3 (1 ↑)		X
Indiana	Indianapolis	2.576%	3,091	11 (3 ↑)	2.576%	30,908	13 (3 ↑)	2.576%	772,693	14 (3 ↑)		
Iowa	Des Moines	2.395%	2,874	15 (5 ↑)	3.122%	37,465	6 (1 ↑)	3.376%	1,012,710	5 (2 ↑)	X	X
Kansas	Wichita	2.708%	3,250	9 (3 ↑)	2.708%	32,497	11 (3 ↑)	2.708%	812,433	13 (1 ↑)		
Kentucky	Louisville	1.287%	1,544	38 (3 ↑)	1.287%	15,439	41 (2 ↑)	1.287%	385,968	42 (1 ↑)		
Louisiana	New Orleans	2.063%	2,475	21 (4 ↑)	2.063%	24,751	22 (4 ↑)	2.063%	618,783	23 (4 ↑)		
Maine	Portland	2.042%	2,450	22 (2 ↑)	2.042%	24,503	23 (2 ↑)	2.042%	612,580	24 (2 ↑)		
Maryland	Baltimore	2.717%	3,260	8 (1 ↑)	2.717%	32,604	10 (1 ↑)	2.717%	815,112	11 (-)		
Massachusetts	Boston	1.785%	2,142	24 (4 ↑)	1.785%	21,420	26 (3 ↑)	1.785%	535,500	27 (3 ↑)		X
Michigan	Detroit	3.829%	4,594	2 (1 ↓)	3.829%	45,943	2 (1 ↓)	3.829%	1,148,575	2 (1 ↓)		X
Minnesota	Minneapolis	1.622%	1,947	27 (6 ↓)	2.606%	31,273	12 (4 ↓)	2.753%	826,023	9 (1 ↓)	X	X
Mississippi	Jackson	2.774%	3,329	7 (-)	2.774%	33,292	8 (1 ↑)	2.774%	832,296	8 (1 ↑)		
Missouri	Kansas City	2.872%	3,447	6 (4 ↑)	2.872%	34,465	7 (5 ↑)	2.872%	861,635	7 (5 ↑)		X
Montana	Billings	1.057%	1,269	47 (1 ↑)	1.143%	13,718	45 (1 ↑)	1.226%	367,735	43 (1 ↑)	X	X
Nebraska	Omaha	1.853%	2,223	23 (3 ↑)	2.021%	24,246	24 (-)	2.038%	611,524	25 (-)	X	X
Nevada	Las Vegas	1.139%	1,367	45 (-)	1.139%	13,670	46 (1 ↓)	1.139%	341,752	46 (-)		
New Hampshire	Manchester	1.760%	2,112	25 (2 ↑)	1.760%	21,123	27 (1 ↑)	1.760%	528,064	28 (1 ↑)		X
New Jersey	Newark	2.469%	2,963	12 (1 ↑)	2.469%	29,633	14 (1 ↑)	2.469%	740,816	15 (-)		X
New Mexico	Albuquerque	1.484%	1,781	29 (3 ↑)	1.484%	17,807	32 (2 ↑)	1.484%	445,187	33 (3 ↑)		
New York	Buffalo*	2.219%	2,663	17 (-)	2.219%	26,628	19 (-)	2.219%	665,712	19 (1 ↑)		X
New York	New York City**	1.139%	1,367	46 (44 ↓)	1.139%	13,668	47 (45 ↓)	1.139%	341,705	47 (45 ↓)		X
AVERAGE		**1.878%**	**2,253**		**1.945%**	**23,335**		**1.981%**	**594,407**		**N = 11**	**N = 26**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
North Carolina	Charlotte	1.036%	1,243	48 (2 ↓)	1.036%	12,426	48 (1 ↓)	1.036%	310,658	48 (1 ↓)		
North Dakota	Fargo	0.969%	1,162	50 (1 ↓)	0.969%	11,625	50 (1 ↓)	0.969%	290,620	50 (1 ↓)		X
Ohio	Columbus	2.162%	2,594	20 (2 ↑)	2.162%	25,943	21 (2 ↑)	2.162%	648,565	21 (2 ↑)		X
Oklahoma	Oklahoma City	1.300%	1,560	36 (2 ↑)	1.300%	15,598	39 (2 ↑)	1.300%	389,950	40 (2 ↑)		
Oregon	Portland	2.455%	2,946	13 (2 ↑)	2.455%	29,465	15 (2 ↑)	2.455%	736,614	16 (2 ↑)		
Pennsylvania	Philadelphia	1.140%	1,368	44 (-)	1.960%	23,521	25 (2 ↑)	2.118%	635,548	22 (2 ↑)	X	X
Rhode Island	Providence	3.854%	4,625	1 (4 ↑)	3.854%	46,245	1 (4 ↑)	3.854%	1,156,130	1 (4 ↑)		
South Carolina	Charleston	1.454%	1,745	30 (1 ↓)	1.454%	17,452	33 (3 ↓)	1.454%	436,294	34 (3 ↓)		
South Dakota	Sioux Falls	1.342%	1,610	35 (2 ↓)	1.342%	16,101	37 (2 ↓)	1.342%	402,515	39 (1 ↓)		X
Tennessee	Nashville***	1.209%	1,451	41 (33 ↓)	1.209%	14,513	43 (33 ↓)	1.209%	362,825	44 (34 ↓)		X
Texas	Houston	2.388%	2,866	16 (-)	2.388%	28,660	17 (1 ↑)	2.388%	716,508	18 (1 ↑)		
Utah	Salt Lake City	1.287%	1,544	37 (-)	1.287%	15,440	40 (-)	1.287%	386,004	41 (-)		
Vermont	Burlington	2.419%	2,903	14 (4 ↑)	2.419%	29,030	16 (4 ↑)	2.419%	725,761	17 (4 ↑)		X
Virginia	Virginia Beach	0.956%	1,147	51 (1 ↓)	0.956%	11,474	51 (1 ↓)	0.956%	286,841	51 (1 ↓)		
Washington	Seattle	0.896%	1,076	52 (-)	0.896%	10,757	52 (-)	0.896%	268,933	52 (-)		
West Virginia	Charleston	1.671%	2,005	26 (4 ↑)	1.671%	20,049	28 (4 ↑)	1.671%	501,228	30 (3 ↑)		
Wisconsin	Milwaukee	2.672%	3,207	10 (1 ↑)	2.728%	32,735	9 (4 ↑)	2.734%	820,144	10 (3 ↑)	X	
Wyoming	Cheyenne	0.625%	750	53 (-)	0.625%	7,502	53 (-)	0.625%	187,559	53 (-)		
AVERAGE		**1.878%**	**2,253**		**1.945%**	**23,335**		**1.981%**	**594,407**		**N = 11**	**N = 26**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
** Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.
*** Nashville is now the largest city in the Tennessee and replaces Memphis.

Note: $100,000-valued property has an additional $20,000 worth of fixtures; $1 million-valued property has an additional $200,000 worth of fixtures; $25 million-valued property has an additional $5 million worth of fixtures.

Appendix Table 3b: Commercial Property Taxes for the Largest Fifty U.S. Cities

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Arizona	Mesa	1.554%	1,865	26 (3 ↑)	1.614%	19,370	29 (1 ↑)	1.908%	572,450	27 (1 ↑)	X	X
Arizona	Phoenix	2.201%	2,641	16 (6 ↑)	2.287%	27,443	17 (3 ↑)	2.708%	812,471	10 (4 ↑)	X	X
Arizona	Tucson	2.018%	2,421	21 (2 ↓)	2.096%	25,146	21 (3 ↓)	2.475%	742,388	15 (3 ↓)	X	X
California	Fresno	1.244%	1,493	37 (1 ↑)	1.244%	14,931	38 (1 ↑)	1.244%	373,280	38 (1 ↑)		
California	Long Beach	1.207%	1,449	39 (-)	1.207%	14,487	40 (-)	1.207%	362,168	40 (-)		
California	Los Angeles	1.196%	1,435	40 (1 ↑)	1.196%	14,353	41 (1 ↑)	1.196%	358,814	41 (1 ↑)		
California	Oakland	1.367%	1,640	32 (1 ↑)	1.367%	16,399	33 (1 ↑)	1.367%	409,980	34 (1 ↑)		
California	Sacramento	1.130%	1,355	46 (-)	1.130%	13,554	46 (-)	1.130%	338,850	46 (-)		
California	San Diego	1.175%	1,410	41 (2 ↑)	1.175%	14,095	42 (2 ↑)	1.175%	352,383	42 (2 ↑)		
California	San Francisco	1.163%	1,396	42 (-)	1.163%	13,956	43 (-)	1.163%	348,900	43 (-)		
California	San Jose	1.281%	1,537	36 (2 ↓)	1.281%	15,370	37 (2 ↓)	1.281%	384,240	37 (1 ↓)		
Colorado	Colorado Springs	1.930%	2,316	22 (4 ↑)	1.930%	23,156	25 (4 ↑)	1.930%	578,902	26 (5 ↑)		
Colorado	Denver	2.198%	2,637	17 (-)	2.198%	26,373	18 (1 ↑)	2.198%	659,322	19 (1 ↑)		
DC	Washington	1.286%	1,543	35 (1 ↑)	1.286%	15,428	36 (1 ↑)	1.963%	588,788	25 (1 ↑)	X	X
Florida	Jacksonville	1.391%	1,670	31 (1 ↑)	1.644%	19,724	28 (-)	1.678%	503,493	30 (-)	X	X
Florida	Miami	1.553%	1,864	27 (1 ↑)	1.847%	22,159	26 (-)	1.887%	566,028	28 (1 ↓)	X	X
Georgia	Atlanta	1.520%	1,824	28 (1 ↓)	1.520%	18,237	30 (1 ↑)	1.520%	455,918	31 (1 ↑)		
Illinois	Chicago	3.552%	4,262	2 (1 ↑)	3.552%	42,623	2 (1 ↑)	3.552%	1,065,585	2 (1 ↑)		X
Indiana	Indianapolis	2.576%	3,091	11 (3 ↑)	2.576%	30,908	12 (3 ↑)	2.576%	772,693	13 (4 ↑)		
Kansas	Wichita	2.708%	3,250	8 (3 ↑)	2.708%	32,497	9 (3 ↑)	2.708%	812,433	11 (2 ↑)		
Kentucky	Louisville	1.287%	1,544	34 (3 ↑)	1.287%	15,439	35 (3 ↑)	1.287%	385,968	36 (2 ↑)		
Louisiana	New Orleans	2.063%	2,475	20 (3 ↑)	2.063%	24,751	22 (2 ↑)	2.063%	618,783	23 (2 ↑)		
Maryland	Baltimore	2.717%	3,260	7 (-)	2.717%	32,604	8 (-)	2.717%	815,112	9 (1 ↓)		
Massachusetts	Boston	1.785%	2,142	24 (1 ↑)	1.785%	21,420	27 (-)	1.785%	535,500	29 (-)		X
Michigan	Detroit	3.829%	4,594	1 (-)	3.829%	45,943	1 (-)	3.829%	1,148,575	1 (-)		X
Minnesota	Minneapolis	1.622%	1,947	25 (7 ↓)	2.606%	31,273	11 (6 ↓)	2.753%	826,023	7 (2 ↓)	X	X
Missouri	Kansas City	2.872%	3,447	4 (4 ↑)	2.872%	34,465	4 (5 ↑)	2.872%	861,635	4 (5 ↑)		X
Nebraska	Omaha	1.853%	2,223	23 (1 ↑)	2.021%	24,246	23 (-)	2.038%	611,524	24 (-)	X	X
Nevada	Las Vegas	1.139%	1,367	44 (1 ↑)	1.139%	13,670	44 (1 ↑)	1.139%	341,752	44 (1 ↑)		
New Mexico	Albuquerque	1.484%	1,781	30 (-)	1.484%	17,807	32 (-)	1.484%	445,187	33 (-)		
New York	New York City*	1.139%	1,367	45 (43 ↓)	1.139%	13,668	45 (43 ↓)	1.139%	341,705	45 (43 ↓)		X
North Carolina	Charlotte	1.036%	1,243	47 (-)	1.036%	12,426	47 (-)	1.036%	310,658	47 (-)		
North Carolina	Raleigh	0.992%	1,191	48 (-)	0.992%	11,909	48 (-)	0.992%	297,734	48 (-)		
Ohio	Columbus	2.162%	2,594	18 (2 ↑)	2.162%	25,943	19 (2 ↑)	2.162%	648,565	20 (1 ↑)		X
Oklahoma	Oklahoma City	1.300%	1,560	33 (2 ↑)	1.300%	15,598	34 (2 ↑)	1.300%	389,950	35 (2 ↑)		
AVERAGE		**1.861%**	**2,233**		**1.917%**	**23,003**		**1.960%**	**588,126**		**N = 10**	**N = 18**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Oklahoma	Tulsa	1.488%	1,785	29 (2 ↑)	1.488%	17,854	31 (2 ↑)	1.488%	446,355	32 (2 ↑)		X
Oregon	Portland	2.455%	2,946	13 (2 ↑)	2.455%	29,465	14 (2 ↑)	2.455%	736,614	16 (2 ↑)		
Pennsylvania	Philadelphia	1.140%	1,368	43 (1 ↑)	1.960%	23,521	24 (1 ↑)	2.118%	635,548	21 (2 ↑)	X	X
Tennessee	Memphis	2.778%	3,333	6 (1 ↓)	2.778%	33,331	6 (-)	2.778%	833,279	6 (-)		X
Tennessee	Nashville	1.209%	1,451	38 (2 ↑)	1.209%	14,513	39 (2 ↑)	1.209%	362,825	39 (2 ↑)		X
Texas	Arlington	2.360%	2,832	15 (3 ↓)	2.360%	28,315	16 (3 ↓)	2.360%	707,882	18 (3 ↓)		
Texas	Austin	2.112%	2,535	19 (2 ↑)	2.112%	25,347	20 (2 ↑)	2.112%	633,685	22 (-)		
Texas	Dallas	2.668%	3,201	10 (3 ↑)	2.668%	32,014	10 (4 ↑)	2.668%	800,350	12 (4 ↑)		
Texas	El Paso	2.997%	3,597	3 (1 ↑)	2.997%	35,967	3 (1 ↑)	2.997%	899,163	3 (1 ↑)		
Texas	Fort Worth	2.562%	3,074	12 (3 ↓)	2.562%	30,744	13 (2 ↓)	2.562%	768,589	14 (3 ↓)		
Texas	Houston	2.388%	2,866	14 (2 ↑)	2.388%	28,660	15 (2 ↑)	2.388%	716,508	17 (2 ↑)		
Texas	San Antonio	2.839%	3,407	5 (1 ↑)	2.839%	34,072	5 (2 ↑)	2.839%	851,812	5 (2 ↑)		
Virginia	Virginia Beach	0.956%	1,147	49 (-)	0.956%	11,474	49 (-)	0.956%	286,841	49 (-)		
Washington	Seattle	0.896%	1,076	50 (-)	0.896%	10,757	50 (-)	0.896%	268,933	50 (-)		
Wisconsin	Milwaukee	2.672%	3,207	9 (1 ↑)	2.728%	32,735	7 (3 ↑)	2.734%	820,144	8 (2 ↑)	X	
AVERAGE		**1.861%**	**2,233**		**1.917%**	**23,003**		**1.960%**	**588,126**		**N = 10**	**N = 18**

* Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.

Note: $100,000-valued property has an additional $20,000 worth of fixtures; $1 million-valued property has an additional $200,000 worth of fixtures; $25 million-valued property has an additional $5 million worth of fixtures.

Appendix Table 3c: Commercial Property Taxes for Selected Rural Municipalities

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Alabama	Monroeville	0.819%	983	45 (-)	0.819%	9,832	45 (-)	0.819%	245,795	45 (-)		
Alaska	Ketchican	0.914%	1,097	43 (1 ↑)	1.083%	13,001	40 (2 ↓)	1.107%	331,992	40 (2 ↓)	X	X
Arizona	Safford	2.068%	2,482	17 (10 ↑)	2.129%	25,544	16 (9 ↑)	2.423%	727,005	9 (15 ↑)	X	X
Arkansas	Pocahontas	0.758%	909	47 (1 ↑)	0.758%	9,093	47 (1 ↑)	0.758%	227,332	47 (1 ↑)		
California	Yreka	1.056%	1,267	41 (2 ↓)	1.056%	12,670	42 (2 ↓)	1.056%	316,740	42 (2 ↓)		
Colorado	Walsenburg	2.263%	2,716	10 (2 ↑)	2.263%	27,159	12 (3 ↑)	2.263%	678,965	14 (1 ↑)		
Connecticut	Litchfield	1.398%	1,678	27 (1 ↓)	1.398%	16,781	28 (1 ↑)	1.398%	419,517	30 (1 ↓)		
Delaware	Georgetown	0.394%	473	50 (-)	0.394%	4,727	50 (-)	0.394%	118,169	50 (-)		X
Florida	Moore Haven	1.851%	2,221	23 (1 ↓)	2.178%	26,136	15 (3 ↓)	2.223%	666,864	15 (4 ↓)	X	X
Georgia	Fitzgerald	1.720%	2,064	24 (1 ↓)	1.720%	20,635	26 (2 ↓)	1.720%	515,880	26 (1 ↓)		
Hawaii	Kauai	0.574%	689	49 (-)	0.574%	6,885	49 (-)	0.574%	172,125	49 (-)		X
Idaho	St. Anthony	1.203%	1,443	34 (4 ↓)	1.336%	16,032	32 (6 ↓)	1.464%	439,241	28 (2 ↓)	X	X
Illinois	Galena	2.086%	2,503	14 (4 ↑)	2.086%	25,035	19 (2 ↑)	2.086%	625,875	19 (2 ↑)		X
Indiana	North Vernon	2.828%	3,393	4 (2 ↓)	2.828%	33,930	4 (1 ↓)	2.828%	848,250	4 (1 ↓)		
Iowa	Hampton	1.363%	1,636	28 (4 ↓)	2.091%	25,091	18 (10 ↓)	2.345%	703,352	10 (3 ↓)	X	X
Kansas	Iola	4.403%	5,283	1 (-)	4.403%	52,830	1 (-)	4.403%	1,320,753	1 (-)		
Kentucky	Morehead	1.188%	1,425	35 (1 ↑)	1.188%	14,251	35 (1 ↑)	1.188%	356,280	35 (1 ↑)		
Louisiana	Natchitoches	1.257%	1,509	32 (1 ↑)	1.257%	15,087	34 (1 ↓)	1.257%	377,174	34 (1 ↓)		
Maine	Rockland	2.308%	2,770	9 (1 ↑)	2.308%	27,696	10 (1 ↑)	2.308%	692,400	12 (-)		
Maryland	Denton	2.188%	2,626	12 (5 ↑)	2.188%	26,259	13 (7 ↑)	2.188%	656,483	17 (3 ↑)		
Massachusetts	Adams	2.084%	2,501	15 (4 ↑)	2.084%	25,010	20 (2 ↑)	2.084%	625,240	20 (2 ↑)		X
Michigan	Manistique	2.942%	3,531	2 (1 ↑)	2.942%	35,306	2 (2 ↑)	2.942%	882,652	2 (2 ↑)		X
Minnesota	Glencoe	1.664%	1,996	25 (19 ↓)	2.643%	31,713	6 (4 ↓)	2.792%	837,731	5 (3 ↓)	X	X
Mississippi	Philadelphia	2.104%	2,525	13 (2 ↑)	2.104%	25,250	17 (1 ↑)	2.104%	631,260	18 (-)		
Missouri	Boonville	2.064%	2,477	18 (4 ↓)	2.064%	24,767	22 (5 ↓)	2.064%	619,181	22 (5 ↓)		X
Montana	Glasgow	1.243%	1,491	33 (4 ↓)	1.345%	16,139	31 (4 ↓)	1.443%	432,962	29 (2 ↓)	X	X
Nebraska	Sidney	2.010%	2,413	20 (-)	2.187%	26,244	14 (1 ↓)	2.206%	661,757	16 (3 ↓)	X	X
Nevada	Fallon	1.275%	1,530	31 (1 ↑)	1.275%	15,299	33 (1 ↓)	1.275%	382,470	33 (1 ↓)		
New Hampshire	Lancaster	2.433%	2,919	7 (2 ↑)	2.433%	29,195	8 (2 ↑)	2.433%	729,864	8 (2 ↑)		X
New Jersey	Maurice River Twp	2.310%	2,772	8 (3 ↑)	2.310%	27,718	9 (5 ↑)	2.310%	692,944	11 (3 ↑)		X
New Mexico	Santa Rosa	1.065%	1,278	40 (1 ↑)	1.065%	12,777	41 (1 ↑)	1.065%	319,423	41 (1 ↑)		
New York	Warsaw	2.922%	3,507	3 (1 ↑)	2.922%	35,066	3 (2 ↑)	2.922%	876,654	3 (2 ↑)		X
North Carolina	Edenton	1.137%	1,364	37 (-)	1.137%	13,638	37 (-)	1.137%	340,952	37 (-)		
North Dakota	Devils Lake	1.111%	1,333	39 (1 ↓)	1.111%	13,334	39 (-)	1.111%	333,338	39 (-)		X
Ohio	Bryan	1.541%	1,849	26 (2 ↑)	1.541%	18,486	27 (3 ↑)	1.541%	462,154	27 (3 ↑)		X
AVERAGE		**1.688%**	**2,026**		**1.743%**	**20,913**		**1.763%**	**528,937**		**N = 9**	**N = 23**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Oklahoma	Mangum	0.907%	1,088	44 (1 ↓)	0.907%	10,880	44 (-)	0.907%	271,988	44 (-)		
Oregon	Tillamook	1.162%	1,394	36 (1 ↓)	1.162%	13,945	36 (1 ↓)	1.162%	348,624	36 (1 ↓)		
Pennsylvania	Ridgway	2.490%	2,988	6 (1 ↑)	2.490%	29,880	7 (-)	2.490%	746,992	7 (1 ↑)		X
Rhode Island	Hopkinton	2.029%	2,434	19 (2 ↑)	2.029%	24,345	23 (-)	2.029%	608,623	23 (-)		
South Carolina	Mullins	2.737%	3,285	5 (-)	2.737%	32,849	5 (1 ↑)	2.737%	821,237	6 (-)		
South Dakota	Vermillion	1.887%	2,265	22 (3 ↑)	1.887%	22,645	25 (3 ↑)	1.887%	566,132	25 (3 ↑)		X
Tennessee	Savannah	1.032%	1,238	42 (-)	1.032%	12,380	43 (-)	1.032%	309,500	43 (-)		X
Texas	Fort Stockton	1.964%	2,357	21 (8 ↓)	1.964%	23,565	24 (8 ↓)	1.964%	589,135	24 (8 ↓)		
Utah	Richfield	1.348%	1,618	30 (1 ↑)	1.348%	16,177	30 (1 ↑)	1.348%	404,430	32 (1 ↓)		
Vermont	Hartford	2.083%	2,500	16 (-)	2.083%	25,000	21 (2 ↓)	2.083%	624,994	21 (2 ↓)		X
Virginia	Wise	0.796%	955	46 (-)	0.796%	9,548	46 (-)	0.796%	238,695	46 (-)		
Washington	Okanogan	1.358%	1,629	29 (5 ↑)	1.358%	16,292	29 (5 ↑)	1.358%	407,307	31 (3 ↑)		
West Virginia	Elkins	1.112%	1,334	38 (2 ↑)	1.112%	13,339	38 (3 ↑)	1.112%	333,477	38 (3 ↑)		
Wisconsin	Rice Lake	2.225%	2,670	11 (3 ↓)	2.280%	27,364	11 (2 ↓)	2.286%	685,873	13 (4 ↓)	X	
Wyoming	Worland	0.737%	884	48 (1 ↓)	0.737%	8,842	48 (1 ↓)	0.737%	221,062	48 (1 ↓)		
AVERAGE		**1.688%**	**2,026**		**1.743%**	**20,913**		**1.763%**	**528,937**		**N = 9**	**N = 23**

Note: $100,000-valued property has an additional $20,000 worth of fixtures; $1 million-valued property has an additional $200,000 worth of fixtures; $25 million-valued property has an additional $5 million worth of fixtures.

Appendix Table 4a: Industrial Property Taxes for Largest City in Each State (Personal Property = 50% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Birmingham	1.153%	2,307	30 (4 ↑)	1.153%	23,070	34 (3 ↑)	1.153%	576,738	36 (2 ↑)	
Alaska	Anchorage	1.418%	2,836	21 (7 ↑)	1.566%	31,314	19 (5 ↑)	1.581%	790,726	21 (4 ↑)	X
Arizona	Phoenix	1.320%	2,641	27 (4 ↑)	2.002%	40,048	9 (4 ↑)	2.255%	1,127,592	5 (3 ↑)	X
Arkansas	Little Rock	1.401%	2,802	24 (2 ↑)	1.401%	28,019	27 (3 ↑)	1.401%	700,474	27 (3 ↑)	
California	Los Angeles	0.957%	1,914	38 (1 ↑)	0.957%	19,137	41 (1 ↑)	0.957%	478,418	42 (1 ↑)	
Colorado	Denver	1.766%	3,532	13 (2 ↑)	1.766%	35,320	15 (1 ↑)	1.766%	883,011	16 (2 ↑)	
Connecticut	Bridgeport	1.884%	3,768	12 (2 ↓)	1.884%	37,684	14 (4 ↓)	1.884%	942,096	14 (3 ↓)	
DC	Washington	0.771%	1,543	43 (-)	1.409%	28,178	25 (2 ↑)	1.858%	928,788	15 (2 ↑)	X
Delaware	Wilmington	0.855%	1,711	41 (8 ↑)	0.855%	17,108	45 (5 ↑)	0.855%	427,709	45 (5 ↑)	
Florida	Jacksonville	1.138%	2,275	31 (2 ↑)	1.332%	26,645	29 (3 ↑)	1.353%	676,515	28 (4 ↑)	X
Georgia	Atlanta	1.409%	2,818	22 (1 ↓)	1.409%	28,179	24 (1 ↑)	1.409%	704,478	25 (1 ↑)	
Hawaii	Honolulu	0.597%	1,194	50 (1 ↑)	0.597%	11,937	50 (1 ↑)	0.597%	298,437	50 (1 ↑)	
Idaho	Boise	0.717%	1,435	46 (2 ↓)	1.100%	22,001	37 (1 ↓)	1.174%	586,761	35 (1 ↑)	X
Illinois	Aurora*	2.001%	4,002	9 (2 ↑)	2.001%	40,021	10 (1 ↑)	2.001%	1,000,526	11 (1 ↑)	
Illinois	Chicago	2.056%	4,112	7 (1 ↓)	2.056%	41,117	7 (-)	2.056%	1,027,913	9 (2 ↓)	
Indiana	Indianapolis	2.102%	4,204	6 (6 ↑)	2.102%	42,037	6 (6 ↑)	2.102%	1,050,918	8 (5 ↑)	
Iowa	Des Moines	1.517%	3,035	17 (13 ↑)	1.954%	39,075	12 (6 ↑)	2.106%	1,052,957	7 (9 ↑)	X
Kansas	Wichita	1.478%	2,957	19 (3 ↑)	1.478%	29,567	23 (3 ↑)	1.478%	739,174	24 (3 ↑)	
Kentucky	Louisville	0.724%	1,448	45 (-)	0.724%	14,482	48 (1 ↓)	0.724%	362,043	48 (1 ↓)	
Louisiana	New Orleans	2.111%	4,223	5 (4 ↑)	2.111%	42,226	5 (4 ↑)	2.111%	1,055,643	6 (4 ↑)	
Maine	Portland	1.113%	2,226	32 (4 ↑)	1.113%	22,255	35 (4 ↑)	1.113%	556,380	37 (3 ↑)	
Maryland	Baltimore	1.351%	2,701	25 (2 ↑)	1.351%	27,013	28 (3 ↑)	1.351%	675,315	29 (2 ↑)	
Massachusetts	Boston	1.071%	2,142	34 (4 ↑)	1.071%	21,420	38 (3 ↑)	1.071%	535,500	39 (3 ↑)	
Michigan	Detroit	2.330%	4,659	3 (4 ↑)	2.723%	54,453	2 (-)	2.723%	1,361,323	2 (-)	X
Minnesota	Minneapolis	0.958%	1,915	37 (14 ↓)	1.538%	30,762	20 (3 ↓)	1.626%	812,796	20 (1 ↓)	X
Mississippi	Jackson	2.801%	5,601	1 (-)	2.801%	56,013	1 (-)	2.801%	1,400,319	1 (-)	
Missouri	Kansas City	2.276%	4,553	4 (4 ↑)	2.276%	45,526	4 (4 ↑)	2.276%	1,138,155	4 (5 ↑)	
Montana	Billings	0.634%	1,269	49 (1 ↑)	0.892%	17,848	43 (2 ↑)	1.250%	624,852	33 (2 ↑)	X
Nebraska	Omaha	1.559%	3,118	16 (2 ↑)	1.660%	33,193	18 (1 ↑)	1.670%	835,191	18 (2 ↑)	X
Nevada	Las Vegas	0.913%	1,826	39 (1 ↑)	0.913%	18,260	42 (1 ↑)	0.913%	456,489	43 (1 ↑)	
New Hampshire	Manchester	1.056%	2,112	35 (-)	1.056%	21,123	39 (1 ↓)	1.056%	528,064	40 (1 ↓)	
New Jersey	Newark	1.482%	2,963	18 (1 ↑)	1.482%	29,633	22 (-)	1.482%	740,816	23 (-)	
New Mexico	Albuquerque	1.203%	2,405	29 (3 ↑)	1.203%	24,052	32 (2 ↑)	1.203%	601,297	34 (3 ↑)	
New York	Buffalo*	1.331%	2,663	26 (2 ↓)	1.331%	26,628	30 (2 ↓)	1.331%	665,712	30 (2 ↓)	
New York	New York City**	0.578%	1,157	52 (48 ↓)	0.578%	11,565	52 (47 ↓)	0.578%	289,135	52 (47 ↓)	
AVERAGE		**1.336%**	**2,672**		**1.418%**	**28,362**		**1.447%**	**723,359**		**N = 12**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
North Carolina	Charlotte	0.884%	1,767	40 (1 ↑)	0.884%	17,674	44 (-)	0.884%	441,848	44 (1 ↑)	
North Dakota	Fargo	0.581%	1,162	51 (1 ↑)	0.581%	11,625	51 (1 ↑)	0.581%	290,620	51 (1 ↑)	
Ohio	Columbus	1.275%	2,550	28 (1 ↑)	1.275%	25,499	31 (2 ↑)	1.275%	637,482	31 (2 ↑)	
Oklahoma	Oklahoma City	1.404%	2,808	23 (2 ↑)	1.404%	28,076	26 (3 ↑)	1.404%	701,910	26 (3 ↑)	
Oregon	Portland	1.964%	3,929	10 (3 ↑)	1.964%	39,286	11 (3 ↑)	1.964%	982,152	12 (2 ↑)	
Pennsylvania	Philadelphia	0.684%	1,368	47 (-)	1.176%	23,521	33 (2 ↑)	1.271%	635,548	32 (2 ↑)	X
Rhode Island	Providence	2.033%	4,067	8 (6 ↑)	2.033%	40,665	8 (7 ↑)	2.033%	1,016,630	10 (5 ↑)	
South Carolina	Charleston	1.940%	3,879	11 (6 ↓)	1.940%	38,794	13 (7 ↓)	1.940%	969,839	13 (7 ↓)	
South Dakota	Sioux Falls	0.805%	1,610	42 (-)	0.805%	16,101	46 (-)	0.805%	402,515	46 (-)	
Tennessee	Nashville***	1.104%	2,209	33 (31 ↓)	1.104%	22,085	36 (33 ↓)	1.104%	552,125	38 (35 ↓)	
Texas	Houston	2.393%	4,785	2 (1 ↑)	2.393%	47,853	3 (1 ↑)	2.393%	1,196,330	3 (1 ↑)	
Utah	Salt Lake City	1.039%	2,078	36 (1 ↑)	1.039%	20,778	40 (-)	1.039%	519,454	41 (-)	
Vermont	Burlington	1.664%	3,329	15 (2 ↑)	1.664%	33,289	17 (4 ↑)	1.664%	832,227	19 (3 ↑)	
Virginia	Virginia Beach	0.494%	987	53 (-)	0.494%	9,874	53 (-)	0.494%	246,841	53 (-)	
Washington	Seattle	0.728%	1,456	44 (2 ↑)	0.728%	14,563	47 (1 ↑)	0.728%	364,076	47 (1 ↑)	
West Virginia	Charleston	1.671%	3,342	14 (2 ↑)	1.671%	33,415	16 (4 ↑)	1.671%	835,380	17 (4 ↑)	
Wisconsin	Milwaukee	1.467%	2,933	20 (-)	1.500%	30,001	21 (2 ↑)	1.504%	751,792	22 (2 ↑)	X
Wyoming	Cheyenne	0.658%	1,316	48 (-)	0.658%	13,160	49 (-)	0.658%	328,992	49 (-)	
AVERAGE		**1.336%**	**2,672**		**1.418%**	**28,362**		**1.447%**	**723,359**		**N = 12**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
** Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.
*** Nashville is now the largest city in the Tennessee and replaces Memphis.

Note:
$100,000-valued property has an additional $50,000 worth of machinery and equipment, an additional $40,000 worth of inventories, and an additional $10,000 worth of fixtures.
$1 million-valued property has an additional $500,000 worth of machinery and equipment, an additional $400,000 worth of inventories, and an additional $100,000 worth of fixtures.
$25 million-valued property has an additional $12.5 million worth of machinery and equipment, an additional $10 million worth of inventories, and an additional $2.5 million worth of fixtures.

Appendix Table 4b: Industrial Property Taxes for Largest City in Each State (Personal Property = 60% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Birmingham	1.097%	2,742	28 (3 ↑)	1.097%	27,420	31 (4 ↑)	1.097%	685,488	33 (3 ↑)	
Alaska	Anchorage	1.462%	3,656	16 (6 ↑)	1.581%	39,514	17 (3 ↑)	1.593%	995,726	18 (2 ↑)	X
Arizona	Phoenix	1.056%	2,641	31 (4 ↑)	1.980%	49,501	7 (1 ↑)	2.182%	1,363,932	4 (2 ↑)	X
Arkansas	Little Rock	1.401%	3,503	19 (1 ↑)	1.401%	35,029	22 (2 ↑)	1.401%	875,724	22 (3 ↑)	
California	Los Angeles	0.909%	2,272	35 (2 ↑)	0.909%	22,725	39 (1 ↑)	0.909%	568,122	40 (1 ↑)	
Colorado	Denver	1.681%	4,203	10 (2 ↑)	1.681%	42,031	11 (2 ↑)	1.681%	1,050,777	13 (1 ↑)	
Connecticut	Bridgeport	1.583%	3,959	14 (1 ↓)	1.583%	39,587	16 (2 ↓)	1.583%	989,670	19 (4 ↓)	
DC	Washington	0.617%	1,543	46 (-)	1.535%	38,378	19 (-)	1.894%	1,183,788	9 (1 ↑)	X
Delaware	Wilmington	0.684%	1,711	42 (7 ↑)	0.684%	17,108	46 (4 ↑)	0.684%	427,709	46 (4 ↑)	
Florida	Jacksonville	1.118%	2,794	27 (1 ↑)	1.273%	31,836	24 (3 ↑)	1.290%	806,281	25 (2 ↑)	X
Georgia	Atlanta	1.392%	3,481	20 (2 ↓)	1.392%	34,806	23 (2 ↓)	1.392%	870,158	23 (-)	
Hawaii	Honolulu	0.477%	1,194	50 (1 ↑)	0.477%	11,937	50 (1 ↑)	0.477%	298,437	50 (1 ↑)	
Idaho	Boise	0.574%	1,435	47 (-)	1.064%	26,593	34 (1 ↓)	1.123%	701,565	32 (1 ↑)	X
Illinois	Aurora*	1.601%	4,002	13 (2 ↑)	1.601%	40,021	14 (2 ↑)	1.601%	1,000,526	17 (-)	
Illinois	Chicago	1.645%	4,112	12 (1 ↓)	1.645%	41,117	13 (1 ↓)	1.645%	1,027,913	15 (2 ↓)	
Indiana	Indianapolis	2.012%	5,030	5 (2 ↑)	2.012%	50,301	6 (3 ↑)	2.012%	1,257,521	7 (2 ↑)	
Iowa	Des Moines	1.214%	3,035	23 (11 ↑)	1.563%	39,075	18 (8 ↑)	1.685%	1,052,957	12 (9 ↑)	X
Kansas	Wichita	1.241%	3,103	21 (4 ↑)	1.241%	31,032	26 (4 ↑)	1.241%	775,804	28 (3 ↑)	
Kentucky	Louisville	0.636%	1,591	44 (1 ↑)	0.636%	15,910	48 (1 ↑)	0.636%	397,756	48 (1 ↑)	
Louisiana	New Orleans	2.126%	5,315	4 (1 ↑)	2.126%	53,147	5 (1 ↑)	2.126%	1,328,681	6 (1 ↑)	
Maine	Portland	0.935%	2,338	34 (2 ↑)	0.935%	23,379	38 (1 ↑)	0.935%	584,480	39 (1 ↑)	
Maryland	Baltimore	1.192%	2,981	24 (2 ↑)	1.192%	29,809	28 (3 ↑)	1.192%	745,214	29 (3 ↑)	
Massachusetts	Boston	0.857%	2,142	38 (1 ↑)	0.857%	21,420	42 (-)	0.857%	535,500	43 (-)	
Michigan	Detroit	1.927%	4,817	6 (3 ↑)	2.398%	59,954	2 (2 ↑)	2.398%	1,498,846	2 (2 ↑)	X
Minnesota	Minneapolis	0.766%	1,915	40 (11 ↓)	1.230%	30,762	27 (4 ↓)	1.300%	812,796	24 (2 ↓)	X
Mississippi	Jackson	2.809%	7,021	1 (-)	2.809%	70,213	1 (-)	2.809%	1,755,333	1 (-)	
Missouri	Kansas City	2.153%	5,382	3 (3 ↑)	2.153%	53,822	4 (3 ↑)	2.153%	1,345,545	5 (3 ↑)	
Montana	Billings	0.507%	1,269	49 (1 ↑)	0.838%	20,946	44 (1 ↑)	1.248%	779,742	27 (3 ↑)	X
Nebraska	Omaha	1.516%	3,789	15 (2 ↑)	1.596%	39,903	15 (3 ↑)	1.605%	1,002,942	16 (3 ↑)	X
Nevada	Las Vegas	0.868%	2,170	36 (5 ↑)	0.868%	21,702	40 (4 ↑)	0.868%	542,542	41 (4 ↑)	
New Hampshire	Manchester	0.845%	2,112	39 (1 ↓)	0.845%	21,123	43 (2 ↓)	0.845%	528,064	44 (2 ↓)	
New Jersey	Newark	1.185%	2,963	25 (2 ↓)	1.185%	29,633	29 (-)	1.185%	740,816	30 (1 ↓)	
New Mexico	Albuquerque	1.149%	2,874	26 (1 ↑)	1.149%	28,735	30 (2 ↑)	1.149%	718,379	31 (3 ↑)	
New York	Buffalo*	1.065%	2,663	30 (-)	1.065%	26,628	33 (1 ↑)	1.065%	665,712	35 (-)	
New York	New York City**	0.463%	1,157	52 (44 ↓)	0.463%	11,565	52 (42 ↓)	0.463%	289,135	52 (41 ↓)	
AVERAGE		**1.204%**	**3,010**		**1.293%**	**32,323**		**1.318%**	**823,867**		**N = 12**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
North Carolina	Charlotte	0.864%	2,161	37 (3 ↑)	0.864%	21,610	41 (2 ↑)	0.864%	540,240	42 (2 ↑)	
North Dakota	Fargo	0.465%	1,162	51 (1 ↑)	0.465%	11,625	51 (1 ↑)	0.465%	290,620	51 (1 ↑)	
Ohio	Columbus	1.020%	2,550	32 (1 ↑)	1.020%	25,499	35 (2 ↑)	1.020%	637,482	36 (2 ↑)	
Oklahoma	Oklahoma City	1.435%	3,588	18 (1 ↑)	1.435%	35,875	21 (1 ↑)	1.435%	896,885	21 (3 ↑)	
Oregon	Portland	1.866%	4,665	8 (2 ↑)	1.866%	46,652	9 (2 ↑)	1.866%	1,166,306	10 (2 ↑)	
Pennsylvania	Philadelphia	0.547%	1,368	48 (-)	0.941%	23,521	37 (1 ↑)	1.017%	635,548	37 (2 ↑)	X
Rhode Island	Providence	1.738%	4,346	9 (5 ↑)	1.738%	43,455	10 (5 ↑)	1.738%	1,086,380	11 (5 ↑)	
South Carolina	Charleston	1.902%	4,755	7 (3 ↓)	1.902%	47,548	8 (3 ↓)	1.902%	1,188,711	8 (3 ↓)	
South Dakota	Sioux Falls	0.644%	1,610	43 (1 ↓)	0.644%	16,101	47 (1 ↓)	0.644%	402,515	47 (1 ↓)	
Tennessee	Nashville***	1.073%	2,682	29 (26 ↓)	1.073%	26,818	32 (29 ↓)	1.073%	670,438	34 (31 ↓)	
Texas	Houston	2.394%	5,985	2 (-)	2.394%	59,849	3 (1 ↓)	2.394%	1,496,219	3 (1 ↓)	
Utah	Salt Lake City	0.991%	2,478	33 (1 ↓)	0.991%	24,782	36 (-)	0.991%	619,542	38 (1 ↓)	
Vermont	Burlington	1.452%	3,629	17 (4 ↑)	1.452%	36,293	20 (5 ↑)	1.452%	907,332	20 (6 ↑)	
Virginia	Virginia Beach	0.427%	1,067	53 (-)	0.427%	10,674	53 (-)	0.427%	266,841	53 (-)	
Washington	Seattle	0.697%	1,742	41 (2 ↑)	0.697%	17,417	45 (2 ↑)	0.697%	435,433	45 (2 ↑)	
West Virginia	Charleston	1.671%	4,177	11 (5 ↑)	1.671%	41,769	12 (5 ↑)	1.671%	1,044,225	14 (4 ↑)	
Wisconsin	Milwaukee	1.228%	3,070	22 (2 ↑)	1.255%	31,368	25 (3 ↑)	1.258%	785,968	26 (2 ↑)	X
Wyoming	Cheyenne	0.625%	1,563	45 (1 ↓)	0.625%	15,627	49 (1 ↓)	0.625%	390,678	49 (1 ↓)	
AVERAGE		**1.204%**	**3,010**		**1.293%**	**32,323**		**1.318%**	**823,867**		**N = 12**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
** Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.
*** Nashville is now the largest city in the Tennessee and replaces Memphis.

Note:
$100,000-valued property has an additional $75,000 worth of machinery and equipment, an additional $60,000 worth of inventories, and an additional $15,000 worth of fixtures.
$1 million-valued property has an additional $750,000 worth of machinery and equipment, an additional $600,000 worth of inventories, and an additional $150,000 worth of fixtures.
$25 million-valued property has an additional $18.75 million worth of machinery and equipment, an additional $15 million worth of inventories, and an additional $3.75 million worth of fixtures.

Appendix Table 4c: Industrial Property Taxes for the Largest Fifty U.S. Cities (Personal Property = 50% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Arizona	Mesa	0.932%	1,865	39 (2 ↑)	1.408%	28,166	27 (1 ↓)	1.585%	792,346	21 (1 ↑)	X
Arizona	Phoenix	1.320%	2,641	24 (5 ↑)	2.002%	40,048	14 (2 ↑)	2.255%	1,127,592	10 (3 ↑)	X
Arizona	Tucson	1.211%	2,421	27 (2 ↓)	1.824%	36,488	16 (1 ↓)	2.052%	1,025,928	15 (4 ↓)	X
California	Fresno	0.995%	1,991	34 (2 ↑)	0.995%	19,908	38 (1 ↑)	0.995%	497,707	38 (1 ↑)	
California	Long Beach	0.966%	1,932	35 (2 ↑)	0.966%	19,316	39 (1 ↑)	0.966%	482,890	39 (1 ↑)	
California	Los Angeles	0.957%	1,914	37 (1 ↑)	0.957%	19,137	40 (1 ↑)	0.957%	478,418	40 (1 ↑)	
California	Oakland	1.093%	2,187	31 (3 ↑)	1.093%	21,866	35 (2 ↑)	1.093%	546,640	35 (2 ↑)	
California	Sacramento	0.904%	1,807	42 (1 ↑)	0.904%	18,072	44 (1 ↑)	0.904%	451,800	44 (1 ↑)	
California	San Diego	0.940%	1,879	38 (2 ↑)	0.940%	18,794	41 (2 ↑)	0.940%	469,844	41 (2 ↑)	
California	San Francisco	0.930%	1,861	40 (1 ↓)	0.930%	18,608	42 (-)	0.930%	465,200	42 (-)	
California	San Jose	1.025%	2,049	33 (2 ↑)	1.025%	20,493	37 (1 ↑)	1.025%	512,320	37 (1 ↑)	
Colorado	Colorado Springs	1.561%	3,122	16 (10 ↑)	1.561%	31,217	19 (12 ↑)	1.561%	780,435	22 (9 ↑)	
Colorado	Denver	1.766%	3,532	15 (1 ↑)	1.766%	35,320	17 (1 ↑)	1.766%	883,011	18 (1 ↑)	
DC	Washington	0.771%	1,543	45 (1 ↑)	1.409%	28,178	26 (1 ↑)	1.858%	928,788	17 (1 ↑)	X
Florida	Jacksonville	1.138%	2,275	29 (2 ↑)	1.332%	26,645	30 (-)	1.353%	676,515	29 (1 ↑)	X
Florida	Miami	1.284%	2,568	25 (2 ↑)	1.510%	30,202	21 (-)	1.534%	767,104	23 (-)	X
Georgia	Atlanta	1.409%	2,818	21 (2 ↓)	1.409%	28,179	25 (2 ↓)	1.409%	704,478	27 (2 ↓)	
Illinois	Chicago	2.056%	4,112	13 (4 ↓)	2.056%	41,117	13 (3 ↓)	2.056%	1,027,913	14 (4 ↓)	
Indiana	Indianapolis	2.102%	4,204	12 (2 ↑)	2.102%	42,037	12 (2 ↑)	2.102%	1,050,918	13 (3 ↑)	
Kansas	Wichita	1.478%	2,957	18 (2 ↑)	1.478%	29,567	23 (1 ↑)	1.478%	739,174	25 (1 ↑)	
Kentucky	Louisville	0.724%	1,448	47 (-)	0.724%	14,482	48 (-)	0.724%	362,043	48 (-)	
Louisiana	New Orleans	2.111%	4,223	11 (2 ↑)	2.111%	42,226	11 (2 ↑)	2.111%	1,055,643	12 (3 ↑)	
Maryland	Baltimore	1.351%	2,701	23 (1 ↑)	1.351%	27,013	29 (-)	1.351%	675,315	30 (1 ↓)	
Massachusetts	Boston	1.071%	2,142	32 (1 ↑)	1.071%	21,420	36 (-)	1.071%	535,500	36 (-)	
Michigan	Detroit	2.330%	4,659	8 (2 ↑)	2.723%	54,453	3 (1 ↑)	2.723%	1,361,323	3 (1 ↑)	X
Minnesota	Minneapolis	0.958%	1,915	36 (14 ↓)	1.538%	30,762	20 (1 ↓)	1.626%	812,796	20 (-)	X
Missouri	Kansas City	2.276%	4,553	9 (3 ↑)	2.276%	45,526	9 (3 ↑)	2.276%	1,138,155	9 (5 ↑)	
Nebraska	Omaha	1.559%	3,118	17 (-)	1.660%	33,193	18 (2 ↑)	1.670%	835,191	19 (2 ↑)	X
Nevada	Las Vegas	0.913%	1,826	41 (1 ↑)	0.913%	18,260	43 (1 ↑)	0.913%	456,489	43 (1 ↑)	
New Mexico	Albuquerque	1.203%	2,405	28 (2 ↑)	1.203%	24,052	32 (1 ↑)	1.203%	601,297	33 (1 ↑)	
New York	New York City*	0.578%	1,157	49 (41 ↓)	0.578%	11,565	49 (40 ↓)	0.578%	289,135	49 (40 ↓)	
North Carolina	Charlotte	0.884%	1,767	43 (1 ↑)	0.884%	17,674	45 (1 ↑)	0.884%	441,848	45 (1 ↑)	
North Carolina	Raleigh	0.814%	1,628	44 (1 ↑)	0.814%	16,280	46 (1 ↑)	0.814%	406,994	46 (1 ↑)	
Ohio	Columbus	1.275%	2,550	26 (2 ↑)	1.275%	25,499	31 (1 ↑)	1.275%	637,482	31 (1 ↑)	
Oklahoma	Oklahoma City	1.404%	2,808	22 (1 ↑)	1.404%	28,076	28 (-)	1.404%	701,910	28 (-)	
AVERAGE		**1.460%**	**2,920**		**1.549%**	**30,974**		**1.576%**	**787,815**		**N = 11**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Tulsa	1.442%	2,884	20 (1 ↑)	1.442%	28,841	24 (1 ↑)	1.442%	721,035	26 (1 ↑)	
Oregon	Portland	1.964%	3,929	14 (1 ↑)	1.964%	39,286	15 (2 ↑)	1.964%	982,152	16 (1 ↑)	
Pennsylvania	Philadelphia	0.684%	1,368	48 (1 ↑)	1.176%	23,521	33 (1 ↑)	1.271%	635,548	32 (1 ↑)	X
Tennessee	Memphis	2.536%	5,072	5 (1 ↑)	2.536%	50,721	6 (1 ↑)	2.536%	1,268,033	6 (1 ↑)	
Tennessee	Nashville	1.104%	2,209	30 (2 ↑)	1.104%	22,085	34 (1 ↑)	1.104%	552,125	34 (1 ↑)	
Texas	Arlington	2.490%	4,980	6 (1 ↓)	2.490%	49,795	7 (1 ↓)	2.490%	1,244,882	7 (1 ↓)	
Texas	Austin	2.125%	4,250	10 (1 ↑)	2.125%	42,496	10 (1 ↑)	2.125%	1,062,402	11 (1 ↑)	
Texas	Dallas	2.720%	5,441	3 (1 ↑)	2.720%	54,409	4 (1 ↑)	2.720%	1,360,236	4 (1 ↑)	
Texas	El Paso	3.003%	6,006	1 (-)	3.003%	60,062	1 (-)	3.003%	1,501,548	1 (-)	
Texas	Fort Worth	2.694%	5,388	4 (1 ↓)	2.694%	53,876	5 (2 ↓)	2.694%	1,346,902	5 (2 ↓)	
Texas	Houston	2.393%	4,785	7 (-)	2.393%	47,853	8 (-)	2.393%	1,196,330	8 (-)	
Texas	San Antonio	2.873%	5,747	2 (-)	2.873%	57,468	2 (-)	2.873%	1,436,692	2 (-)	
Virginia	Virginia Beach	0.494%	987	50 (-)	0.494%	9,874	50 (-)	0.494%	246,841	50 (-)	
Washington	Seattle	0.728%	1,456	46 (2 ↑)	0.728%	14,563	47 (2 ↑)	0.728%	364,076	47 (2 ↑)	
Wisconsin	Milwaukee	1.467%	2,933	19 (1 ↓)	1.500%	30,001	22 (-)	1.504%	751,792	24 (-)	X
AVERAGE		**1.460%**	**2,920**		**1.549%**	**30,974**		**1.576%**	**787,815**		**N = 11**

* Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.

Note:
$100,000-valued property has an additional $50,000 worth of machinery and equipment, an additional $40,000 worth of inventories, and an additional $10,000 worth of fixtures.
$1 million-valued property has an additional $500,000 worth of machinery and equipment, an additional $400,000 worth of inventories, and an additional $100,000 worth of fixtures.
$25 million-valued property has an additional $12.5 million worth of machinery and equipment, an additional $10 million worth of inventories, and an additional $2.5 million worth of fixtures.

Appendix Table 4d: Industrial Property Taxes for the Largest Fifty U.S. Cities (Personal Property = 60% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Arizona	Mesa	0.746%	1,865	44 (1 ↑)	1.391%	34,763	25 (1 ↑)	1.532%	957,267	20 (1 ↑)	X
Arizona	Phoenix	1.056%	2,641	28 (5 ↑)	1.980%	49,501	13 (-)	2.182%	1,363,932	9 (1 ↑)	X
Arizona	Tucson	0.969%	2,421	32 (2 ↓)	1.800%	44,994	15 (3 ↓)	1.982%	1,238,582	14 (3 ↓)	X
California	Fresno	0.946%	2,364	33 (2 ↑)	0.946%	23,641	36 (1 ↑)	0.946%	591,027	37 (1 ↑)	
California	Long Beach	0.917%	2,294	34 (2 ↑)	0.917%	22,937	38 (1 ↑)	0.917%	573,432	38 (1 ↑)	
California	Los Angeles	0.909%	2,272	35 (2 ↑)	0.909%	22,725	39 (1 ↑)	0.909%	568,122	39 (1 ↑)	
California	Oakland	1.039%	2,597	29 (3 ↑)	1.039%	25,965	33 (2 ↑)	1.039%	649,135	33 (2 ↑)	
California	Sacramento	0.858%	2,146	40 (3 ↑)	0.858%	21,461	44 (2 ↑)	0.858%	536,513	44 (2 ↑)	
California	San Diego	0.893%	2,232	36 (3 ↑)	0.893%	22,318	40 (2 ↑)	0.893%	557,940	40 (2 ↑)	
California	San Francisco	0.884%	2,210	37 (1 ↑)	0.884%	22,097	41 (-)	0.884%	552,425	41 (-)	
California	San Jose	0.973%	2,434	31 (3 ↑)	0.973%	24,335	35 (1 ↑)	0.973%	608,380	36 (1 ↑)	
Colorado	Colorado Springs	1.491%	3,726	17 (5 ↑)	1.491%	37,263	20 (9 ↑)	1.491%	931,584	21 (8 ↑)	
Colorado	Denver	1.681%	4,203	14 (2 ↑)	1.681%	42,031	16 (2 ↑)	1.681%	1,050,777	17 (2 ↑)	
DC	Washington	0.617%	1,543	47 (1 ↑)	1.535%	38,378	19 (1 ↑)	1.894%	1,183,788	15 (-)	X
Florida	Jacksonville	1.118%	2,794	26 (1 ↑)	1.273%	31,836	26 (1 ↑)	1.290%	806,281	27 (-)	X
Florida	Miami	1.268%	3,171	21 (-)	1.449%	36,234	21 (-)	1.469%	917,911	22 (-)	X
Georgia	Atlanta	1.392%	3,481	20 (2 ↓)	1.392%	34,806	24 (2 ↓)	1.392%	870,158	25 (1 ↓)	
Illinois	Chicago	1.645%	4,112	15 (-)	1.645%	41,117	17 (-)	1.645%	1,027,913	18 (-)	
Indiana	Indianapolis	2.012%	5,030	11 (-)	2.012%	50,301	12 (2 ↑)	2.012%	1,257,521	13 (1 ↑)	
Kansas	Wichita	1.241%	3,103	22 (2 ↑)	1.241%	31,032	28 (2 ↑)	1.241%	775,804	29 (1 ↑)	
Kentucky	Louisville	0.636%	1,591	46 (1 ↑)	0.636%	15,910	48 (1 ↑)	0.636%	397,756	48 (1 ↑)	
Louisiana	New Orleans	2.126%	5,315	10 (1 ↓)	2.126%	53,147	11 (1 ↓)	2.126%	1,328,681	12 (-)	
Maryland	Baltimore	1.192%	2,981	24 (1 ↑)	1.192%	29,809	30 (1 ↑)	1.192%	745,214	30 (1 ↑)	
Massachusetts	Boston	0.857%	2,142	41 (1 ↓)	0.857%	21,420	45 (2 ↓)	0.857%	535,500	45 (2 ↓)	
Michigan	Detroit	1.927%	4,817	12 (1 ↑)	2.398%	59,954	7 (1 ↑)	2.398%	1,498,846	7 (1 ↑)	X
Minnesota	Minneapolis	0.766%	1,915	43 (15 ↓)	1.230%	30,762	29 (5 ↓)	1.300%	812,796	26 (3 ↓)	X
Missouri	Kansas City	2.153%	5,382	8 (2 ↑)	2.153%	53,822	9 (2 ↑)	2.153%	1,345,545	10 (3 ↑)	
Nebraska	Omaha	1.516%	3,789	16 (1 ↑)	1.596%	39,903	18 (1 ↑)	1.605%	1,002,942	19 (1 ↑)	X
Nevada	Las Vegas	0.868%	2,170	38 (4 ↑)	0.868%	21,702	42 (3 ↑)	0.868%	542,542	42 (3 ↑)	
New Mexico	Albuquerque	1.149%	2,874	25 (1 ↑)	1.149%	28,735	31 (1 ↑)	1.149%	718,379	31 (1 ↑)	
New York	New York City*	0.463%	1,157	49 (37 ↓)	0.463%	11,565	49 (34 ↓)	0.463%	289,135	49 (33 ↓)	
North Carolina	Charlotte	0.864%	2,161	39 (2 ↑)	0.864%	21,610	43 (1 ↑)	0.864%	540,240	43 (1 ↑)	
North Carolina	Raleigh	0.782%	1,956	42 (2 ↑)	0.782%	19,558	46 (1 ↑)	0.782%	488,939	46 (1 ↑)	
Ohio	Columbus	1.020%	2,550	30 (1 ↑)	1.020%	25,499	34 (-)	1.020%	637,482	34 (-)	
Oklahoma	Oklahoma City	1.435%	3,588	18 (1 ↑)	1.435%	35,875	22 (1 ↑)	1.435%	896,885	23 (2 ↑)	
AVERAGE		**1.371%**	**3,427**		**1.473%**	**36,820**		**1.494%**	**933,965**		**N = 11**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Tulsa	1.428%	3,571	19 (1 ↑)	1.428%	35,708	23 (2 ↑)	1.428%	892,710	24 (2 ↑)	
Oregon	Portland	1.866%	4,665	13 (1 ↑)	1.866%	46,652	14 (2 ↑)	1.866%	1,166,306	16 (1 ↑)	
Pennsylvania	Philadelphia	0.547%	1,368	48 (1 ↑)	0.941%	23,521	37 (1 ↑)	1.017%	635,548	35 (1 ↑)	X
Tennessee	Memphis	2.464%	6,159	6 (1 ↑)	2.464%	61,590	6 (1 ↑)	2.464%	1,539,754	6 (1 ↑)	
Tennessee	Nashville	1.073%	2,682	27 (2 ↑)	1.073%	26,818	32 (1 ↑)	1.073%	670,438	32 (1 ↑)	
Texas	Arlington	2.529%	6,322	5 (-)	2.529%	63,220	5 (-)	2.529%	1,580,507	5 (-)	
Texas	Austin	2.129%	5,321	9 (1 ↓)	2.129%	53,214	10 (1 ↓)	2.129%	1,330,350	11 (2 ↓)	
Texas	Dallas	2.736%	6,841	3 (1 ↑)	2.736%	68,407	3 (1 ↑)	2.736%	1,710,164	3 (1 ↑)	
Texas	El Paso	3.005%	7,512	1 (-)	3.005%	75,122	1 (-)	3.005%	1,878,038	1 (-)	
Texas	Fort Worth	2.733%	6,833	4 (1 ↓)	2.733%	68,334	4 (1 ↓)	2.733%	1,708,348	4 (1 ↓)	
Texas	Houston	2.394%	5,985	7 (1 ↓)	2.394%	59,849	8 (2 ↓)	2.394%	1,496,219	8 (2 ↓)	
Texas	San Antonio	2.884%	7,209	2 (-)	2.884%	72,090	2 (-)	2.884%	1,802,241	2 (-)	
Virginia	Virginia Beach	0.427%	1,067	50 (-)	0.427%	10,674	50 (-)	0.427%	266,841	50 (-)	
Washington	Seattle	0.697%	1,742	45 (1 ↑)	0.697%	17,417	47 (1 ↑)	0.697%	435,433	47 (1 ↑)	
Wisconsin	Milwaukee	1.228%	3,070	23 (-)	1.255%	31,368	27 (1 ↑)	1.258%	785,968	28 (-)	X
AVERAGE		**1.371%**	**3,427**		**1.473%**	**36,820**		**1.494%**	**933,965**		**N = 11**

* Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.

Note:
$100,000-valued property has an additional $75,000 worth of machinery and equipment, an additional $60,000 worth of inventories, and an additional $15,000 worth of fixtures.
$1 million-valued property has an additional $750,000 worth of machinery and equipment, an additional $600,000 worth of inventories, and an additional $150,000 worth of fixtures.
$25 million-valued property has an additional $18.75 million worth of machinery and equipment, an additional $15 million worth of inventories, and an additional $3.75 million worth of fixtures.

Appendix Table 4e: Industrial Property Taxes for Selected Rural Municipalities (Personal Property = 50% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Monroeville	0.656%	1,311	48 (2 ↓)	0.656%	13,112	48 (2 ↓)	0.656%	327,795	48 (2 ↓)	
Alaska	Ketchican	0.752%	1,503	40 (3 ↑)	0.882%	17,641	39 (-)	0.896%	447,992	38 (-)	X
Arizona	Safford	1.241%	2,482	21 (12 ↑)	1.718%	34,360	11 (5 ↑)	1.895%	947,424	6 (10 ↑)	X
Arkansas	Pocahontas	0.743%	1,486	42 (2 ↑)	0.743%	14,864	43 (1 ↑)	0.743%	371,612	43 (1 ↑)	
California	Yreka	0.845%	1,689	37 (3 ↑)	0.845%	16,893	41 (-)	0.845%	422,320	41 (-)	
Colorado	Walsenburg	1.811%	3,621	6 (-)	1.811%	36,211	6 (4 ↑)	1.811%	905,287	7 (3 ↑)	
Connecticut	Litchfield	0.742%	1,484	43 (4 ↓)	0.742%	14,842	44 (4 ↓)	0.742%	371,042	44 (4 ↓)	
Delaware	Georgetown	0.236%	473	50 (-)	0.236%	4,727	50 (-)	0.236%	118,169	50 (-)	
Florida	Moore Haven	1.503%	3,007	12 (1 ↑)	1.756%	35,117	8 (1 ↑)	1.783%	891,398	9 (1 ↓)	X
Georgia	Fitzgerald	1.535%	3,070	10 (1 ↑)	1.535%	30,702	14 (1 ↓)	1.535%	767,556	14 (1 ↑)	
Hawaii	Kauai	0.377%	753	49 (-)	0.377%	7,533	49 (-)	0.377%	188,325	49 (-)	
Idaho	St. Anthony	0.722%	1,443	45 (7 ↓)	1.122%	22,439	27 (9 ↓)	1.199%	599,417	27 (9 ↓)	X
Illinois	Galena	1.252%	2,503	19 (2 ↑)	1.252%	25,035	23 (1 ↑)	1.252%	625,875	24 (1 ↑)	
Indiana	North Vernon	2.297%	4,593	4 (1 ↓)	2.297%	45,930	4 (1 ↓)	2.297%	1,148,250	4 (1 ↓)	
Iowa	Hampton	0.818%	1,636	38 (13 ↓)	1.255%	25,091	21 (7 ↓)	1.407%	703,352	18 (6 ↓)	X
Kansas	Iola	2.418%	4,836	3 (1 ↑)	2.418%	48,364	3 (1 ↑)	2.418%	1,209,109	3 (1 ↑)	
Kentucky	Morehead	0.674%	1,347	46 (1 ↑)	0.674%	13,474	46 (1 ↑)	0.674%	336,850	46 (1 ↑)	
Louisiana	Natchitoches	1.286%	2,572	16 (2 ↑)	1.286%	25,723	18 (4 ↑)	1.286%	643,064	20 (3 ↑)	
Maine	Rockland	1.269%	2,539	17 (5 ↑)	1.269%	25,388	19 (6 ↑)	1.269%	634,700	21 (5 ↑)	
Maryland	Denton	1.115%	2,231	26 (2 ↑)	1.115%	22,309	29 (2 ↑)	1.115%	557,733	30 (1 ↑)	
Massachusetts	Adams	1.250%	2,501	20 (3 ↑)	1.250%	25,010	24 (2 ↑)	1.250%	625,240	25 (2 ↑)	
Michigan	Manistique	1.520%	3,040	11 (1 ↓)	1.745%	34,906	10 (3 ↓)	1.745%	872,649	11 (4 ↓)	X
Minnesota	Glencoe	0.998%	1,996	30 (18 ↓)	1.586%	31,713	13 (7 ↓)	1.675%	837,731	12 (6 ↓)	X
Mississippi	Philadelphia	2.104%	4,208	5 (-)	2.104%	42,084	5 (-)	2.104%	1,052,100	5 (-)	
Missouri	Boonville	1.656%	3,312	9 (1 ↓)	1.656%	33,119	12 (-)	1.656%	827,975	13 (-)	
Montana	Glasgow	0.746%	1,491	41 (5 ↓)	1.053%	21,054	32 (5 ↓)	1.478%	738,933	16 (2 ↓)	X
Nebraska	Sidney	1.677%	3,354	8 (1 ↑)	1.783%	35,662	7 (1 ↑)	1.794%	897,189	8 (1 ↑)	X
Nevada	Fallon	1.021%	2,042	29 (-)	1.021%	20,423	33 (1 ↓)	1.021%	510,570	33 (1 ↓)	
New Hampshire	Lancaster	1.460%	2,919	14 (1 ↑)	1.460%	29,195	16 (1 ↑)	1.460%	729,864	17 (2 ↑)	
New Jersey	Maurice River Twp	1.386%	2,772	15 (2 ↑)	1.386%	27,718	17 (3 ↑)	1.386%	692,944	19 (2 ↑)	
New Mexico	Santa Rosa	0.854%	1,709	36 (5 ↑)	0.854%	17,088	40 (2 ↑)	0.854%	427,200	40 (2 ↑)	
New York	Warsaw	1.753%	3,507	7 (-)	1.753%	35,066	9 (2 ↑)	1.753%	876,654	10 (1 ↑)	
North Carolina	Edenton	0.911%	1,822	34 (3 ↑)	0.911%	18,218	37 (1 ↑)	0.911%	455,452	37 (2 ↑)	
North Dakota	Devils Lake	0.667%	1,333	47 (1 ↑)	0.667%	13,334	47 (1 ↑)	0.667%	333,338	47 (1 ↑)	
Ohio	Bryan	1.203%	2,406	23 (7 ↓)	1.203%	24,064	25 (6 ↓)	1.203%	601,609	26 (6 ↓)	
AVERAGE		**1.225%**	**2,451**		**1.285%**	**25,691**		**1.304%**	**652,041**		**N = 10**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Mangum	0.979%	1,958	31 (1 ↓)	0.979%	19,583	34 (1 ↓)	0.979%	489,578	34 (1 ↓)	
Oregon	Tillamook	0.930%	1,859	33 (2 ↑)	0.930%	18,593	36 (1 ↑)	0.930%	464,832	36 (1 ↑)	
Pennsylvania	Ridgway	1.494%	2,988	13 (1 ↑)	1.494%	29,880	15 (-)	1.494%	746,992	15 (2 ↑)	
Rhode Island	Hopkinton	1.117%	2,234	25 (1 ↑)	1.117%	22,338	28 (1 ↑)	1.117%	558,448	29 (-)	
South Carolina	Mullins	3.588%	7,176	1 (-)	3.588%	71,761	1 (-)	3.588%	1,794,024	1 (-)	
South Dakota	Vermillion	1.132%	2,265	24 (8 ↑)	1.132%	22,645	26 (9 ↑)	1.132%	566,132	28 (7 ↑)	
Tennessee	Savannah	0.942%	1,884	32 (2 ↑)	0.942%	18,839	35 (1 ↑)	0.942%	470,978	35 (1 ↑)	
Texas	Fort Stockton	2.539%	5,078	2 (-)	2.539%	50,782	2 (-)	2.539%	1,269,550	2 (-)	
Utah	Richfield	0.895%	1,790	35 (11 ↓)	0.895%	17,904	38 (10 ↓)	0.895%	447,603	39 (11 ↓)	
Vermont	Hartford	1.258%	2,515	18 (2 ↑)	1.258%	25,153	20 (3 ↑)	1.258%	628,835	22 (2 ↑)	
Virginia	Wise	0.752%	1,504	39 (3 ↑)	0.752%	15,038	42 (1 ↑)	0.752%	375,945	42 (1 ↑)	
Washington	Okanogan	1.101%	2,202	27 (4 ↑)	1.101%	22,022	30 (4 ↑)	1.101%	550,562	31 (3 ↑)	
West Virginia	Elkins	1.100%	2,199	28 (1 ↓)	1.100%	21,991	31 (1 ↓)	1.100%	549,787	32 (2 ↓)	
Wisconsin	Rice Lake	1.221%	2,441	22 (3 ↓)	1.254%	25,078	22 (1 ↓)	1.257%	628,711	23 (1 ↓)	X
Wyoming	Worland	0.727%	1,453	44 (1 ↑)	0.727%	14,534	45 (-)	0.727%	363,338	45 (-)	
AVERAGE		**1.225%**	**2,451**		**1.285%**	**25,691**		**1.304%**	**652,041**		**N = 10**

$100,000-valued property has an additional $50,000 worth of machinery and equipment, an additional $40,000 worth of inventories, and an additional $10,000 worth of fixtures.
$1 million-valued property has an additional $500,000 worth of machinery and equipment, an additional $400,000 worth of inventories, and an additional $100,000 worth of fixtures.
$25 million-valued property has an additional $12.5 million worth of machinery and equipment, an additional $10 million worth of inventories, and an additional $2.5 million worth of fixtures.

Appendix Table 4f: Industrial Property Taxes for Selected Rural Municipalities (Personal Property = 60% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Monroeville	0.623%	1,557	44 (2 ↑)	0.623%	15,572	46 (-)	0.623%	389,295	46 (-)	
Alaska	Ketchican	0.740%	1,851	39 (1 ↑)	0.845%	21,121	39 (1 ↓)	0.856%	534,992	39 (2 ↓)	X
Arizona	Safford	0.993%	2,482	25 (14 ↑)	1.639%	40,973	9 (5 ↑)	1.780%	1,112,738	6 (8 ↑)	X
Arkansas	Pocahontas	0.740%	1,849	40 (3 ↑)	0.740%	18,491	43 (1 ↑)	0.740%	462,287	43 (1 ↑)	
California	Yreka	0.802%	2,006	36 (1 ↓)	0.802%	20,060	41 (2 ↓)	0.802%	501,505	41 (2 ↓)	
Colorado	Walsenburg	1.720%	4,300	6 (-)	1.720%	43,001	6 (2 ↑)	1.720%	1,075,029	7 (1 ↑)	
Connecticut	Litchfield	0.632%	1,581	43 (1 ↓)	0.632%	15,811	45 (2 ↓)	0.632%	395,279	45 (2 ↓)	
Delaware	Georgetown	0.189%	473	50 (-)	0.189%	4,727	50 (-)	0.189%	118,169	50 (-)	
Florida	Moore Haven	1.472%	3,680	10 (-)	1.674%	41,853	8 (1 ↓)	1.696%	1,059,798	9 (2 ↓)	X
Georgia	Fitzgerald	1.501%	3,753	9 (-)	1.501%	37,527	12 (-)	1.501%	938,185	12 (1 ↑)	
Hawaii	Kauai	0.301%	753	49 (-)	0.301%	7,533	49 (-)	0.301%	188,325	49 (-)	
Idaho	St. Anthony	0.577%	1,443	47 (3 ↓)	1.090%	27,244	20 (4 ↓)	1.151%	719,548	19 (2 ↓)	X
Illinois	Galena	1.001%	2,503	22 (3 ↑)	1.001%	25,035	26 (3 ↑)	1.001%	625,875	27 (2 ↑)	
Indiana	North Vernon	2.197%	5,493	3 (-)	2.197%	54,930	3 (-)	2.197%	1,373,250	3 (-)	
Iowa	Hampton	0.654%	1,636	42 (10 ↓)	1.004%	25,091	25 (8 ↓)	1.125%	703,352	20 (4 ↓)	X
Kansas	Iola	2.024%	5,060	5 (-)	2.024%	50,597	5 (-)	2.024%	1,264,931	5 (-)	
Kentucky	Morehead	0.593%	1,481	46 (1 ↑)	0.593%	14,813	47 (-)	0.593%	370,315	47 (-)	
Louisiana	Natchitoches	1.295%	3,237	12 (1 ↑)	1.295%	32,370	14 (1 ↑)	1.295%	809,245	16 (2 ↑)	
Maine	Rockland	1.062%	2,654	18 (4 ↑)	1.062%	26,542	21 (5 ↑)	1.062%	663,550	23 (3 ↑)	
Maryland	Denton	0.971%	2,428	26 (5 ↑)	0.971%	24,284	30 (5 ↑)	0.971%	607,108	30 (5 ↑)	
Massachusetts	Adams	1.000%	2,501	24 (2 ↑)	1.000%	25,010	28 (2 ↑)	1.000%	625,240	29 (1 ↑)	
Michigan	Manistique	1.252%	3,130	13 (1 ↓)	1.522%	38,060	11 (2 ↓)	1.522%	951,492	11 (1 ↓)	X
Minnesota	Glencoe	0.799%	1,996	37 (23 ↓)	1.269%	31,713	15 (4 ↓)	1.340%	837,731	15 (6 ↓)	X
Mississippi	Philadelphia	2.104%	5,261	4 (-)	2.104%	52,605	4 (-)	2.104%	1,315,125	4 (-)	
Missouri	Boonville	1.575%	3,938	8 (-)	1.575%	39,383	10 (-)	1.575%	984,569	10 (1 ↑)	
Montana	Glasgow	0.596%	1,491	45 (4 ↓)	0.990%	24,740	29 (9 ↓)	1.477%	923,253	13 (1 ↓)	X
Nebraska	Sidney	1.624%	4,061	7 (-)	1.709%	42,725	7 (1 ↓)	1.718%	1,073,763	8 (2 ↓)	X
Nevada	Fallon	0.971%	2,427	27 (-)	0.971%	24,266	31 (-)	0.971%	606,645	31 (-)	
New Hampshire	Lancaster	1.168%	2,919	15 (2 ↑)	1.168%	29,195	17 (4 ↑)	1.168%	729,864	18 (3 ↑)	
New Jersey	Maurice River Twp	1.109%	2,772	16 (5 ↑)	1.109%	27,718	18 (7 ↑)	1.109%	692,944	21 (4 ↑)	
New Mexico	Santa Rosa	0.813%	2,032	35 (1 ↑)	0.813%	20,321	40 (-)	0.813%	508,032	40 (-)	
New York	Warsaw	1.403%	3,507	11 (-)	1.403%	35,066	13 (-)	1.403%	876,654	14 (1 ↑)	
North Carolina	Edenton	0.866%	2,165	34 (-)	0.866%	21,653	38 (1 ↓)	0.866%	541,327	38 (-)	
North Dakota	Devils Lake	0.533%	1,333	48 (-)	0.533%	13,334	48 (-)	0.533%	333,338	48 (-)	
Ohio	Bryan	0.963%	2,406	28 (8 ↓)	0.963%	24,064	32 (8 ↓)	0.963%	601,609	32 (8 ↓)	
AVERAGE		**1.104%**	**2,759**		**1.165%**	**29,119**		**1.183%**	**739,581**		**N = 10**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Mangum	1.001%	2,502	23 (-)	1.001%	25,023	27 (-)	1.001%	625,571	28 (1 ↓)	
Oregon	Tillamook	0.883%	2,208	32 (1 ↑)	0.883%	22,080	36 (-)	0.883%	551,988	36 (-)	
Pennsylvania	Ridgway	1.195%	2,988	14 (1 ↑)	1.195%	29,880	16 (2 ↑)	1.195%	746,992	17 (2 ↑)	
Rhode Island	Hopkinton	0.934%	2,334	29 (1 ↑)	0.934%	23,341	33 (1 ↑)	0.934%	583,535	33 (1 ↑)	
South Carolina	Mullins	3.426%	8,565	1 (-)	3.426%	85,649	1 (-)	3.426%	2,141,236	1 (-)	
South Dakota	Vermillion	0.906%	2,265	31 (7 ↑)	0.906%	22,645	35 (7 ↑)	0.906%	566,132	35 (7 ↑)	
Tennessee	Savannah	0.915%	2,288	30 (1 ↓)	0.915%	22,876	34 (1 ↓)	0.915%	571,901	34 (1 ↓)	
Texas	Fort Stockton	2.539%	6,348	2 (-)	2.539%	63,478	2 (-)	2.539%	1,586,938	2 (-)	
Utah	Richfield	0.878%	2,195	33 (17 ↓)	0.878%	21,948	37 (18 ↓)	0.878%	548,710	37 (17 ↓)	
Vermont	Hartford	1.006%	2,515	21 (3 ↑)	1.006%	25,153	24 (4 ↑)	1.006%	628,835	26 (2 ↑)	
Virginia	Wise	0.774%	1,934	38 (1 ↓)	0.774%	19,343	42 (1 ↓)	0.774%	483,570	42 (1 ↓)	
Washington	Okanogan	1.053%	2,632	19 (9 ↑)	1.053%	26,320	22 (10 ↑)	1.053%	658,004	24 (8 ↑)	
West Virginia	Elkins	1.096%	2,740	17 (1 ↑)	1.096%	27,399	19 (4 ↑)	1.096%	684,980	22 (1 ↑)	
Wisconsin	Rice Lake	1.022%	2,556	20 (1 ↓)	1.049%	26,221	23 (1 ↓)	1.052%	657,292	25 (3 ↓)	X
Wyoming	Worland	0.686%	1,716	41 (4 ↑)	0.686%	17,161	44 (1 ↑)	0.686%	429,018	44 (1 ↑)	
AVERAGE		**1.104%**	**2,759**		**1.165%**	**29,119**		**1.183%**	**739,581**		**N = 10**

$100,000-valued property has an additional $75,000 worth of machinery and equipment, an additional $60,000 worth of inventories, and an additional $15,000 worth of fixtures.
$1 million-valued property has an additional $750,000 worth of machinery and equipment, an additional $600,000 worth of inventories, and an additional $150,000 worth of fixtures.
$25 million-valued property has an additional $18.75 million worth of machinery and equipment, an additional $15 million worth of inventories, and an additional $3.75 million worth of fixtures.

Appendix Table 4g: Preferential Treatment of Personal Property, Largest City in Each State (2018)

State	City	Machinery & Equipment		Manufacturers' Inventories		Fixtures		Rural Municipality
		Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Are preferences for personal property the same as in the state's rural municipality?
Alabama	Birmingham			X	X			Yes
Alaska	Anchorage		X		X		X	No - See note below
Arizona	Phoenix		X	X	X		X	Yes
Arkansas	Little Rock							No - See note below
California	Los Angeles			X	X			Yes
Colorado	Denver			X	X			Yes
Connecticut	Bridgeport	X	X	X	X			Yes
DC	Washington		***	X	X		***	Yes
Delaware	Wilmington	X	X	X	X	X	X	Yes
Florida	Jacksonville		X	X	X		X	Yes
Georgia	Atlanta				X			Yes
Hawaii	Honolulu	X	X	X	X	X	X	Yes
Idaho	Boise		X	X	X		X	Yes
Illinois	Chicago	X	X	X	X	X	X	Yes
Illinois	Aurora	X	X	X	X	X	X	Yes
Indiana	Indianapolis			X	X			Yes
Iowa	Des Moines	X	X	X	X	X	X	Yes
Kansas	Wichita	X	X	X	X			Yes
Kentucky	Louisville		X		X		-	Yes
Louisiana	New Orleans		-		-		-	Yes
Maine	Portland	X	X	X	X			Yes
Maryland	Baltimore	X	X	X	X		-	Yes
Massachusetts	Boston	X	X	X	X	X	X	Yes
Michigan	Detroit		X	X	X		X	Yes
Minnesota	Minneapolis	X	X	X	X	X	X	Yes
Mississippi	Jackson							Yes
Missouri	Kansas City		X	X	X		X	Yes
Montana	Billings		***	X	X		***	Yes
Nebraska	Omaha		***	X	X		***	Yes
Nevada	Las Vegas			X	X			Yes
New Hampshire	Manchester	X	X	X	X	X	X	Yes
New Jersey	Newark	X	X	X	X	X	X	Yes
New Mexico	Albuquerque			X	X			No - See note below
New York	New York City	X	X	X	X	X	X	Yes
New York	Buffalo	X	X	X	X	X	X	Yes
	Number of Cities	**21**	**31**	**43**	**47**	**15**	**23**	**No = 7**

State	City	Machinery & Equipment		Manufacturers' Inventories		Fixtures		Rural Municipality
		Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Are preferences for personal property the same as in the state's rural municipality?
North Carolina	Charlotte			X	X			Yes
North Dakota	Fargo	X	X	X	X	X	X	Yes
Ohio	Columbus	X	X	X	X	X	X	Yes
Oklahoma	Oklahoma City		-		-		-	Yes
Oregon	Portland			X	X			Yes
Pennsylvania	Philadelphia	X	X	X	X	X	X	Yes
Rhode Island	Providence	X	X	X	X		-	No - See note below
South Carolina	Columbia			X	X			Yes
South Dakota	Sioux Falls	X	X	X	X	X	X	Yes
Tennessee	Nashville		X		X		X	Yes
Texas	Houston							Yes
Utah	Salt Lake City			X	X			Yes
Vermont	Burlington		X	X	X		X	No - See note below
Virginia	Virginia Beach		X	X	X		-	No - See note below
Washington	Seattle			X	X			Yes
West Virginia	Charleston							Yes
Wisconsin	Milwaukee	X	X	X	X		-	Yes
Wyoming	Cheyenne			X	X			No - See note below
	Number of Cities	**21**	**31**	**43**	**47**	**15**	**23**	**No = 7**

* Preferential treatment means there are statutory provisions that result in lower property taxes on personal property than on real property, which could be due to exemptions/credits, the nominal tax rate, or the assessment ratio. Preferences are usually fairly uniform within a state.
** A dash ("-") indicates that real property is treated preferentially to personal property.
*** In the District of Columbia and Nebraska, there is a personal property exemption which is capped at a fixed value amount. This provides personal property with preferential treatment for a $100,000-valued property but the non-preferential treatment embedded in the tax system overwhelms that benefit at higher values.
*** In Montana, whether personal property is treated preferentially to real property depends on the total value of a parcel. At low values, machinery and equipment and fixtures are taxed preferentially, because of Montana's exemption of the first $100,000 of property value. But at high values, personal property is being taxed more heavily than real property because the state has a system of tiered assessment ratios.

Differences in Preferential Treatment in Rural Municipalities
-Alaska: Ketchikan has a full exemption for manufacturers' inventories.
-Arkansas: Pocahontas has preferential treatment for manufacturers' inventories.
-New Mexico: Santa Rosa has preferential treatment for machinery/equipment and fixtures.
-Rhode Island: Hopkinton does not treat real property preferentially to fixtures.
-Vermont: Hartford has a full exemption for machinery/equipment and fixtures.
-Virginia: Wise treats real property preferentially to machinery/equipment.
-Wyoming: Worland does not have preferential treatment for manufacturers' inventories.

Appendix Table 5a: Apartment Property Taxes for Largest City in Each State

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change From '17**	
Alabama	Birmingham	1.438%	9,057	28	1 ↑	
Alaska	Anchorage	1.478%	9,309	26	6 ↑	X
Arizona	Phoenix	1.356%	8,540	32	2 ↑	X
Arkansas	Little Rock	1.400%	8,820	29	2 ↑	
California	Los Angeles	1.196%	7,535	40	-	
Colorado	Denver	0.635%	4,003	51	1 ↓	
Connecticut	Bridgeport	3.221%	20,291	3	1 ↑	
DC	Washington	0.757%	4,769	49	-	X
Delaware	Wilmington	1.369%	8,623	30	3 ↑	X
Florida	Jacksonville	1.604%	10,104	21	3 ↑	X
Georgia	Atlanta	1.500%	9,452	25	1 ↑	
Hawaii	Honolulu	0.326%	2,051	53	-	X
Idaho	Boise	1.366%	8,608	31	3 ↓	X
Illinois	Aurora*	3.812%	24,013	2	1 ↑	X
Illinois	Chicago	1.544%	9,726	22	17 ↑	X
Indiana	Indianapolis	1.864%	11,746	18	2 ↑	X
Iowa	Des Moines	3.184%	20,059	4	1 ↑	X
Kansas	Wichita	1.289%	8,120	35	2 ↑	
Kentucky	Louisville	1.107%	6,975	42	1 ↑	X
Louisiana	New Orleans	1.450%	9,132	27	-	
Maine	Portland	2.012%	12,679	14	3 ↑	
Maryland	Baltimore	2.306%	14,530	13	1 ↑	
Massachusetts	Boston	0.908%	5,722	45	-	X
Michigan	Detroit	4.144%	26,107	1	1 ↑	
Minnesota	Minneapolis	1.642%	10,346	19	3 ↑	X
Mississippi	Jackson	2.765%	17,419	6	2 ↑	
Missouri	Kansas City	1.501%	9,457	24	6 ↑	X
Montana	Billings	0.898%	5,660	46	-	X
Nebraska	Omaha	1.975%	12,445	17	1 ↑	X
Nevada	Las Vegas	1.104%	6,953	43	2 ↓	
New Hampshire	Manchester	2.012%	12,674	15	1 ↑	X
New Jersey	Newark	2.822%	17,780	5	1 ↑	X
New Mexico	Albuquerque	1.321%	8,323	33	2 ↑	
New York	Buffalo*	2.536%	15,977	9	1 ↑	X
New York	New York City**	1.201%	7,567	39	38 ↓	X
AVERAGE		**1.680%**	**10,585**			**N = 28**

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change From '17**	
North Carolina	Charlotte	0.996%	6,275	44	-	
North Dakota	Fargo	1.107%	6,975	41	1 ↑	X
Ohio	Columbus	2.471%	15,566	10	2 ↑	X
Oklahoma	Oklahoma City	1.263%	7,955	36	2 ↑	
Oregon	Portland	2.455%	15,469	11	2 ↑	
Pennsylvania	Philadelphia	1.303%	8,207	34	2 ↑	X
Rhode Island	Providence	1.977%	12,458	16	3 ↑	
South Carolina	Charleston	1.245%	7,844	38	13 ↓	
South Dakota	Sioux Falls	1.533%	9,660	23	-	X
Tennessee	Nashville***	1.247%	7,856	37	30 ↓	X
Texas	Houston	2.417%	15,230	12	3 ↑	
Utah	Salt Lake City	0.669%	4,214	50	1 ↑	X
Vermont	Burlington	2.639%	16,628	8	3 ↑	X
Virginia	Virginia Beach	0.827%	5,208	48	-	
Washington	Seattle	0.889%	5,598	47	-	
West Virginia	Charleston	1.618%	10,192	20	1 ↑	
Wisconsin	Milwaukee	2.722%	17,150	7	2 ↑	
Wyoming	Cheyenne	0.623%	3,924	52	-	
AVERAGE		**1.680%**	**10,585**			**N = 28**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
** Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.
*** Nashville is now the largest city in the Tennessee and replaces Memphis.

Note: Property has an additional $30,000 worth of fixtures.

Appendix Table 5b: Apartment Property Taxes for the Largest Fifty U.S. Cities

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change From '17**	
Arizona	Mesa	0.933%	5,879	44	-	X
Arizona	Phoenix	1.356%	8,540	25	-	X
Arizona	Tucson	1.256%	7,911	31	4 ↓	X
California	Fresno	1.244%	7,839	33	1 ↓	
California	Long Beach	1.207%	7,606	34	1 ↑	
California	Los Angeles	1.196%	7,535	36	-	
California	Oakland	1.367%	8,610	24	-	
California	Sacramento	1.130%	7,116	39	-	
California	San Diego	1.175%	7,400	37	1 ↑	
California	San Francisco	1.163%	7,327	38	1 ↓	
California	San Jose	1.281%	8,069	29	1 ↓	
Colorado	Colorado Springs	0.548%	3,454	50	-	
Colorado	Denver	0.635%	4,003	49	-	
DC	Washington	0.757%	4,769	48	-	X
Florida	Jacksonville	1.604%	10,104	18	1 ↑	X
Florida	Miami	1.791%	11,284	16	1 ↑	X
Georgia	Atlanta	1.500%	9,452	22	2 ↓	
Illinois	Chicago	1.544%	9,726	19	15 ↑	X
Indiana	Indianapolis	1.864%	11,746	15	1 ↑	X
Kansas	Wichita	1.289%	8,120	28	2 ↑	
Kentucky	Louisville	1.107%	6,975	40	1 ↑	X
Louisiana	New Orleans	1.450%	9,132	23	1 ↓	
Maryland	Baltimore	2.306%	14,530	12	-	
Massachusetts	Boston	0.908%	5,722	45	-	X
Michigan	Detroit	4.144%	26,107	1	1 ↑	
Minnesota	Minneapolis	1.642%	10,346	17	1 ↑	X
Missouri	Kansas City	1.501%	9,457	21	2 ↑	X
Nebraska	Omaha	1.975%	12,445	14	1 ↑	X
Nevada	Las Vegas	1.104%	6,953	41	1 ↓	
New Mexico	Albuquerque	1.321%	8,323	26	-	
New York	New York City*	1.201%	7,567	35	34 ↓	X
North Carolina	Charlotte	0.996%	6,275	42	-	
North Carolina	Raleigh	0.978%	6,162	43	-	
Ohio	Columbus	2.471%	15,566	9	1 ↑	X
Oklahoma	Oklahoma City	1.263%	7,955	30	1 ↑	
AVERAGE		**1.634%**	**10,297**			**N = 23**

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change From '17**	
Oklahoma	Tulsa	1.504%	9,476	20	1 ↑	X
Oregon	Portland	2.455%	15,469	10	1 ↑	
Pennsylvania	Philadelphia	1.303%	8,207	27	2 ↑	X
Tennessee	Memphis	2.864%	18,042	4	-	X
Tennessee	Nashville	1.247%	7,856	32	1 ↑	X
Texas	Arlington	2.724%	17,164	6	2 ↑	X
Texas	Austin	2.231%	14,054	13	1 ↑	X
Texas	Dallas	2.691%	16,955	8	1 ↑	
Texas	El Paso	2.937%	18,503	2	3 ↑	
Texas	Fort Worth	2.830%	17,831	5	2 ↓	X
Texas	Houston	2.417%	15,230	11	2 ↑	
Texas	San Antonio	2.874%	18,104	3	3 ↑	X
Virginia	Virginia Beach	0.827%	5,208	47	-	
Washington	Seattle	0.889%	5,598	46	-	
Wisconsin	Milwaukee	2.722%	17,150	7	-	
AVERAGE		**1.634%**	**10,297**			**N = 23**

* Estimates of effective tax rates in New York City declined sharply due to new data on sales ratios, not a change in tax policy. See the box on page 23 for details.

Note: Property has an additional $30,000 worth of fixtures.

Appendix Table 5c: Apartment Property Taxes for Selected Rural Municipalities

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Change From '17**	
Alabama	Monroeville	0.819%	5,161	43	-	
Alaska	Ketchican	1.054%	6,641	36	1 ↓	X
Arizona	Safford	0.910%	5,731	40	1 ↑	X
Arkansas	Pocahontas	0.760%	4,789	44	1 ↑	X
California	Yreka	1.056%	6,652	34	-	
Colorado	Walsenburg	0.643%	4,050	48	1 ↓	
Connecticut	Litchfield	2.012%	12,676	20	2 ↓	X
Delaware	Georgetown	0.556%	3,503	50	1 ↓	X
Florida	Moore Haven	2.133%	13,436	15	1 ↓	X
Georgia	Fitzgerald	1.709%	10,769	25	3 ↓	
Hawaii	Kauai	0.570%	3,594	49	1 ↑	X
Idaho	St. Anthony	1.374%	8,658	26	1 ↓	X
Illinois	Galena	2.384%	15,021	10	-	X
Indiana	North Vernon	1.773%	11,172	23	3 ↓	X
Iowa	Hampton	2.657%	16,742	5	3 ↓	X
Kansas	Iola	2.113%	13,311	16	3 ↓	
Kentucky	Morehead	1.028%	6,478	38	-	X
Louisiana	Natchitoches	0.905%	5,704	41	1 ↑	
Maine	Rockland	2.308%	14,540	11	1 ↑	
Maryland	Denton	1.937%	12,201	21	2 ↑	
Massachusetts	Adams	2.073%	13,059	18	1 ↓	X
Michigan	Manistique	2.988%	18,827	2	1 ↑	
Minnesota	Glencoe	1.835%	11,560	22	4 ↑	X
Mississippi	Philadelphia	2.104%	13,256	17	1 ↓	
Missouri	Boonville	1.054%	6,641	35	3 ↓	X
Montana	Glasgow	1.039%	6,543	37	-	X
Nebraska	Sidney	2.148%	13,534	14	1 ↑	X
Nevada	Fallon	1.278%	8,048	28	1 ↓	
New Hampshire	Lancaster	2.780%	17,517	4	1 ↑	X
New Jersey	Maurice River Twp	2.640%	16,631	6	2 ↑	X
New Mexico	Santa Rosa	0.944%	5,950	39	1 ↑	
New York	Warsaw	3.340%	21,040	1	-	X
North Carolina	Edenton	1.135%	7,152	32	1 ↓	
North Dakota	Devils Lake	1.270%	8,000	29	1 ↓	X
Ohio	Bryan	1.761%	11,092	24	-	X
AVERAGE		**1.634%**	**10,293**			**N = 29**

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**Municipality**	**Tax Rate**	**Tax Bill**	**Rank**	**Change From '17**	
Oklahoma	Mangum	0.881%	5,549	42	3 ↓	
Oregon	Tillamook	1.162%	7,321	30	-	
Pennsylvania	Ridgway	2.846%	17,928	3	1 ↑	X
Rhode Island	Hopkinton	2.032%	12,801	19	-	X
South Carolina	Mullins	2.585%	16,287	7	-	
South Dakota	Vermillion	2.157%	13,587	13	8 ↑	X
Tennessee	Savannah	1.064%	6,701	33	3 ↑	X
Texas	Fort Stockton	2.539%	15,996	8	2 ↓	
Utah	Richfield	0.706%	4,449	46	2 ↓	X
Vermont	Hartford	2.484%	15,650	9	2 ↑	X
Virginia	Wise	0.646%	4,068	47	1 ↑	
Washington	Okanogan	1.347%	8,486	27	2 ↑	
West Virginia	Elkins	1.150%	7,246	31	2 ↑	X
Wisconsin	Rice Lake	2.275%	14,331	12	3 ↓	
Wyoming	Worland	0.723%	4,558	45	1 ↑	
AVERAGE		**1.634%**	**10,293**			**N = 29**

Note: Property has an additional $30,000 worth of fixtures.

Appendix Table 6a: Commercial-Homestead Classification Ratio for Largest City in Each State

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
City	State	Rank	Ratio	Chg. from 2017	Assessment Ratio	Nominal Tax Rate	Exemptions & Credits	Assessment Limits	Sales Ratio*
Birmingham	Alabama	10	2.183	0.003	X		X		
Anchorage	Alaska	37	1.072	-0.001			X		
Phoenix	Arizona	15	2.076	0.079	X	X			+
Little Rock	Arkansas	28	1.334	0.074			X	X	+
Los Angeles	California	42	1.011	-0.001			X		
Denver	Colorado	3	3.885	0.386	X				-
Bridgeport	Connecticut	51	0.985	-0.015					-
Washington	DC	11	2.127	-0.040		X	X		-
Wilmington	Delaware	30	1.190	0.312					+
Jacksonville	Florida	13	2.103	0.741			X	X	
Atlanta	Georgia	25	1.358	-0.079			X		
Honolulu	Hawaii	2	3.973	0.413		X	X		-
Boise	Idaho	21	1.684	-0.179			X		-
Aurora	Illinois	34	1.095	-0.001			X		
Chicago	Illinois	5	2.943	0.177	X		X	X	
Indianapolis	Indiana	7	2.425	0.072			X		-
Des Moines	Iowa	22	1.628	0.037	X		-		+
Wichita	Kansas	8	2.256	0.052	X		X		+
Louisville	Kentucky	41	1.012	0.052					+
New Orleans	Louisiana	14	2.088	0.051	X		X		+
Portland	Maine	36	1.074	-0.003			X		
Baltimore	Maryland	50	0.991	-0.079					-
Boston	Massachusetts	1	4.425	0.188		X	X		-
Detroit	Michigan	32	1.173	-0.020		X			-
Minneapolis	Minnesota	19	1.794	-0.143	X	X	X		-
Jackson	Mississippi	16	1.953	0.126	X		X		+
Kansas City	Missouri	18	1.836	-0.011	X	X			-
Billings	Montana	26	1.345	0.016	X				-
Omaha	Nebraska	43	1.000	-0.022					
Las Vegas	Nevada	49	0.997	0.000					-
Manchester	New Hampshire	45	1.000	0.000					
Newark	New Jersey	43	1.000	0.000					
Albuquerque	New Mexico	31	1.189	0.027		X	X	X	
Buffalo	New York	23	1.622	0.159		X	X		
New York City**	New York	6	2.763	-1.204	X	-	X	X	-

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
City	**State**	**Rank**	**Ratio**	**Chg. from 2017**	**Assessment Ratio**	**Nominal Tax Rate**	**Exemptions & Credits**	**Assessment Limits**	**Sales Ratio***
Charlotte	North Carolina	45	1.000	0.000					
Fargo	North Dakota	35	1.087	0.000	X				-
Columbus	Ohio	29	1.320	0.036		X	X		-
Oklahoma City	Oklahoma	39	1.061	-0.002			X		
Portland	Oregon	45	1.000	0.000					
Philadelphia	Pennsylvania	12	2.105	-0.037		X	X		
Providence	Rhode Island	17	1.952	0.000		X			
Charleston	South Carolina	4	3.119	0.018	X		X		
Sioux Falls	South Dakota	40	1.051	-0.075		X			-
Nashville***	Tennessee	24	1.600	0.000	X				
Houston	Texas	27	1.342	0.055			X		-
Salt Lake City	Utah	20	1.747	-0.006			X		-
Burlington	Vermont	33	1.156	0.050	X	-	X		-
Virginia Beach	Virginia	53	0.915	-0.007					-
Seattle	Washington	45	1.000	0.000					
Charleston	West Virginia	9	2.222	0.113		X			+
Milwaukee	Wisconsin	38	1.062	-0.009			X		
Cheyenne	Wyoming	52	0.954	0.037					-
	TOTAL/AVERAGE		**1.666**	**0.025**	**16**	**14**	**29**	**5**	**9 (+), 22 (-)**

*For sales ratio, "+" indicates that the sales ratio is higher for commercial properties and thus increases the classification ratio, while "-" indicates that the sales ratio is lower for commercial properties and thus decreases the classification ratio. For a few cities, one of the other three features of the property tax system favors commercial properties over homesteads, and this is also indicated with a "-".

** Estimates of the classification ratio in New York City declined sharply due to new data on sales ratios for commercial properties, not a change in tax policy. See the box on page 23 for details.

*** Nashville is now the largest city in the Tennessee and replaces Memphis.

Appendix Table 6b: Apartment-Homestead Classification Ratio for Largest City in Each State

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
City	State	Rank	Ratio	Chg. from 2017	Assessment Ratio	Nominal Tax Rate	Exemptions & Credits	Assessment Limits	Sales Ratio*
Birmingham	Alabama	4	2.183	0.003	X		X		
Anchorage	Alaska	29	1.072	-0.001			X		
Phoenix	Arizona	23	1.119	-0.003		X			
Little Rock	Arkansas	16	1.334	0.074			X	X	+
Los Angeles	California	36	1.011	-0.001			X		
Denver	Colorado	48	0.985	-0.053					-
Bridgeport	Connecticut	52	0.928	-0.072					-
Washington	DC	25	1.096	-0.021			X		-
Wilmington	Delaware	41	1.000	0.000					
Jacksonville	Florida	6	2.103	0.741			X	X	
Atlanta	Georgia	14	1.358	-0.079			X		
Honolulu	Hawaii	24	1.110	-0.008			X		-
Boise	Idaho	9	1.684	-0.179			X		-
Aurora	Illinois	26	1.095	-0.001			X		
Chicago	Illinois	22	1.119	0.324	-		X	X	
Indianapolis	Indiana	3	2.425	0.072			X		-
Des Moines	Iowa	12	1.452	-0.097	X		X		-
Wichita	Kansas	34	1.022	-0.002			X		
Louisville	Kentucky	35	1.012	0.052					+
New Orleans	Louisiana	13	1.447	-0.013			X		
Portland	Maine	28	1.074	-0.003			X		
Baltimore	Maryland	47	0.991	-0.079					-
Boston	Massachusetts	7	1.970	0.016			X		
Detroit	Michigan	19	1.261	0.005		X			
Minneapolis	Minnesota	18	1.296	-0.014	X		X		-
Jackson	Mississippi	8	1.953	0.126	X		X		+
Kansas City	Missouri	41	1.000	0.000					
Billings	Montana	45	1.000	0.000					
Omaha	Nebraska	37	1.000	-0.022					
Las Vegas	Nevada	49	0.966	0.000					-
Manchester	New Hampshire	44	1.000	0.000					
Newark	New Jersey	37	1.000	0.000					
Albuquerque	New Mexico	32	1.060	0.026			X	X	
Buffalo	New York	10	1.622	0.159		X	X		
New York City**	New York	2	2.550	-2.250	X	-	X	X	-

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
City	**State**	**Rank**	**Ratio**	**Chg. from 2017**	**Assessment Ratio**	**Nominal Tax Rate**	**Exemptions & Credits**	**Assessment Limits**	**Sales Ratio***
Charlotte	North Carolina	45	1.000	0.000					
Fargo	North Dakota	27	1.087	0.000	X				-
Columbus	Ohio	17	1.320	0.036		X	X		-
Oklahoma City	Oklahoma	30	1.061	0.000			X		
Portland	Oregon	37	1.000	0.000					
Philadelphia	Pennsylvania	20	1.224	-0.021			X		
Providence	Rhode Island	37	1.000	0.000					
Charleston	South Carolina	1	3.119	0.018	X		X		
Sioux Falls	South Dakota	33	1.051	-0.075		X			-
Nashville***	Tennessee	11	1.600	0.000	X				
Houston	Texas	15	1.357	0.053			X		-
Salt Lake City	Utah	51	0.961	-0.003					-
Burlington	Vermont	21	1.185	0.071	X	-	X		-
Virginia Beach	Virginia	53	0.871	-0.004					-
Seattle	Washington	41	1.000	0.000					
Charleston	West Virginia	5	2.148	-0.106		X			+
Milwaukee	Wisconsin	31	1.060	-0.009			X		
Cheyenne	Wyoming	50	0.963	0.043					-
	TOTAL/AVERAGE		**1.308**	**-0.024**	**9**	**6**	**29**	**5**	**4 (+), 19 (-)**

* For sales ratio, "+" indicates that the sales ratio is higher for apartments and thus increases the classification ratio, while "-" indicates that the sales ratio is lower for apartments and thus decreases the classification ratio. For a few cities, one of the other three features of the property tax system favors apartments over homesteads, and this is also indicated with a “-”.

** Estimates of the classification ratio in New York City declined sharply due to new data on sales ratios for apartment buildings, not a change in tax policy. See the box on page 23 for details.

*** Nashville is now the largest city in the Tennessee and replaces Memphis.

Appendix Table 7: Impact of Assessment Limits

Difference in Property Taxes between a Newly Purchased Home and a Home Subject to that Has Been Owned for the Average Duration for the City (For Median Valued Home)

		Tax Rate on Median-Valued Home			Tax Bill on Median-Valued Home			
State	City	Newly Purchased Home	Home Owned for Average Duration in City	Difference	Newly Purchased Home	Home Owned for Average Duration in City	Difference	% Difference
Arizona	Mesa	0.831	0.665	0.166	1,867	1,494	373	20.0%
Arizona	Phoenix	1.272	0.936	0.336	2,939	2,162	777	26.4%
Arizona	Tucson	1.163	1.083	0.080	1,749	1,629	120	6.9%
Arkansas	Little Rock	1.123	1.050	0.073	1,908	1,783	125	6.6%
California	Fresno	1.207	0.759	0.448	2,831	1,780	1,050	37.1%
California	Long Beach	1.192	0.777	0.415	6,648	4,335	2,313	34.8%
California	Los Angeles	1.183	0.694	0.489	7,655	4,490	3,165	41.3%
California	Oakland	1.353	0.706	0.647	9,289	4,845	4,444	47.8%
California	Sacramento	1.106	0.594	0.512	3,715	1,995	1,720	46.3%
California	San Diego	1.161	0.784	0.377	6,969	4,703	2,266	32.5%
California	San Francisco	1.156	0.620	0.536	12,759	6,849	5,911	46.3%
California	San Jose	1.270	0.730	0.540	10,857	6,242	4,615	42.5%
Florida	Jacksonville	1.266	0.794	0.472	2,241	1,405	836	37.3%
Florida	Miami	1.602	0.867	0.735	5,160	2,792	2,369	45.9%
Illinois	Chicago	1.628	1.448	0.180	4,165	3,706	459	11.0%
Michigan	Detroit	3.277	2.361	0.916	1,645	1,185	460	28.0%
New Mexico	Albuquerque	1.267	1.235	0.032	2,494	2,432	62	2.5%
New York	New York City*	1.160	0.495	0.665	7,063	3,015	4,049	57.3%
Oklahoma	Oklahoma City	1.176	1.126	0.050	1,861	1,782	79	4.2%
Oklahoma	Tulsa	1.413	1.354	0.059	1,973	1,891	82	4.1%
Oregon	Portland*	2.455	1.656	0.799	10,497	7,077	3,419	32.6%
South Carolina	Charleston	0.372	0.268	0.104	1,283	924	359	28.0%
Texas	Arlington	2.137	2.062	0.075	3,587	3,461	126	3.5%
Texas	Austin	1.884	1.884	0.000	6,267	6,267	0	0.0%
Texas	Dallas	2.155	2.155	0.000	4,108	4,108	0	0.0%
Texas	El Paso	2.640	2.640	0.000	3,372	3,372	0	0.0%
Texas	Fort Worth	2.237	2.158	0.079	3,789	3,655	135	3.6%
Texas	Houston	1.778	1.778	0.000	3,086	3,086	0	0.0%
Texas	San Antonio	2.438	2.438	0.000	3,613	3,613	0	0.0%
	AVERAGE	**1.548**	**1.245**	**0.303**	**4,669**	**3,313**	**1,356**	**29.0%**

Notes: Table is for states with parcel-specific assessment limits. Taxes on newly purchased homes come from Appendix Tables 2a and 2d, which ignore assessment limits. Taxes on homes owned for the average duration in each city come from Appendix Tables 2b and 2e, which do account for assessment limits. See Methodology section for details.

* New York City and Portland (OR) have unique assessment limits, because they do not reset when a property is sold like in other cities. For these cities, table 7 shows the difference in property taxes for a newly-built home versus a home built prior to the implementation of assessment limits (1981 in New York City; 1996 in Portland). (See footnote 48 on page 50 for details on the methodology for these two cities).