

## Michigan at a Crossroads



# Infrastructure Investment and Financing for the Incoming 2019 Gubernatorial Administration

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## What is Infrastructure Investment, and Why is it Important?

Michigan state and local governments and their various public components (counties, cities, townships, school districts, public colleges and universities, special districts, development authorities and so on) spent about \$6.6 billion on capital outlay (or infrastructure) in fiscal year 2016 (as measured by the U.S. Census Bureau). Capital expenditure by state and local government is important for a number of reasons. The benefits include the direct effects for public services to individuals and businesses (transportation, education, and recreation for example), and the implications for public safety and environmental degradation from declining quality of public infrastructure (regarding congestion, water, and sanitation for instance). There also is a potentially beneficial relationship between public capital and long-run economic growth, although there has been some ambiguity in the research results regarding this last issue.

As defined by the Governments Division of the Census Bureau, state and local government capital expenditure includes expenditure for construction of buildings and improvements, for purchase of land, equipment, and structures, and for capital leases. The capital spending data collected and reported by the U.S. Census Bureau allow consistent comparisons among the states, although these data may differ from similar information reported in a state or city government's budget. The Census applies a consistent definition of capital spending, even though individual states may label capital spending differently, and the data are adjusted for differences in the way states report spending—including different fiscal years and different financial accounting practices. Importantly, the Census reports aggregate data for state government, local governments, and other governmental entities such as public universities and special districts, permitting an examination of overall public capital investment in a state regardless of the institutional structure.

## Magnitude and History of State-Local Capital (Infrastructure) Spending in Michigan

The data collected and reported by the Census Bureau reveal several important results and patterns concerning public capital (infrastructure) spending in Michigan, as shown in the number of figures and tables.

### Magnitude of Capital Spending

Spending is substantial – \$6.6 billion in 2016 – which amounts to \$665 per person, 1.5 percent of state personal income, and almost 6.8 percent of total state and local government spending (see Figures 1 – 3) (Fisher and Wassmer, 2015).

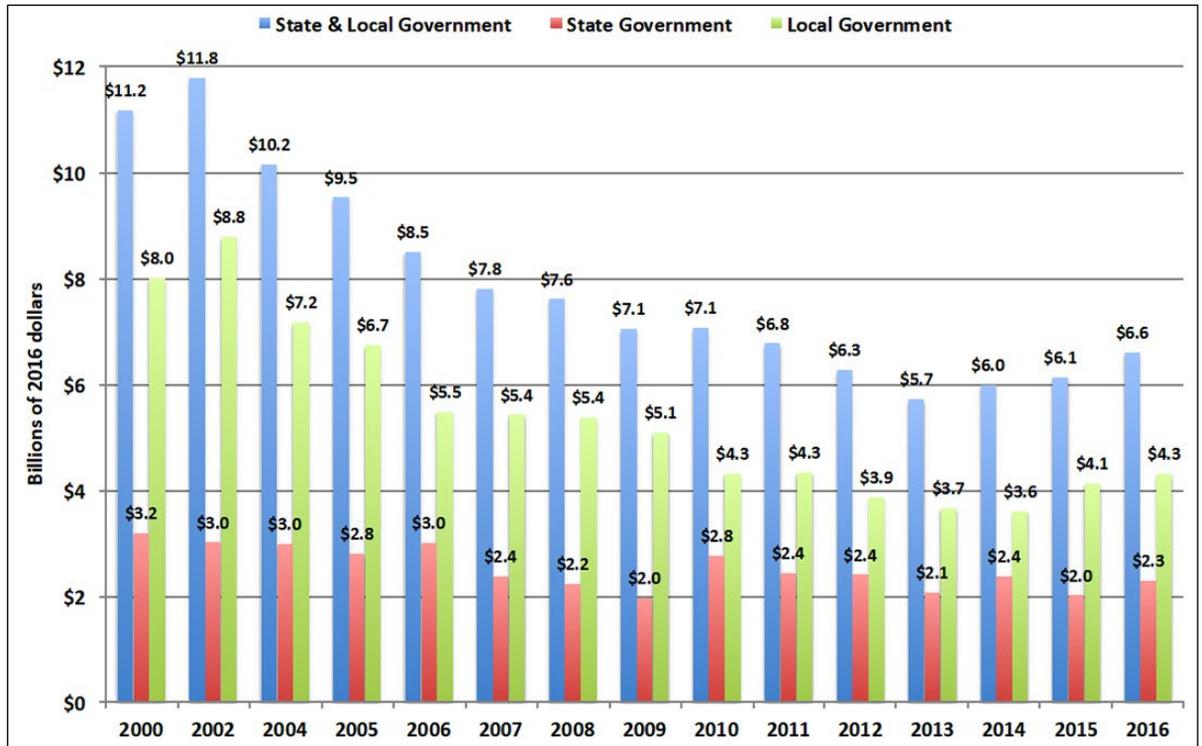
Of this spending in 2016, about 65 percent (\$4.3 billion) was made by local governments and associated entities, whereas only about 35 percent (\$2.3 billion) was made by the state government or state universities. Consequently, direct capital spending accounted for about 3 percent of overall state government spending (including the universities), but 9 percent of total local government budgets.

This pattern is relatively consistent except for the years 2010 through 2014 following the Great Recession when the share of capital spending by state government was higher. Of course, much of local government capital spending – especially for transportation – is funded by grants from the state or federal government.

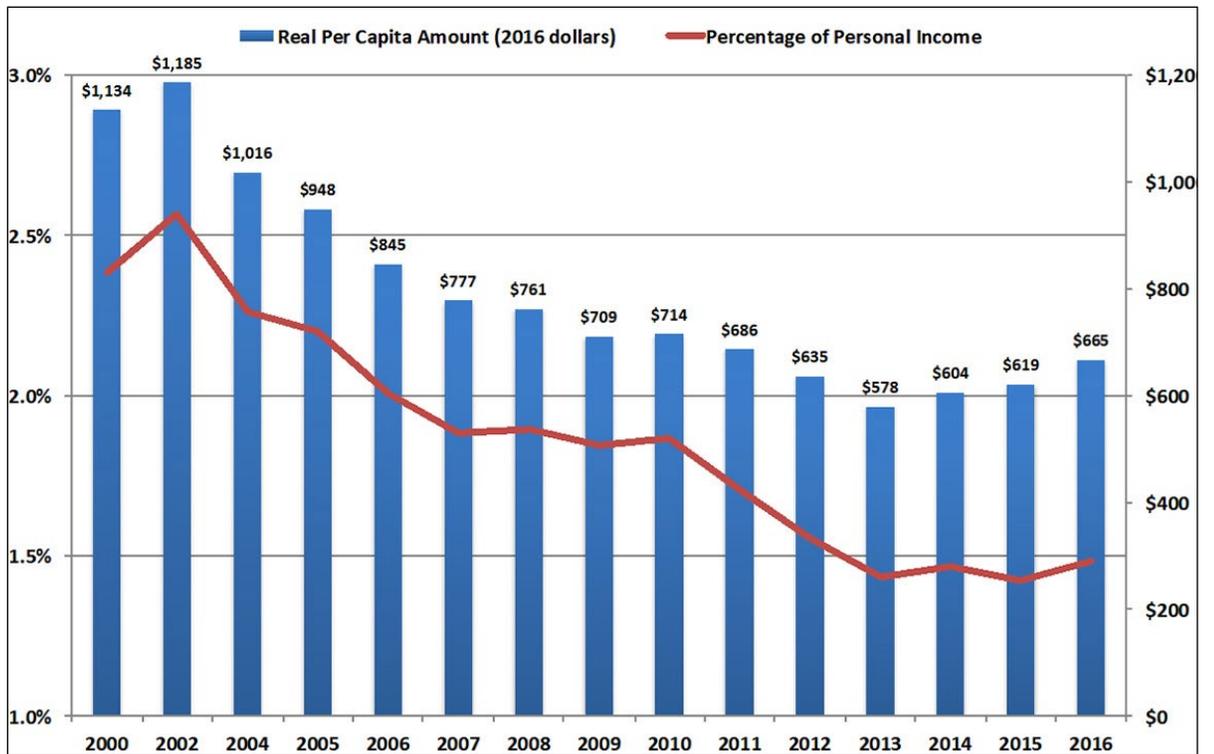
The composition of capital spending differs substantially between the state and various types of local governments (see Figure 4). State government capital spending is largely in two sectors – state universities (61 percent) and highways (34 percent). In contrast, capital spending by the mix of local governments is divided among a number of categories, with elementary and secondary education (25 percent), public utilities (17 percent), and highways (16 percent) the largest.



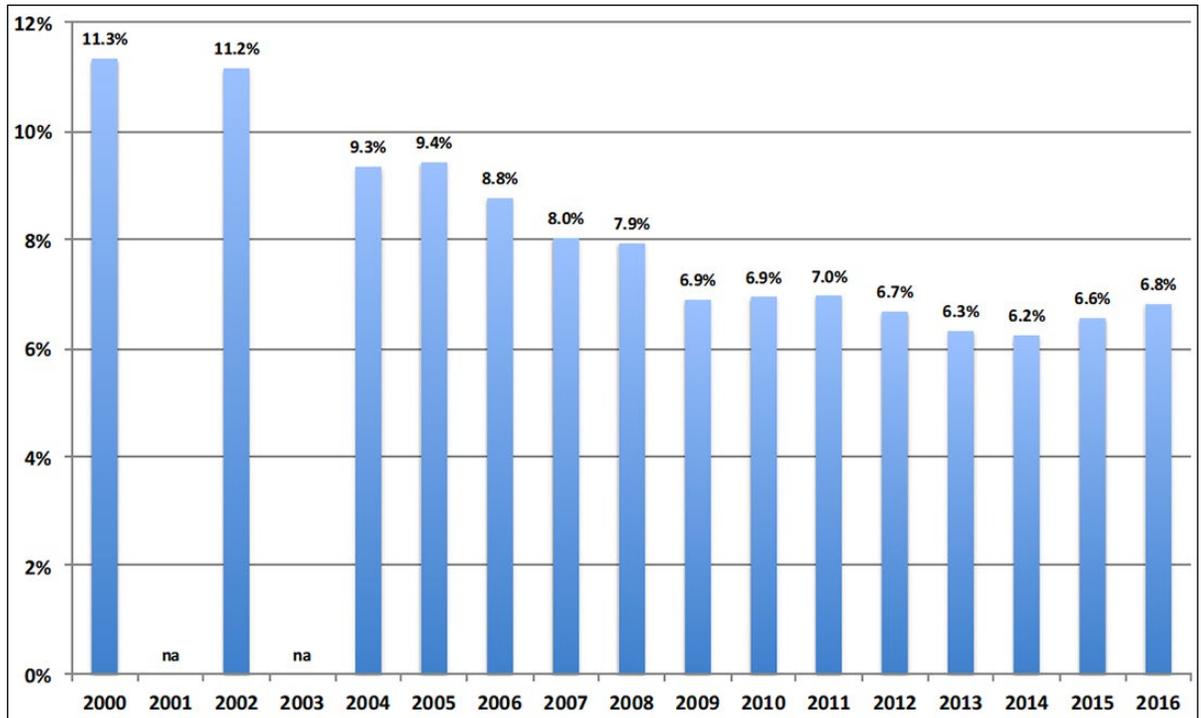
**Figure 1.  
Real Capital  
Outlay,  
Michigan  
(billions of  
2016 dollars)**



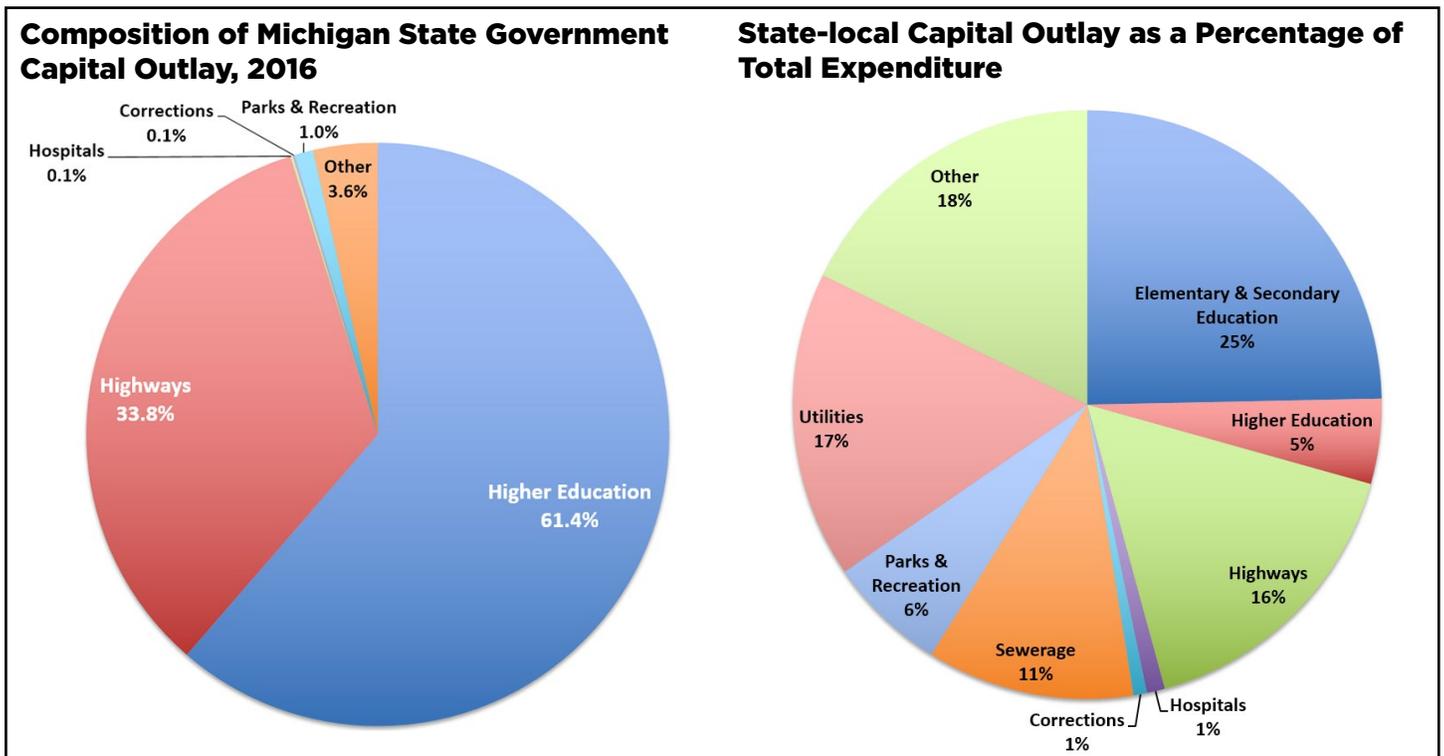
**Figure 2.  
Michigan  
State-Local  
Government  
Capital  
Outlay**



**Figure 3. Michigan State-Local Capital Outlay as a Percentage of Total State-Local Expenditure, Twenty-first Century**



**Figure 4.**



**History of Capital Spending Over Time and Compared to Other States**

Despite the substantial magnitude of state-local capital spending in 2016, both the absolute and relative amounts have decreased during this century (since 2000) (Fisher and Wassmer, 2016). Real capital outlay declined from \$10 to \$12 billion in the 2000

to 2004 years to about \$6 to \$6.5 billion in the most recent four years. Annual capital spending per capita declined from more than \$1,000 per person to about \$600, and capital spending fell from about 2.5 percent of state personal income to about 1.5 percent. In other words, state and local government capital spending has not kept pace with either population or income in the state.

One reason for the decline in state-local capital expenditure is that it has become a less significant component of state and local government budgets (Fisher and Wassmer, 2016). Capital spending amounted to 10 or 11 percent of total state-local spending in the early years of the century but only about 6 to 7 percent in the most recent eight years.

The apparent decline in capital spending by state and local government in Michigan likely did improve since 2016, the most recently available Census data. The additional revenue from action taken in 2016 to increase vehicle registration fees and motor fuel tax rates was dedicated to reducing state government debt for the first two years, but then was dedicated to additional highway funding subsequently. That began in the current fiscal year. In addition, the state government appropriated other funds in FY 2017 and 2018 for highway expenditure, and some additional expenditure directed at water infrastructure in Flint also has occurred.

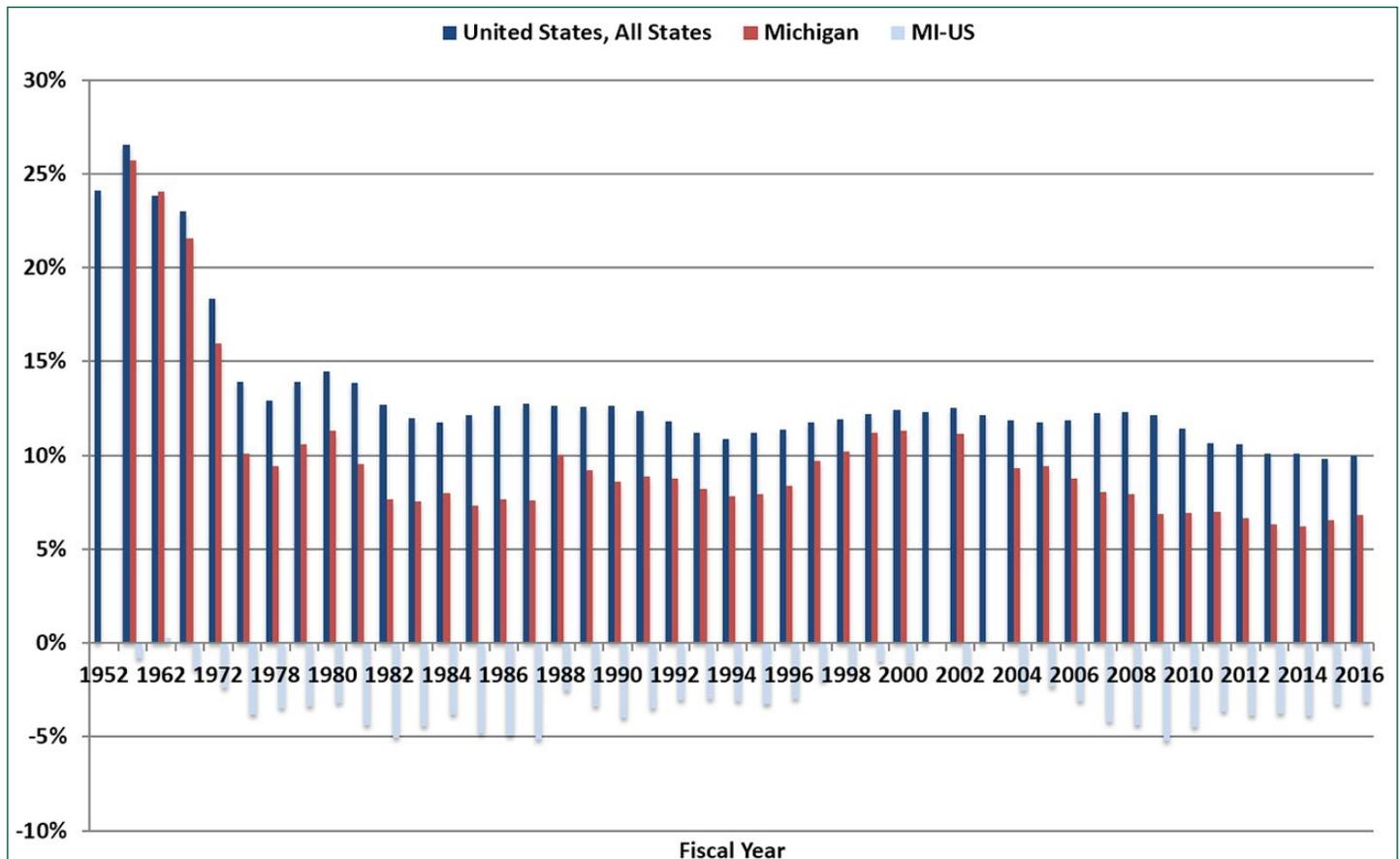
In fact, capital spending by state and local governments in Michigan has been a smaller component of overall government spending in Michigan than in other states since 1970 (see Figure 5). In the 1950s and 1960s, capital spending by state and local governments in Michigan accounted for 20 to 25 percent of overall spending, a share about the same as in all states.

Beginning in the 1970s, the share of overall state-local spending for capital has been consistently and substantially less than in other states. Capital spending as a share of total spending in recent years in Michigan has been 3 to 4 percentage points lower than in the average of all states. In short, for the past 50 years governments in Michigan have devoted a smaller share of state-local resources to infrastructure investment than has been the case nationally.

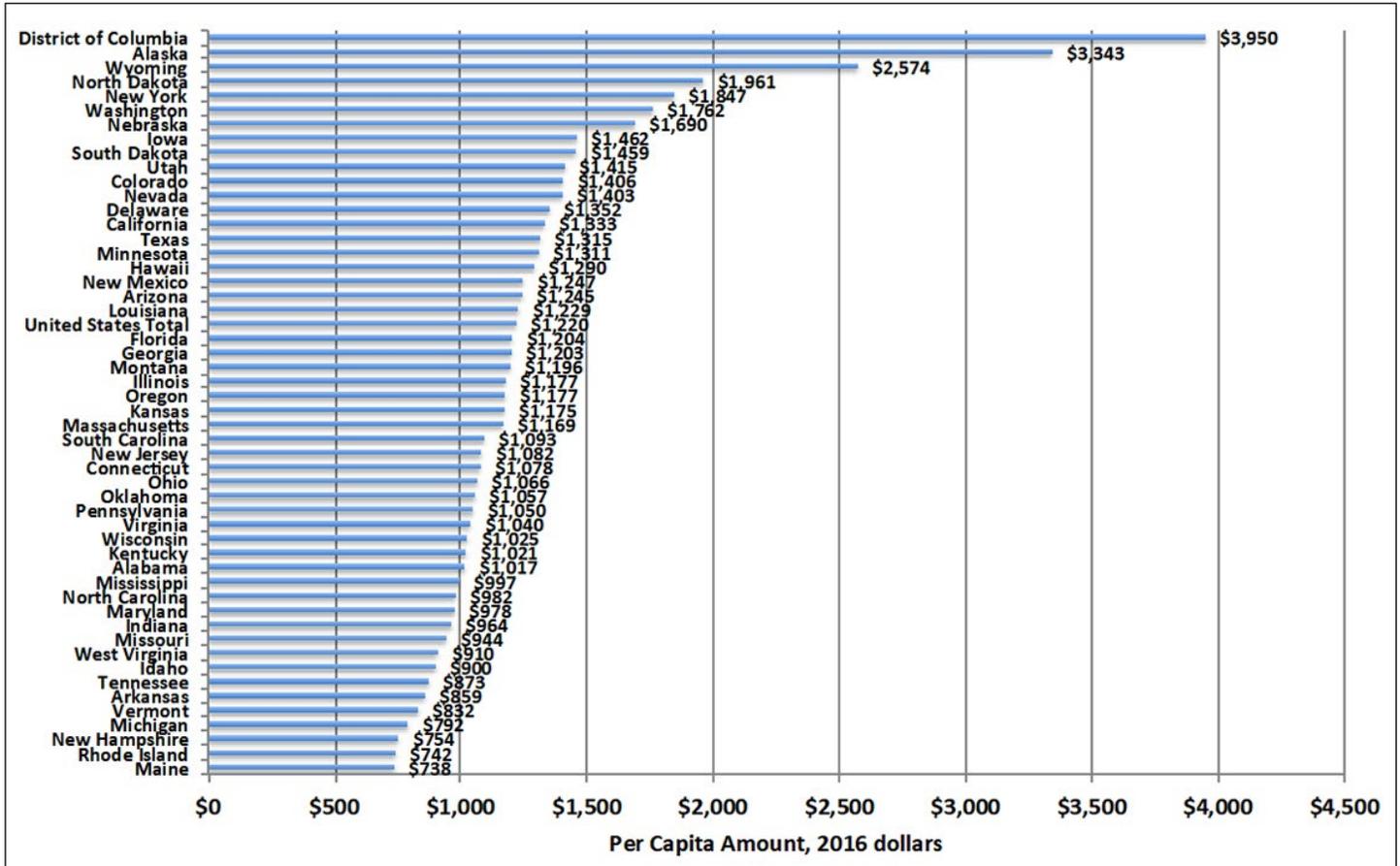
The relatively low level of spending on public capital or infrastructure in Michigan compared to other states is confirmed by looking at average annual capital spending per person in the years 2000 through 2016 (see Figure 6 on page 6). Michigan ranks 4<sup>th</sup> lowest among the states, with average annual spending per person of \$792 compared to an average of \$1,220 nationally. Moreover, capital spending by state and local governments in Michigan was substantially less than all of the other Great Lakes states (the closest is Indiana at \$964 per person).

The fact that capital or infrastructure spending by state and local governments and their associated components in Michigan has been low compared to all states nationally for an extended period is confirmed by the data in Table 1 (Fisher and Wassmer, 2015) on page 7. Michigan ranks fourth lowest in capital spending per person in the 2000 to 2016 years, eighth lowest in capital

**Figure 5. State-Local Capital Outlay as a Percentage of Total Expenditure**



**Figure 6. Average Annual Real Per Capita Capital Outlay, Total, 2000-2016**



spending relative to state personal income, and fourth lowest in capital spending as a share of total government spending. Michigan has been near the bottom by all three measures. The relative magnitudes are telling. While state and local governments nationally were allocating an average of 11 percent of total spending to capital (infrastructure), governments in Michigan were allocating less than 8 percent. Nationally, state and local governments spent almost \$15,500 per person on capital investment over this period, whereas only about \$9,800 in Michigan.

This perspective of capital spending by state and local governments in Michigan for an extended period goes a long way in explaining the condition of public infrastructure in the state. For example, the 2017 Infrastructure Report Card compiled by the American Society of Civil Engineers identifies a poor condition of public infrastructure in the state across the

board, but especially for roads, storm water facilities, drinking water, and schools (ASCE, 2017). Similarly, the recent report by a nonprofit research organization (TRIP 2018) and data compiled by the Federal Highway Administration (Highway Statistics) document the relatively poor quality of Michigan roads, something that seems a popular consensus. Simply put, for an extended time Michigan state and local governments have not invested in infrastructure to the degree required.

How much additional state and local government spending on infrastructure would be necessary to bring Michigan’s annual spending up to the national average of all states? The answer is between \$3 and \$4 billion annually, depending on whether one compares infrastructure spending to population, income, or total government spending. Given that total state-local capital spending in Michigan in 2016 was \$6.6 billion, the increase essentially amounts to about a 50 percent annual increase.

Table 1. State-local Capital Expenditure, 2000-2016

Per Capita Capital Outlay (nominal)		Percentage of Personal Income		Percentage of Total Expenditure	
<i>State &amp; Local</i>	<i>State &amp; Local</i>	<i>State &amp; Local</i>	<i>State &amp; Local</i>	<i>State &amp; Local</i>	<i>State &amp; Local</i>
District of Columbia	\$51,027	Alaska	6.4%	North Dakota	18.1%
Alaska	\$43,152	District of Columbia	5.2%	District of Columbia	17.0%
Wyoming	\$33,264	Wyoming	4.8%	South Dakota	16.6%
North Dakota	\$26,113	North Dakota	4.2%	Wyoming	16.4%
New York	\$23,595	Nebraska	3.5%	Alaska	15.3%
Washington	\$22,400	Utah	3.5%	Nebraska	14.6%
Nebraska	\$21,570	Washington	3.4%	Washington	14.6%
Iowa	\$18,911	Iowa	3.3%	Utah	14.5%
South Dakota	\$18,846	New Mexico	3.3%	Nevada	14.2%
Utah	\$17,952	New York	3.2%	Texas	14.2%
Colorado	\$17,704	South Dakota	3.2%	Iowa	14.1%
Nevada	\$17,289	Louisiana	3.0%	Arizona	13.3%
Delaware	\$17,116	Montana	2.9%	Georgia	13.1%
California	\$17,002	Arizona	2.9%	Colorado	13.0%
Texas	\$16,718	Nevada	2.9%	Florida	12.6%
Hawaii	\$16,717	Texas	2.8%	Montana	12.4%
Minnesota	\$16,565	Mississippi	2.8%	Oklahoma	12.2%
New Mexico	\$15,965	Delaware	2.8%	Kansas	12.2%
Louisiana	\$15,907	Georgia	2.8%	Louisiana	11.6%
Arizona	\$15,535	South Carolina	2.7%	Hawaii	11.5%
<b>United States Total</b>	<b>\$15,492</b>	Hawaii	2.7%	New York	11.4%
Montana	\$15,394	Oregon	2.7%	Minnesota	11.3%
Kansas	\$15,090	Kentucky	2.7%	New Mexico	11.2%
Georgia	\$15,026	Colorado	2.6%	<b>United States Total</b>	<b>11.1%</b>
Florida	\$15,018	Alabama	2.6%	Virginia	11.1%
Oregon	\$14,999	Kansas	2.6%	Delaware	11.0%
Illinois	\$14,951	Minnesota	2.5%	Indiana	10.9%
Massachusetts	\$14,757	California	2.5%	Illinois	10.9%
Connecticut	\$13,823	<b>United States Total</b>	<b>2.5%</b>	Kentucky	10.8%
New Jersey	\$13,737	Florida	2.5%	Idaho	10.8%
South Carolina	\$13,716	West Virginia	2.5%	South Carolina	10.6%
Oklahoma	\$13,653	Oklahoma	2.5%	Alabama	10.6%
Ohio	\$13,498	Ohio	2.4%	Missouri	10.5%
Pennsylvania	\$13,440	Illinois	2.3%	North Carolina	10.4%
Virginia	\$13,301	Indiana	2.3%	Oregon	10.4%
Kentucky	\$13,071	North Carolina	2.3%	Mississippi	10.2%
Wisconsin	\$12,920	Arkansas	2.3%	California	10.2%
Alabama	\$12,834	Idaho	2.2%	Arkansas	10.1%
Mississippi	\$12,762	Wisconsin	2.2%	Ohio	10.0%
Maryland	\$12,401	Pennsylvania	2.2%	West Virginia	9.9%
North Carolina	\$12,340	Missouri	2.2%	Pennsylvania	9.8%
Indiana	\$12,267	Tennessee	2.0%	Wisconsin	9.6%
Missouri	\$11,909	Virginia	2.0%	Massachusetts	9.2%
West Virginia	\$11,661	Massachusetts	1.9%	Tennessee	9.2%
Idaho	\$11,300	<b>Michigan</b>	<b>1.8%</b>	Maryland	9.1%
Tennessee	\$11,001	New Jersey	1.8%	Connecticut	9.0%
Arkansas	\$10,992	Vermont	1.8%	New Jersey	8.8%
Vermont	\$10,719	Maine	1.7%	New Hampshire	8.2%
<b>Michigan</b>	<b>\$9,834</b>	Maryland	1.7%	<b>Michigan</b>	<b>7.8%</b>
New Hampshire	\$9,540	Connecticut	1.6%	Maine	7.3%
Rhode Island	\$9,490	Rhode Island	1.5%	Vermont	7.2%
Maine	\$9,385	New Hampshire	1.4%	Rhode Island	6.5%

Source: U.S. Census Bureau

# Options for Financing Capital Expenditure

Subnational governments face two fundamental choices for financing capital expenditure. First, state-local governments finance capital purchases using two methods, either by using current revenue (“pay-as-you-go”) or by borrowing the funds to be repaid with interest from taxes or other revenues in future years (“pay-as-you-use”). “Pay-as-you-use” finance (borrowing) recognizes both the irregular nature of large capital expenditures and the fact that those who will benefit from the capital facility are the future residents of the jurisdiction. By borrowing the cash for the facility now but effectively paying for the facility with future revenue, those who receive the services from the facility will be paying for them.

In practice, many state and local governments use both financing methods simultaneously. Governments often use current funds for maintenance of capital facilities or for small new projects. On the other hand, governments typically sell bonds (borrow) to generate initial funds for new large capital projects. For instance, a state government might appropriate or dedicate annual funds for highway repairs and borrow funds for a major new bridge project. Or a school district might use a portion of annual revenue for maintaining school facilities and issue bonds for a major renovation project or to build new schools.

Second, whichever financial method is used (or perhaps both simultaneously), governments must identify or select the revenue sources to generate resources for capital expenditure – either generating current revenue for capital purposes or to generate future revenue to repay bonds. The typical options are (1) specific taxes related to the service produced with the infrastructure, i.e. fuel excise taxes for roads, (2) fees or charges for use of the service produced with the infrastructure, i.e. mass transit fares or road tolls or park admission fees, (3) general, broad-based taxes that are used to finance that specific government, i.e. property, sales, or income taxes, and (4) intergovernmental grants from the federal or state government. Each has advantages and disadvantages, as discussed below.

## Fuel Excise Taxes

The bulk of state-local revenue spent on transportation comes from state and federal excise taxes on the sale of motor fuels, especially gasoline. These taxes are collected at a rate of so many cents per gallon, and thus the revenue generated for any set of rates depends on the number of gallons consumed. Traditionally, one great advantage of fuel taxes was that the amount paid depended on road use; those who drove more miles generated more tax revenue to support the road system.

Over time, however, purchases of motor fuels have not increased as much as highway travel. That traditional connection has gradually been reduced as engine efficiency (miles per gallon) has improved, differences in miles per gallon among different vehicles has increased substantially, and some vehicles (hybrids

and electric cars) use gas little or not at all. This disconnection between the gasoline tax and miles will grow as electric vehicles and vehicles fueled by natural gas and hydrogen become more common. Those changes put a squeeze on highway and other transportation funds because reductions or slow growth in the gallons of fuel consumed directly affect excise tax revenues (Fisher and Wassmer, 2017).

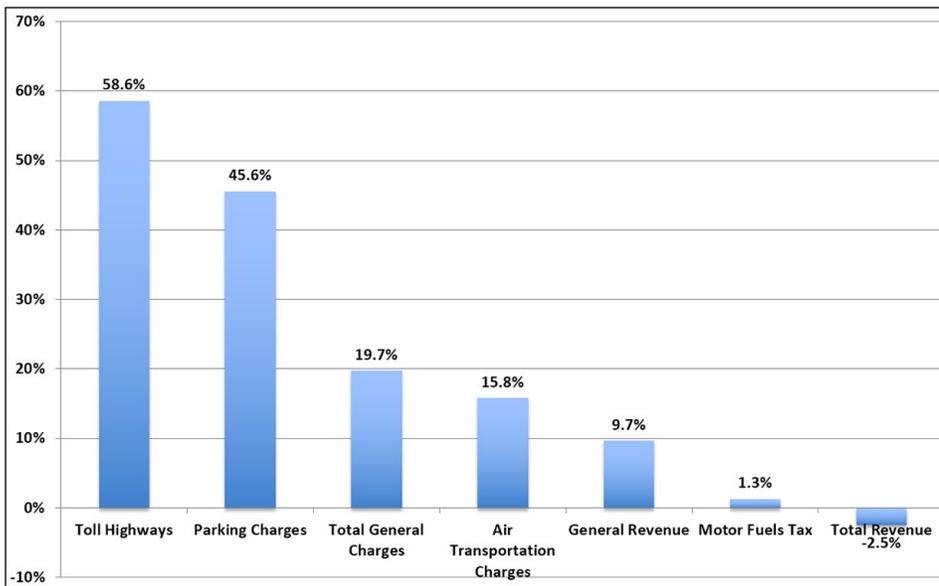
The most common response has been for state governments to increase the fuel excise tax rate – 26 states in the past 4 years according to Pew research – just as Michigan did effective in 2017. A few states have adopted a variable motor fuel tax rate that automatically increases if fuel consumption decreases or prices rise. The problem is that vehicle fuel efficiency and use of electric vehicles is expected to continue to increase, which means that the revenue efficiency of traditional fuel excise taxes will continue to decline requiring continuing increases in tax rates.

## Traditional User Fees

A number of different traditional user fees or charges are used to fund state and local government infrastructure, including road tolls, fees for riding mass transit, airport passenger facility charges, water and sewer charges, park admission fees, tuition at public colleges, and so on. Indeed, more than half of state-local expenditures on airports, hospitals, and sewer and sanitation systems nationally are financed by user charges, with public colleges not far behind.

Road tolls are an especially interesting case (Fisher and Wassmer, 2018). The federal highway act that created the interstate highway system prohibits the use of tolls on interstate highways financed with federal funds, with an exception for state toll roads that existed previously and became part of the interstate system (such as the Indiana, Ohio, and Pennsylvania Turnpikes, etc.). Attempts to alter this provision in Congress have not been successful. However, road tolls also are used on a variety of other roads, including state highways built without federal interstate funds, roads operated by private firms in cooperation or under contract with government (Chicago Skyway), new lanes connected to non-toll roads, and others.

User charges for transportation – roads, parking, and air transport – have been among the fastest growing components of state revenue, as shown in Figure 7. In fiscal year 2015, state and local governments collected about \$15.3 billion in highway tolls. User charges from toll highways increased in real terms by nearly 59 percent from 2007 to 2015, swamping the overall increase in state-local government user charges over this period, which was about 20 percent. Of course, Michigan is unusual compared to other states in having no toll roads (although tolls are used for a few bridges and the Detroit-Windsor tunnel).



**Figure 7. Percentage Change, Real State-Local Revenue Components, 2015 vs 2007**

Source: US Census Bureau

Not all road tolls are the same, of course. Toll has the potential to adjust for differential environmental costs and congestion. Indeed, increasingly tolls differ based on type of vehicle or congestion or demand. Per mile tolls on roads can differ based on location, time of day, season, as well as type of vehicle. Now a few road systems, several in Virginia, are utilizing dynamic pricing in which the toll varies continuously based on traffic in order to maintain a specific traffic flow.

The traditional disadvantage of tolls is that they may entail both high administration costs (wages of collectors) and high compliance costs (delay). Indeed, use of tollbooths to relieve congestion can be counterproductive because stopping to pay the toll may only create more congestion. However, in most cases currently tolls are collected through “smart highway” systems— such as E-ZPass, I-PASS, and FasTrak—which allow drivers to pay tolls with a pre-paid toll account or credit card avoiding the need for tollbooths and collectors.

Vehicle registration fees also are used to generate revenue for transportation expenditures, and an increase in this fee was part of the transportation revenue proposal adopted in Michigan in 2016. Registration fees, which in Michigan are based on vehicle value, have an obvious disadvantage because fees are not related to road use and cannot be used to correct for road congestion.

### Modern User Fees (VMC)

One alternative that is receiving increased attention is to substitute a direct highway user fee—typically called “metered usage” or a mileage fee or vehicles miles traveled fee—for fuel taxes and vehicle fees to fund highway construction and maintenance. One key advantage of such a funding method is that the fee is based directly on use of the roads. The charge for traveling on a particular segment of a particular road could vary by vehicle type and time of day or year. As Jennifer Weiner (2014) notes,

“As the name implies, a VMT tax charges a flat or variable tax per mile traveled. A key advantage of such a mechanism is that it is not adversely impacted by increases in fuel efficiency or the use of alternative-fuel vehicles. Indexing a VMT tax to general or construction inflation can help to ensure that the real value of revenue generated by the tax does not erode over time.”

Even very low vehicle mileage fees can generate substantial revenue for transportation investment. A fee of just ½ cent per mile would generate about \$500 million in revenue for transportation investment in Michigan. Because the typical vehicle travels about 12,000 miles per year, the average fee would be just \$60 per year or \$5 per month. Correspondingly, a fee of just 1 cent per mile would generate about \$1 billion of additional revenue for road reinvestment. Those who drive less would pay less, and those who drive a lot pay more, just as with a gasoline tax traditionally.

A common concern with such an option is how the fee would be collected. One can envision an eventual system to measure miles driven with a recorder or transponder in each vehicle. The technology already exists and is in use. Some insurance companies offer policyholders the option of basing insurance payments on measured miles in this way. For immediate application it is also possible simply to collect the fee at the time a vehicle is registered each year. The owner would simply report (on an official form) the speedometer mileage of the vehicle, with the information recorded by the Secretary of State’s office, miles driven since the last registration calculated, and fee collected. To avoid cheating, if mileage was reported incorrectly, this would be noted when the vehicle was sold and back fees collected at that time before the sale was permitted.

Vehicle mileage fees do not have public support (yet), are opposed by the trucking industry, and face a variety of

implementation challenges (how to measure, how to collect, privacy concerns, interstate transportation, and so on). So far, vehicle mileage fees have been tried only in a few pilot programs and utilized to any degree in Oregon.

## General Taxes

Obviously, it also is possible to use the major general taxes – income, property, and sales – to generate revenue for

infrastructure improvement. One problem with this approach is that the tax is not related to use of a facility or public service, for instance not related to road or water or school building use. Therefore, these revenue options cannot also differentiate by type of user or correct for congestion. In addition, these taxes already are used to finance a broad set of government services. Finally, the most popular tax option in recent years – an increase in the state sales tax – also would expand a regressive revenue source.

# Public Support for Infrastructure Investment

Lawmakers continue to face a well-known political problem in addressing infrastructure investment. Most taxpayers/voters support greater investment for infrastructure maintenance or replacement, but everyone is looking for a way for someone else to pay for it. As an example, in recent polls conducted in California and Michigan 71 percent of respondents in California and 89 percent in Michigan favor more spending on road maintenance, and 50 percent of California respondents and 41 percent in Michigan favor more spending on construction of new roads. However, when asked how much they were willing to pay for additional road investment, 42 percent of California survey participants and 43 percent of those in Michigan responded “nothing.”

The good news is that a slight majority (54 percent in California and 53 percent in Michigan) was willing at least to pay some additional amount to fund road investment, although the median amounts for both states were less than \$5 per month. Thus it seems important for taxpayers to have an accurate accounting of the personal cost of any infrastructure proposal.

Research suggests that the cause for this divide between wanting better infrastructure and a lack of willingness to pay for it is more than simply taxpayers wanting something for nothing.

Rather there is evidence that voters overestimate their personal cost from taxes or fees and underestimate the necessary project cost for infrastructure work. Research shows that taxpayers overestimate the amount they pay in gasoline excise taxes, the amount they would pay from a mileage fee, the amount they pay in property taxes, and what their income tax rate is. For example, if taxpayers believe that they are paying \$50 per month in state gasoline tax when the actual amount is \$10 or \$20, it is not surprising that they oppose additional revenues for investment.

Similarly, it seems that taxpayers/voters often believe that the expense necessary to maintain or repair infrastructure is less than the actual cost. If taxpayers underestimate the true cost of necessary infrastructure investment and overestimate their individual cost share in taxes or fees, it is not surprising that generating support for an investment proposal is difficult.

An implication for policy makers is that proposals to generate additional revenue for infrastructure investment are likely to have more success if accompanied by a public education campaign concerning the taxes and fees actually required and the reality of the magnitude that will be paid by the state’s typical taxpayer.

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