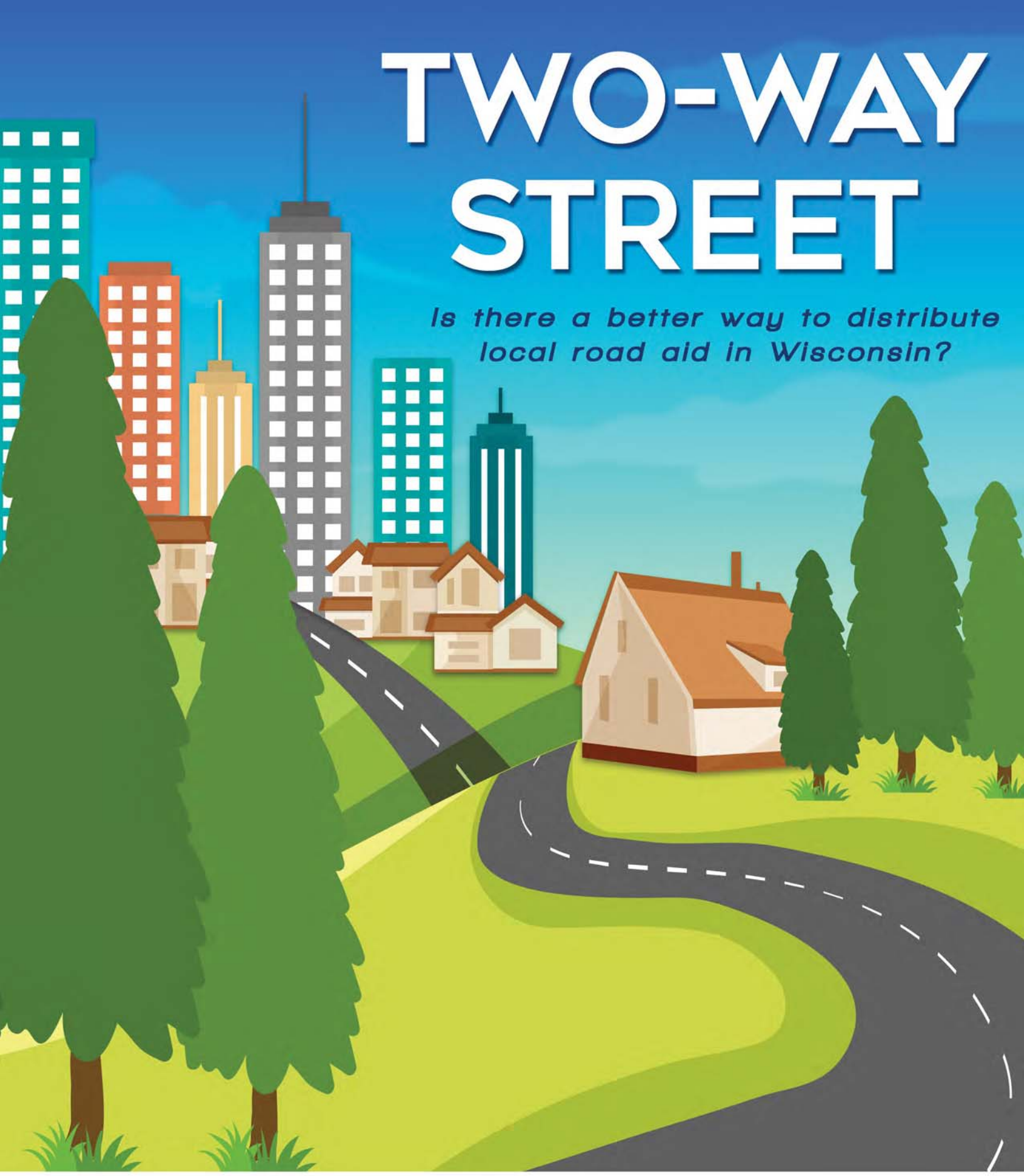
TWO-WAY STREET

Is there a better way to distribute local road aid in Wisconsin?



WISCONSIN POLICY FORUM

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The Wisconsin Policy Forum was created on January 1, 2018, by the merger of the Milwaukee-based Public Policy Forum and the Madison-based Wisconsin Taxpayers Alliance. Throughout their lengthy histories, both organizations engaged in nonpartisan, independent research and civic education on fiscal and policy issues affecting state and local governments and school districts in Wisconsin. The Wisconsin Policy Forum is committed to those same activities and to that spirit of nonpartisanship.

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PREFACE AND ACKNOWLEDGMENTS

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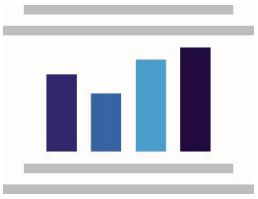

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Is there a better way to distribute local road aid in Wisconsin?

December 2021

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PART 1: INTRODUCTION AND PROGRAM OVERVIEW

In Wisconsin, local governments have jurisdiction over most of the roadways in the state and with that the responsibility to pay for their construction and upkeep. Both municipalities and counties own and maintain streets and roads and engage in tasks that include building, repairing, plowing, sweeping, and lighting them as well as ensuring they have adequate signage, drainage, and law enforcement.[1]

Given that this network of local roads serves a statewide purpose of travel and commerce, the state provides aid to local governments to help defray these costs and has done so since "the early development of Wisconsin's road system."[2] The state's General Transportation Aids (GTA) program dates back decades and serves as the primary vehicle for delivering state road aid to 1,922 local governments – all cities, villages, towns, and counties in Wisconsin.

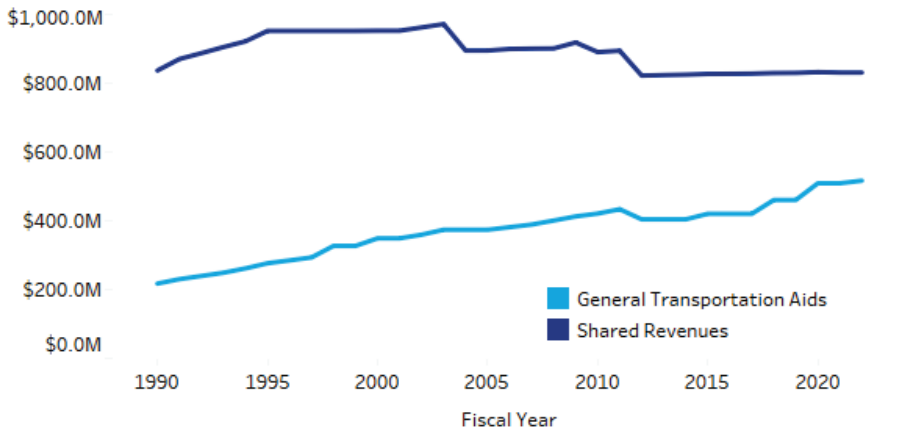
This report on the GTA program builds on the work the Wisconsin Policy Forum has done looking at local government revenues and spending in the state. Past research has found that state-local tax and spending levels have been falling in Wisconsin relative to other states as local governments here face tighter controls on key revenues such property taxes and state aid.

With $505.7 million in payments to local governments in calendar 2021 alone plus an additional $2.5 million in supplemental payments to towns, the GTA program is the second-largest program within the state Department of Transportation (DOT).[3] It also is the second-largest form of state aid to municipal governments in Wisconsin and one of the top forms of aid to counties as well. For certain municipalities such as the city of Madison, GTA payments actually represent their single-largest source of state aid.

GTA payments also are growing much faster than shared revenue, the largest form of state aid to municipal and county governments as a whole. As Figure 1 shows, GTA payments in 1990 totaled $217 million, or 26% of that year's shared revenue payments of $835.6 million, according to Legislative Fiscal Bureau (LFB) figures.[4] By 2021, GTA payments had increased to 61.3% of the estimated shared revenue payments of $829.7 million. This growing importance and cost underlines the value in studying the GTA program in detail and ensuring it is meeting its goals.

Figure 1: State Road Aids Gain Ground on Main Form of State Aid

General Transportation Aid vs Shared Revenue payments to local governments



Source: Legislative Fiscal Bureau; Shared revenue payments include County and Municipal and Utility Aids only and are estimates for fiscal years 2022 and 2023.

What are GTA payments for?

The aid helps support a network of more than 102,000 miles of local roads – from paved city thoroughfares with multiple lanes and extensive improvements to gravel town roads. Currently, towns have 60.3% of the local roads in the state by mileage, cities and villages have 20.3%, and counties have 19.4%, according to LFB data. Cities and villages now account for a somewhat larger share of local roads than two decades ago as they have built new roads and expanded their borders through annexation. At the same time, towns have lost a modest share of overall roads due to slower growth and a loss of territory through annexation.

A 2021 LFB background paper lays out how responsibility for roads is delineated in the state:

• **Municipalities and towns** "are responsible for local roads, such as residential streets and town roads, which provide property access" and local movement.

• **Counties** "are responsible for collector roads, which serve short-distance, intra-regional traffic or provide connections between arterial roads and local roads."

• **The state** "generally has jurisdiction over arterial roads, which function as corridors for interstate and inter-regional travel."

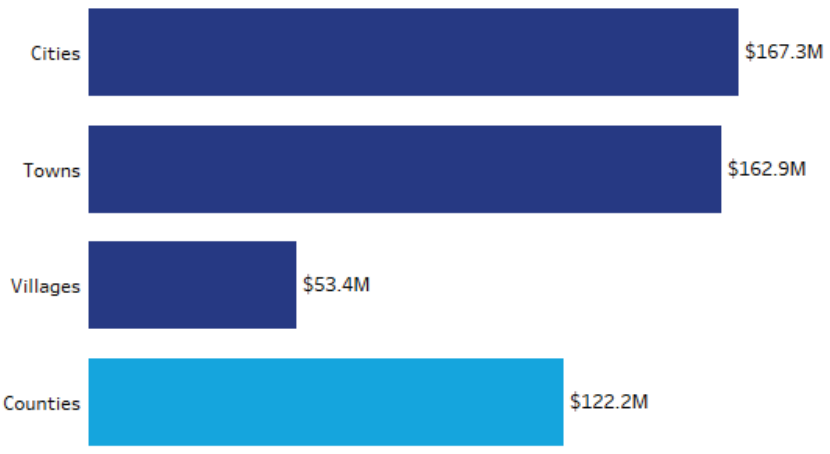
The GTA program does not support locally maintained segments of state highways that run through municipalities. These segments generally have the features of local roads such as curbs and gutters. The state has a separate aid program to provide at last some assistance for these "connecting highways." There are also separate state payments for county forest roads and for county plowing and other work done on a contract basis on the state highway system.[5]

The program generally supports local governments in covering the costs of all construction and maintenance within a road's right of way, including sidewalks and storm sewers. For example, if a bike path is located along the shoulder of a roadway, the local government could count the costs associated with it in the state formula used to determine GTA payments. If the bike path is completely separate from the roadway and is located in a park or along an abandoned rail line, however, then the costs for it could not be included.

Payments for the GTA program are made out of the state's transportation fund, which relies on revenues from state motor fuel taxes, vehicle registration and title fees, transfers from the state's general fund and petroleum inspection fund, and a handful of other smaller sources.[6] The GTA payments typically go into the local government's

Figure 2: Cities and Towns Get Largest GTA Payments

Calendar 2020 General Transportation Aid payments by type of local government



Source: Wisconsin Department of Transportation

general or highway fund, though in either case the money must be kept in a separate account that is used only for roads.[7]

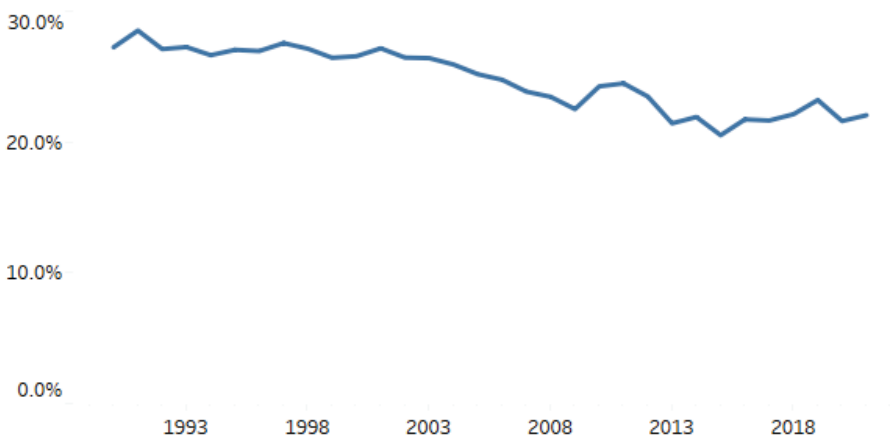
As Figure 2 on page 4 shows, cities and towns were the largest recipients of GTA payments in 2020, with each receiving about one-third of the total. Almost one-quarter went to counties, and just over one-tenth to villages. After relatively steady growth in the 1990s and 2000s, GTA payments decreased in 2012 by 6.8% and then increased in only one of the next five years. Since then, they have begun to grow again. Between 1990 and 2021, they rose by 133%, which exceeded the 107% increase in the Consumer Price Index (CPI) over those years.

However, over the period the cost of building local roads in Wisconsin likely rose by much more than CPI, which tracks a basket of consumer goods and services. For example, the index used by the state DOT to track construction project costs rose 50% between the first quarters of 2010 and 2020, compared to an 18.9% increase in CPI over that period.[8] Local law enforcement spending – another major cost covered by the GTA program, rose rapidly during the 2000s though since then it has moderated. Some other expenses such as plowing and maintenance may have been easier to manage since they are driven in large part by labor costs. In 2011, Wisconsin Act 10 helped to control those costs by eliminating most union bargaining for public workers, with the notable exception of police and firefighters.

Over the past generation, GTAs have fallen as a share of the state's transportation fund revenues. In fiscal year 1990, GTA payments equaled 27.2% of state transportation revenues ($775.8 million), according to DOT figures.[9] By fiscal 2021, that share had dropped to 22% of state revenues ($2.29 billion) though it was somewhat higher than the low point it reached in fiscal 2015 of 20.5% (see Figure 3). GTAs have also fallen as a share of transportation fund spending though again they have improved somewhat in recent years.

Figure 3: Local Aids Fall as Share of Transportation Fund

General Transportation Aids as % of transportation fund revenues by fiscal year



Source: Wisconsin Department of Transportation

How GTAs are Distributed

Payments per Mile

Since 1988, state GTA payments have been distributed to local governments based on a pair of formulas that take into account two main factors.[10] The first formula is based on the mileage of roads in a community and the second is based on a share of certain costs associated with the community's roads.

Counties must use the share of costs formula. Municipalities must provide data for the two sets of calculations and then the state uses whichever formula yields the largest payment for that community. Nearly all towns and a minority of villages are paid through the mileage formula. Other larger villages and cities end up being paid through the share of costs formula since they spend more per mile on their roads. Those communities tend to have more traffic, lanes, lighting, and storm sewers; more costly standards and materials; and relatively high law enforcement costs.

To calculate the payment based on mileage, the community takes the number of road miles it has reported to DOT and then multiplies that number by the mileage rate set in state law - $2,628 per mile in 2021. Notably, the mileage formula does not account for lanes – a mile of a lightly-used two-lane, rural road counts the same as a mile of a heavily used four-lane urban street.

Without adjusting for inflation, the mileage rate in state law has more than tripled since 1990, rising 224.4%, while as noted earlier overall GTA payments have risen just 133% (see Figure 4). As a result, more of the program's payments now go to small communities that use the mileage formula – a notable fact because the payments from that calculation are made first and reduce payments made through the cost formula.

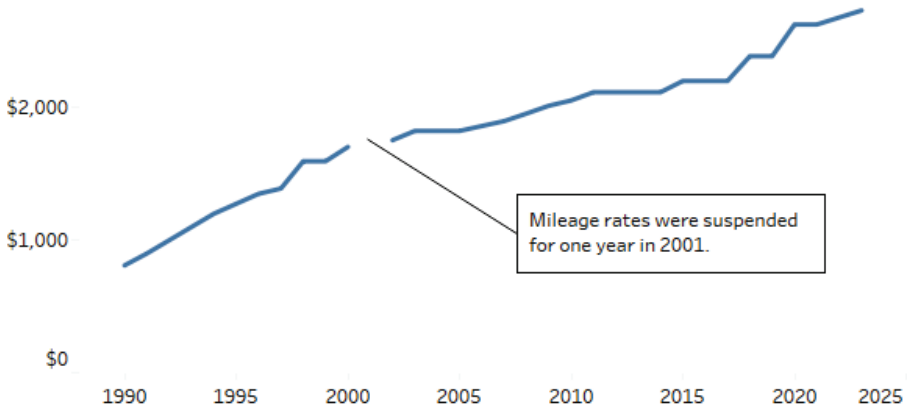
Not surprisingly, over the past several decades more communities within the GTA program have switched to the mileage rate. In 2020, 1,282 municipalities received payments under the mileage rate, an increase of 9.2% from 1,174 in 1990, DOT data show. This may remove an incentive for these additional communities to invest in roads since their payment does not increase with their costs or spending.

This trend has moderated in recent years. Greater growth in rate per mile payments happened largely in the 1990s and in 2012, when lawmakers cut the overall GTA program by 6.8% but left the rate per mile the same. Since then, the overall municipal program and mileage rates have risen in unison and the number of mileage rate communities has actually dipped slightly from its peak in 2012.

In addition, 69.1% of the GTA funding is still distributed according to the share of cost formula and 30.9% according to the mileage rate. Some might argue on that basis that communities using the cost formula are still doing relatively well.

Figure 4: Mileage Rates Rise More Quickly than GTA Program Overall

Mileage rates for General Transportation Aids in state law by calendar year



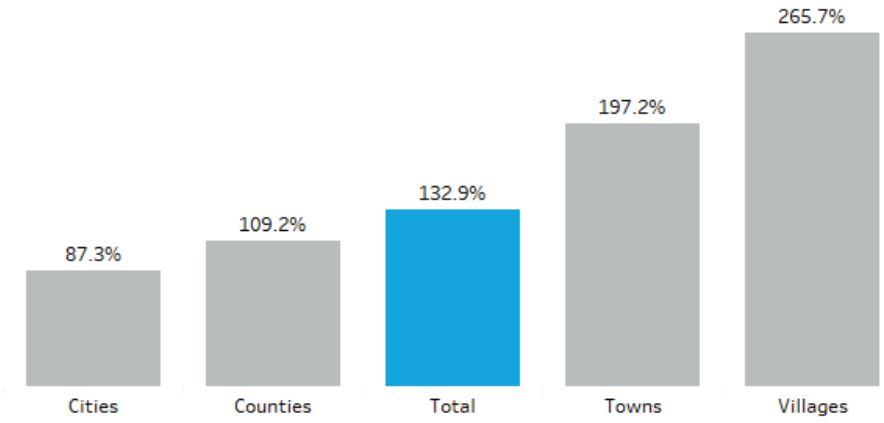
Sources: Wisconsin Department of Transportation; Wisconsin statutes

Over the past generation, however, the types of communities that rely on the mileage rate –

towns and to an extent villages – have seen their GTA payments rise much more quickly than cities and counties, which rely on the share of costs formula. Before adjusting for inflation, GTA payments to towns essentially tripled between 1990 and 2020 and those to villages more than tripled while those to counties barely doubled and those to cities fell somewhat short of that (see Figure 5).

Figure 5: Small Communities See Largest Increase in Payments

Growth in GTA payments by type of local government, calendar 1990-2020



Source: Wisconsin Department of Transportation

Payments as a Share of Costs

After the mileage payments are made to the communities using that formula, the remaining funds are distributed to the other municipalities using the share of cost formula. As we have noted, counties have their own separate pot of money within the GTA program that is also distributed according to the share of cost formula.

All local governments report their road and highway-related expenses as part of their annual financial statements filed with the Department of Revenue. Those figures are shared with DOT, which in turn uses them to calculate the eligible costs for each community over a six-year period to smooth the year-to-year fluctuations in capital spending. The eligible costs include those for roads, bridges, culverts, storm sewers, related buildings and equipment, and lighting, signage, and signals. The costs fall into several categories:

- Maintenance including mowing, sweeping, snow plowing, and the upkeep of pavement
- Construction including land acquisition, grading, and engineering
- Related costs including policing, insurance, and debt payments

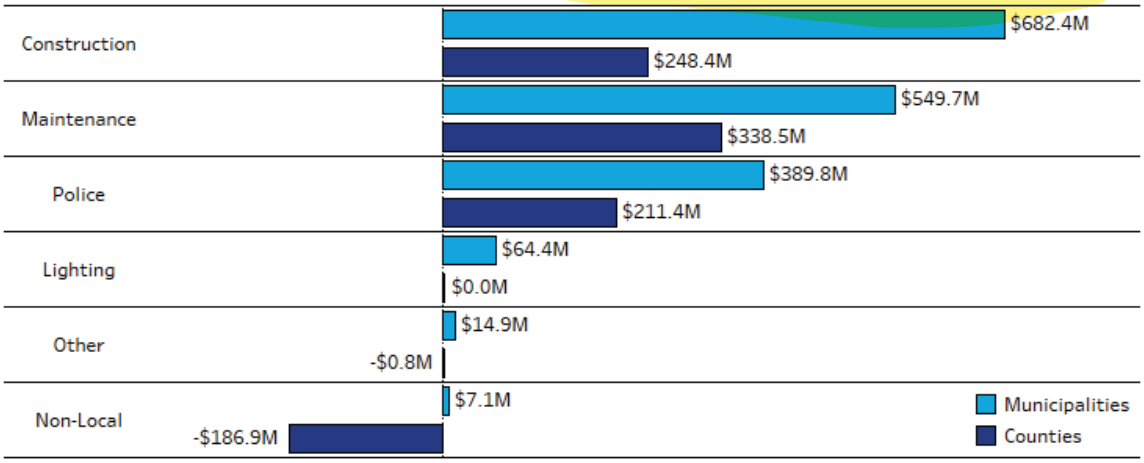
In tallying the eligible costs, the state deducts certain other revenues that offset these expenses, including from state programs such as the Local Road Improvement Program, federal programs, and payments from other local governments. These deductions mean that actual spending in some of these categories can be much greater than the total eligible costs that are discussed here and shown in the charts.

Eligible GTA costs have risen more quickly over the past two decades than the program's funding. As a result, the GTA program has been covering a gradually shrinking share of local governments' statewide eligible costs –19.7% in 2021 compared to 24% in 1999, according to LFB figures.

For counties and larger municipalities, at least, the GTA program is weighted toward communities that spend more in state aid, property taxes and other revenues on road-related costs. The state,

Figure 6: Construction, Maintenance, and Police Make Up Most Costs

Total eligible GTA costs incurred by type of local government, six-year average (2014-2019)



Source: Wisconsin Department of Revenue

however, has limited increases in county and municipal property tax levies used for operations to the rate of net new construction in their area. Given that many communities in the state have seen relatively little new construction since the Great Recession, this creates a sharp divide in revenues between low-growth and high-growth communities. In 2018, the Forum noted that high-growth communities increased transportation spending at much faster rates than slow-growth communities. Though the report did not identify any one factor as the cause – high-growth communities may need to spend more on transportation – the study did point to a "growing gap" between the municipalities able to increase their levies under state limits and those that could not. The GTA formula poses an additional challenge – slow-growth communities may be unable to increase roads spending and as a result may face some erosion in their payments under this important state program.

From 2014 to 2019, the state's 1,850 municipalities and 72 counties averaged annual eligible costs of $2.32 billion after netting out certain revenues received for those projects and operations. As Figure 6 shows, those costs were primarily for road construction ($930.8 million), road maintenance ($888.2 million), and police expenses ($601.3 million), with smaller amounts for lighting and other costs such as storm sewer. The figure also shows $179.8 million being deducted for work that was done on roads under other jurisdiction such as that of the federal, state, or other local governments.

Certain costs within the formula, such as law enforcement, have grown more quickly than others over the past two decades. That means that a greater share of the GTA program payments is being made to reimburse police costs such as patrolling streets rather than being spent on roads directly.

The same trend happened during the 1990s and by 1997, police spending made up 27.3% of eligible GTA spending, according to the Legislative Audit Bureau.[11] Starting in 1999, the state changed the formula to limit eligible police costs to a share of the total expenses, with larger communities being more tightly limited than smaller ones.[12] WPF used DOR data to calculate that by 2000, police costs made up only 21% of total municipal and county eligible costs.

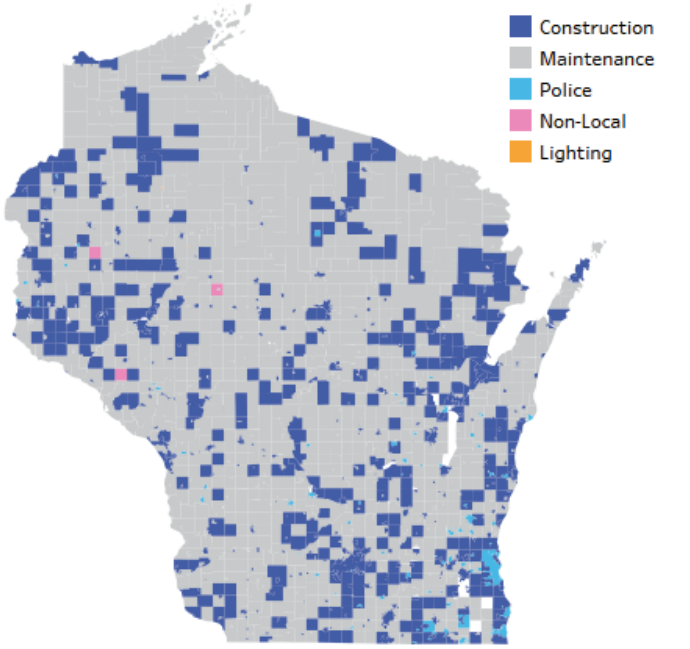
However, since then the amount for police has once again risen and by 2019 made up 24.5% of total local eligible costs, returning partway back to its share before the formula change. Combined construction and maintenance spending changed little as a share of the total between 2000 and

2019 while spending on certain other costs like storm sewers and sidewalk maintenance and repair fell as a share of the total.

Figure 7 shows that while construction and maintenance were the largest categories of average eligible expense for most Wisconsin communities between 2014 and 2019, police spending accounted for the largest share in 78 municipalities statewide, particularly in southeast Wisconsin. Those local governments that spend the most heavily on law enforcement tend to be certain small suburbs with high property values, some large cities, tourist destinations, and eight largely urban counties.

Figure 7: Which Cost is Greatest?

Municipalities by greatest eligible GTA expense, six-year average (2014-2019)



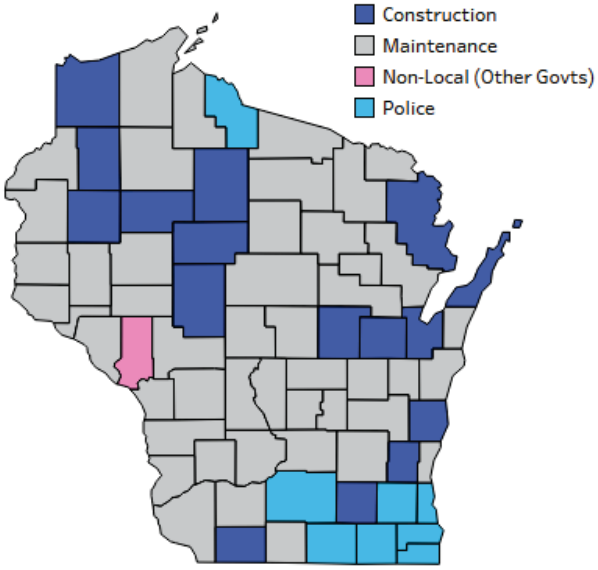
Source: Department of Revenue

For example, 73.7% of the town of Madison's average eligible GTA costs from 2014 to 2019 came from police spending and in the villages of Oconomowoc Lake, Lac La Belle, and Lannon (all suburbs to the west and northwest of Milwaukee) it was 60% or more. In the city of Milwaukee, police spending made up 48% of its eligible costs on average.

Law enforcement spending also makes up the majority of the latest six-year eligible costs reported by urban Milwaukee County (65.9%) and Racine County (57.7%), as shown in Figure 8. Yet it also makes up 59.7% of eligible costs in Iron County – one of the state's least populous – and more than half of Walworth County's costs.

Figure 8: Which Cost is Greatest?

Counties by greatest eligible GTA expense, six-year average (2014-2019)



Source: Department of Revenue

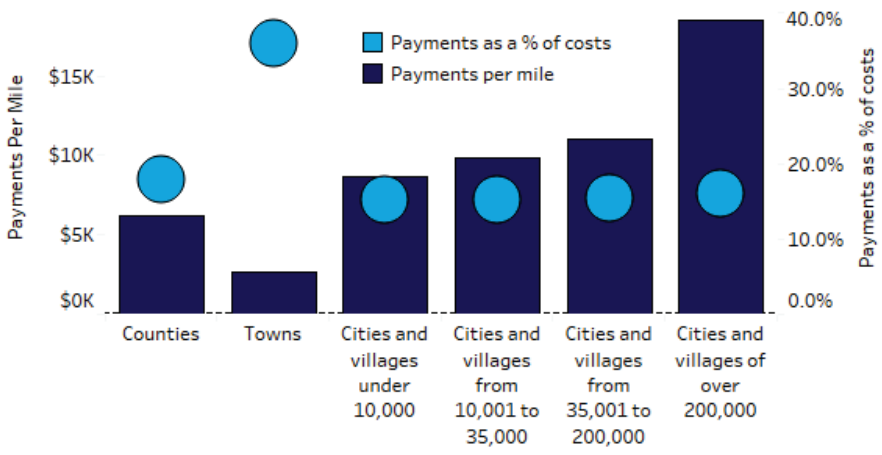
There are good reasons for the state to use road aids to reimburse some police costs, as traffic patrols can make roads safer by deterring speeding and intoxicated driving. That may be particularly true in urban areas due to aggressive driving or other factors – in 2020 the Forum noted the rise in recent years in speeding-related vehicle fatalities in the city of Milwaukee despite decreases in the rest of the state.

Police also help stranded motorists and respond to crashes. The state includes

only a part of police spending in its GTA eligible costs, with larger communities limited to counting a lower share of these costs. This cap helps exclude spending on police activities such as investigations and training.

Figure 9: Towns Receive Larger Share of Costs, Smaller Payments Per Mile

GTA payments per mile and as a % of eligible costs by type of local government



Source: Wisconsin Legislative Fiscal Bureau

However, some citizens might be surprised to learn how much of the GTA program – often thought of as an aid program for road maintenance and construction – is focused on police costs, particularly in certain communities. Those who are concerned about improving Wisconsin's roads might question whether the GTA program should subsidize police costs to that extent, particularly in relatively wealthy communities that have the resources to provide both enforcement and high-quality streets for residents.

The Two Sides of the Formulas

Once the costs for all communities have been calculated, the state then pays a share of that cost that is adjusted to use all of the funds set aside for counties and for municipalities that do not use the mileage formula. This cost method has one advantage for larger communities with greater expenses from their larger traffic volumes and multi-lane streets and greater need for lighting, storm sewers, and police. Because they have greater costs per mile, these larger local governments receive GTA payments per mile that are many times larger than smaller communities, according to LFB data (see Figure 9). These local governments may also be eligible to a greater degree for federal transportation funding for roads and bridges within their jurisdiction.

That might make it seem as if the GTA program gives an advantage to larger communities. However, we can also look at what share of a community's eligible road costs are covered by the GTA program since all communities must report their expenses even if ultimately they are paid through the mileage formula. On that arguably more telling metric, local governments using the share of costs formula do much worse, as the figure below shows. Towns that are paid through the mileage formula almost exclusively have an average of 36% of their costs covered by the GTA program while local governments paid according to the share of costs formula receive on average less than half as much – 17.9% for counties and less than 16% for cities and villages.

Additional Factors in the Formula

The formulas also make adjustments to keep payments from changing too much in one year. Those include ensuring that communities receive at least 90% of their prior year payment and prohibiting communities from receiving more than 115% of what they were paid in the previous year. Dozens of municipalities have their payments raised or lowered each year because of these adjustments.

Municipalities also cannot have more than 85% of their average costs over the past three years covered by the GTA program. The rule has lowered payments to some communities, impacting their budgets. Yet the rule may also provide some smaller towns and villages with an incentive to do additional projects or spending on roads to ensure they receive their full mileage payments. In 2021, 98 towns and four villages had their payments lowered because of this adjustment.

Lawmakers and Gov. Tony Evers modified this rule in the new 2021-23 budget for towns with property values in the lowest 25% of all of towns statewide.[13] Under the modified rule – one of several in recent years to increase payments to towns – GTA payments to these particular towns can cover up to 98% of their costs over the past three years, or nearly all of them. This new provision will be funded by subtracting what LFB has estimated as $550,000 from payments to municipalities that use the shared costs formula – primarily cities and larger villages.

The Bigger Picture

GTA payments are one of the most important forms of state aid to local governments in Wisconsin, but there are still many others. Even within the area of transportation, there are multiple state programs as well as federal assistance. Though this report is focused on the GTA program, it is important to at least mention other transportation aid programs as well as other sources of revenue for local roads.

Two other state programs focus on ongoing financial support for local transportation, including transit aids and aid payments to support certain state highway segments known as connecting highways that run through municipalities and have the features of local roads. Funding for these programs, which focus on cities and villages, has grown more slowly than GTA payments.

The Connecting Highway program payments per mile have not risen since at least 2003 and, due to a decrease in program miles, the overall state payments of $12.1 million in 2021 were less than they were in 1998 even before adjusting for inflation.[14] State transit aids totaled $116 million in 2021, which was 31.4% more than the 2000 payments before accounting for inflation.

Most of the remaining forms of state aid are for specific projects. The Local Road Improvement Program and Local Bridge Improvement Assistance Program, among others, are a significant source of state funding for projects on county, city, village, and town roads. Funding in recent years has generally been somewhat similar to what it was two decades ago before adjusting for inflation although there have been large one-time increases in funding in 2020 and 2022.

Lagging state aid might be less of an issue if counties and municipalities could easily collect revenues locally. In Wisconsin, however, local governments can levy relatively few taxes besides the property tax, which is kept under tight state limits. Counties have a sales tax of 0.5% and municipalities can levy room taxes of up to 8% in general on overnight stays, though they typically must use at least 70% of the proceeds for promoting tourism.

That may help to explain large increases in recent years in the number of county and municipal governments in Wisconsin that have approved local vehicle registration fees of between $10 and $40 per vehicle per year. As recently as fiscal 2008, local vehicle fee collections across the entire state amounted to less than $300,000. In fiscal 2021, they reached $62.8 million – more than triple their total in 2017.[15] Other communities are also experimenting with “transportation utilities,” which treat local roads as a utility and charge individual properties a fee based on the traffic they generate.

In short, the modest growth in local revenues and state funding outside the GTA program may be putting more pressure at the local level on government budgets as well as infrastructure. That makes it all the more important that the GTA program be adequate and effective.

Summary

General Transportation Aids are growing in size and importance as a key form of state support to local governments in Wisconsin. At more than $500 million in payments to local governments in 2021, the GTA program is the second-largest within the state Department of Transportation (DOT).

The program also is the second-largest form of state aid to municipal governments in Wisconsin and one of the top forms of aid for counties as well. For certain municipalities such as the city of Madison, it actually represents their single largest source of state aid. To sum up this section:

- GTA payments in 1990 totaled $217 million, or 26.8% of that year's shared revenue payments of $808.4 million, according to state figures. By 2021, GTA payments had grown to 61.3% of the estimated $829.7 million in shared revenue payments.

- Between 1990 and 2021, GTA payments rose by 133%, which exceeded the 107.9% increase in the Consumer Price Index (CPI) over those years. However, the index used by the state DOT to try to track increases in construction project costs has greatly outpaced CPI in recent years. Police costs, which are also supported by the GTA program, outpaced CPI during the 2000s.

- Over the past generation, GTAs have fallen as a share of state transportation fund revenues. In fiscal year 1990, GTA payments equaled 27.2% of the state's own transportation revenues ($775.8 million). By fiscal 2021, that share had dropped to 22% of revenues ($2.29 billion). GTAs have also been covering a gradually shrinking percentage of local governments' road costs.

- Since 1990, the mileage rate used to calculate GTA payments for smaller communities has more than tripled, rising 224.4% and easily outpacing overall payments within the program. As a result, more GTA payments are going to these small municipalities and more communities are also getting payments through the mileage rate. Unlike the cost formula, the mileage rate provides no incentive for communities to spend more on roads. That likely limits the effectiveness of the GTA program in promoting road maintenance and construction in small communities.

- Larger municipalities and all counties receive GTA payments that are calculated based on a share of road spending and other eligible costs. This method pays the communities much more per road mile because of their higher costs but still covers a smaller share of those expenses when compared to smaller municipalities – less than 16% on average for cities and villages that typically are paid through the share of costs formula compared to 36% on average for towns, which typically are paid according to the mileage formula.

- Other state aid programs that help cities and villages fund ongoing transportation operations, such as connecting highway and transit aids, have not kept pace with inflation or with the GTA program. For that and other reasons, local governments have increasingly turned to vehicle registration fees to fund local transportation programs.

PART 2: COMPARING WISCONSIN TO ITS NEIGHBORS

After examining Wisconsin's main form of transportation aid to local governments, we now explore how the system and formula in our state compares to those used by our neighbors. Every state has a different level of overall state and local spending on roads and a different division of responsibility between the state and local governments, which complicates comparisons. We use U.S. Census Bureau data to situate Wisconsin within this broader context and then look in greater detail at specific approaches in our four border states: Minnesota, Michigan, Iowa, and Illinois.

In our recent report "Dollar for Dollar," we found that Wisconsin ranked sixth highest nationally with $952 per capita in state and local highway spending in fiscal year 2017 (the most recent year for which U.S. Census Bureau data are available on all local governments nationally).[16] That amount – which includes both operating and capital spending combined – was 68% higher than the national average. Yet it was lower than some other northern states with harsh winters and many rural roads such as the Dakotas, Alaska, Wyoming, and Vermont. Neighboring Iowa and Minnesota, which have some of the same challenges, ranked seventh and ninth.

In Wisconsin and other Midwestern states, local governments including in some cases special units such as road districts have much of the responsibility for roads and do much of the spending on them. Wisconsin ranked fourth highest among the 50 states in per capita spending by local governments on highways and roads while it ranked 10th highest for state spending on highways (see Figure 10).

On per capita local road spending, Wisconsin's four border states all ranked 16th or higher nationally. Wisconsin is particularly close to Minnesota and to a somewhat lesser extent Iowa in having a strong role for both municipalities and counties in road spending. Wisconsin stands out among the border states, however, for having the highest state spending on highways and roads. Like all of its neighbors, Wisconsin has a large number of local governments, which may contribute to higher road spending.

Our analysis also looked at Census Bureau data on all state aid payments to local governments, or intergovernmental revenue, that was classified as being for highways (and excludes aid for urban mass transit systems). Once again, Wisconsin and other states in the Upper Midwest – including all of our border states – ranked highly.

The state of Wisconsin provided $119 per capita in highway aid to all local governments in 2017, which was seventh highest in the country. The other top states were almost all in the Upper Midwest including North Dakota ($497), Iowa ($225), Nebraska ($166), Michigan ($143), Minnesota ($133), and Oregon ($130).

Wisconsin was also tenth highest nationally for state highway aid per capita to counties and ranked thirteenth highest in the nation for aid to cities and villages. But where Wisconsin truly stood out was in its state highway payments to towns, which at $89 per capita were the largest in the nation.[17]

Readers should be cautious, however, in interpreting the data on aid to towns as there are only 20 states nationally with town governments at all. These governments have varying levels of authority and responsibility, making comparisons across states difficult.

These data show the high level of spending on local and state roads in Wisconsin – and the high amounts of state road aid to local governments here. In doing so, they illustrate the importance of having a fair, effective, and efficient system for financing, building, and maintaining our statewide road system and for allocating state aid for roads.

The data also point to the logic in looking at bordering states for other potential models for Wisconsin. All of these states face similar challenges in terms of climate and geography and have a shared emphasis on a strong local role for roads and spending on them that is supported by substantial amounts of state aid.

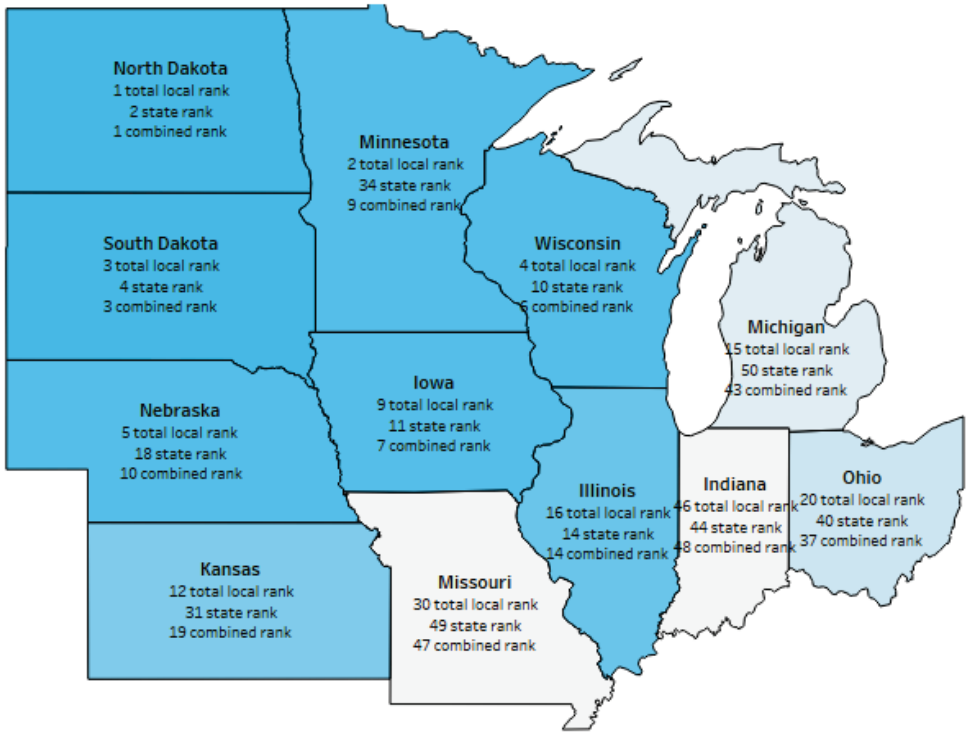
Border States

Though state transportation systems in the Upper Midwest share a number of similarities, there are still many notable differences between them that may complicate comparisons. For example, the Illinois Tollway authority uses toll revenue to maintain and operate its 294-mile system separately from that state's Department of Transportation.

Local governments in Wisconsin and neighboring states can draw on local property taxes for a variety of purposes including road construction and repair and may also receive payments from other local governments in the area. Most states in the Midwest also give their local governments a greater number of options than Wisconsin for raising revenue for various priorities. Municipal governments in Minnesota, Michigan, Iowa, and in particular Illinois all make greater use of sales taxes than their counterparts in Wisconsin. In Michigan, 20 cities including Detroit levy an income tax on residents and certain non-residents and in Illinois some local governments including Cook County and the city of Chicago tax either the sale of motor fuel or the purchaser.[18]

Figure 10: Upper Midwest States Spend Heavily on Highways

Per capita ranks on combined operating and capital spending, 2017 data; color corresponds to combined rank



Source: U.S. Census Bureau

Wisconsin has relatively few local taxes available for supporting roads besides the property tax, county sales taxes, and county and municipal wheel taxes, or vehicle registration fees. This tends to make state aid more important in Wisconsin for roads and other local services.

Minnesota

In the simplest terms, the state of Minnesota has two broad programs for funding county and municipal road systems in the state that date back to 1957.[19] Both of them are funded out of the state's highway tax fund, which receives revenues from the state's motor fuels tax, vehicle registration fees, sales taxes on motor vehicle purchases, and certain other sales taxes associated with automobile parts and leases.[20]

With some limited deductions and exceptions, the money in this state highway fund is divided between the state Trunk Highway Fund (62%), the County State-Aid Highway Fund (29%), and the Municipal State-Aid Street Fund (9%).[21] A small portion of the money in the overall state fund is also set aside for town roads and bridges and for state trunk segments that are being upgraded and made part of the county or municipal systems.[22]

County State-Aid Highway Fund

This fund provided $801.2 million in calendar year 2020 – a large increase over the prior decade – for roughly 30,800 centerline miles of key county roads in Minnesota, or more than two-thirds of all county highway miles.[23] Counties must typically spend 60% of the aid on construction projects and 40% on maintenance and must meet certain state standards for roads receiving state aid. In addition, counties must spend a portion of these state payments on state-aid highways within cities of less than 5,000 residents according to their construction needs.

Most of the county fund is considered core aid and just over two-thirds of that core aid – $674.6 million in 2020 – is divided among counties according to this formula[24]:

- 10% is divided evenly
- 10% according to the county's share of total motor vehicle registrations statewide
- 30% according to a county's share of total lane miles in this system
- 50% according to a county's share of construction needs that are designed to be compared across counties and submitted for review to a screening board of county engineers. The need is defined as the estimated total annual costs of constructing and preserving, over a period of 25 years, the county's state aid highway system according to common statewide engineering standards. The calculation includes certain minimums and maximums and assumes that roads and certain other structures will last longer than 25 years so it is not providing for complete replacement over that period.[25]

Just under one-third of the county fund is distributed through a second formula:

- 60% according to the county's share of construction needs as described above
- 40% according to the county's share of total motor vehicle registrations statewide

In addition, certain revenues are set aside specifically for counties in the Twin Cities metro area, state trunk segments that are being upgraded and made part of this system, and certain other deductions for administrative costs, research, disasters, and state park roads.

Municipal State-Aid Street Fund

This fund provided $210.2 million in 2020 for roughly 3,800 miles of higher volume streets in 148 Minnesota cites.[26] With some exceptions, the program serves cities with a population of over 5,000. Like the counties program, funding for this program has outpaced inflation.

Nearly all of the municipal fund is distributed according to a single formula, with deductions again for administration, research, and disasters.[27] The formula calls for dividing:

- 50% according to a city's share of the population of all cities within the program
- 50% according to a city's share of the total construction needs within the system. The need is again defined as the estimated total annual costs of constructing and preserving, over a period of 25 years, the municipality's state aid street system.[28]

As with counties, the aid formula uses a calculation of need that is set up to allow comparisons across cities and is reviewed by a screening board of city engineers. Cities can request a minimum of $1,500 per mile or up to 35 percent of their total allocation be deposited into a maintenance account. The rest of their allocation goes to a construction account.

Iowa

Like Minnesota, Iowa also has two main state funding mechanisms for local roads. Both are primarily financed through the state's Road Use Tax Fund (RUTF), which is the largest state funding source of all local and state roads in Iowa. For fiscal 2022, RUTF has an estimated total of $1.57 billion in budgeted funding which comes from motor vehicle registration fees, fuel taxes, and certain other sources.[29]

The RUTF budget for county roads is mainly separated into the Secondary Road Fund and the Farm-to-Market Fund. The Secondary Road Fund receives 24.5% of RUTF allocations ($390.3 million in fiscal 2022).[30] This funding supports the state's entire secondary road system including Area Service roads, which provide access in rural areas and totaled 59,190 miles in 2019.[31] Each year, the Iowa County Engineers Association Service Bureau is responsible for computing the Secondary Road Fund allocations for each county based on the following formula in state law[32]:

- 30% according to the county's share of the total area of the state
- 10% according to the county's share of the rural population of the state
- 12.5% according to the county's share of total daily vehicle miles of travel on the secondary road system
- 0.5% according to the county's share of earth-surfaced miles in the system
- 20% according to the county's share of granular-surfaced miles in the system such as gravel roads

- 13% according to the county's share of paved-surfaced miles in the system
- 14% according to the county's share of the length in feet of secondary road bridges in the system

In addition to the Secondary Road Fund, counties also receive RUTF allocations as part of the Farm-to-Market Fund. The 30,527 miles of county roads covered by this fund serve the principal areas in counties that generate traffic. This fund receives 8% of the total RUTF budget, which for fiscal 2022 amounts to $112.3 million to be used for the Farm-to-Market road system. The Iowa County Engineers Association Service Bureau again calculates the allocations using this formula:

- 30% according to the county's share of the total area of the state
- 15% according to the county's share of the rural population of the state
- 10% according to the county's share of total daily vehicle miles of travel on roads in the farm-to-market system
- 9% according to the county's share of granular-surfaced miles in the system
- 23% according to the county's share of paved-surfaced miles in the system
- 13% according to the county's share of the length in feet of farm-to-market bridges in the system

Funding for city roads comes from the Street Construction Fund, which in turn is funded through RUTF and receives 20% of RUTF allocations ($332.0 million in fiscal 2022). Unlike the statutory formula used for county allocations, funding allocated for cities is based on their share of the overall population based on the latest available federal Census Bureau data. The funds received by cities are limited to the construction, maintenance, and supervision of public streets. As of 2019, cities were responsible for 15,442 miles of roads.[33]

For cities with a population of less than 500, counties are responsible for the maintenance of Farm-to-Market roads.[34] This funding comes from the city's allocation of RUTF funding based on the total length of Farm-to-Market roads which is transferred to the respective county.

Michigan

The primary source of state funding for roads here is the Michigan Transportation Fund. MTF revenue comes from a combination of state motor fuel taxes, vehicle registration taxes and title fees, and a share of state income tax revenue ($468 million in fiscal 2020).[35] Certain deductions are then made from the fund for administration, public transportation, and other programs included in state law. Some of those deductions are for local purposes such as a bridge fund, bridge debt, and a transportation-related economic development fund. After the deductions, MTF funds available for distribution totaled $2.55 billion in fiscal 2020.[36]

These funds are distributed as follows[37]:

- 39.1% to the State Trunkline Fund which is administered by the Michigan DOT
- 39.1% to 83 county road commissions for county road systems

- 21.8% to roughly 530 eligible cities and villages for their street systems

County Road Commissions received $1.06 billion from MTF in fiscal 2020, which went to supporting approximately 89,444 miles of paved roads for which the 83 counties are responsible.[38] According to state law, county primary and local road systems are designated by board members of the County Road Commissions and are approved by the State Transportation Commission. Primary roads are selected according to their importance to a county. All other county roads are designated as being a part of the county local road system.[39]

Certain smaller amounts are distributed to counties for licensed engineers and roads being transferred between jurisdictions. Of the remainder, the funds are distributed using this formula[40]:

- 1% is allocated for snow removal for counties that receive more than 80 inches annually
- 9.9% by a county's share of statewide county urban primary and local road mileage
- 47.9% by a county's share of statewide resident vehicle registrations
- 6.4% by a county's share of statewide county primary road mileage
- 9.6% divided equally among all 83 counties
- 16.4% by a county's share of statewide county local-road mileage
- 8.8% by a county's share of statewide county rural population

In fiscal 2020, cities and villages received $605.3 million in MTF funding, which went to supporting approximately 21,198 miles of paved major and local streets for which cities and villages are responsible. Similar to county roads, city major and local streets are designated by a municipality's governing body with approval from the State Transportation Commission. Major streets are chosen based on their importance to the municipality, while all other streets are designated as local.

After certain deductions for snow removal and payments for roads transferred between jurisdictions, major streets in cities and villages receive 75% of their MTF funding through this formula:

- 60% of the distribution is based on city and village population in Census Bureau data
- 40% of the distribution is based on a factor known as city and village "equivalent major mileage"

This "equivalent major mileage" factor is based on a combination of the mileage of city and village major streets, weighted population, and the mileage of state trunkline highways within municipalities with populations greater than 25,000.

The remaining 25% of the allocation is for local streets, as defined by Michigan statute. It is then distributed to the eligible cities and villages using a similar formula:

- 60% of the distribution based on city and village population based on Census Bureau data
- 40% of the distribution based on local street mileage

Both counties and cities and villages have limited flexibility on how they spend their MTF allocations. Under state law, revenue earmarked for roads must be spent for that purpose. However, counties as well as cities and villages are able to shift funding between road categories. For example, counties are able to transfer up to 30% of funding allocated for primary roads to local roads.[41]

An unusual aspect of Michigan's transportation system is that although the state DOT is responsible for the construction and maintenance of the state's primary roads, state law requires some cities and villages to share in the cost of certain state projects within their boundaries.

For municipalities with a population under 25,000, the state covers 100% of the costs. For those above 25,000, however, a cost sharing formula is used. At the maximum, municipalities with a population greater than 50,000 are required to pay 12.5% of the costs for projects.[42] Yet federal funds are deducted from those costs first and as previously noted, cities and villages do receive more funding if they have certain state roadway miles within their boundaries. This results in actual out of pocket spending to be relatively low for roadway cost sharing.

Illinois

The Illinois Motor Fuel Tax (MFT) Fund is the primary vehicle for dispersing state road aid to counties and municipalities. As of June 2019, MFT revenue included a 19-cent per gallon tax on gasoline and a 7.5-cent per gallon tax on diesel fuel. Total gross collections of MFT in 2020 came to $2.29 billion. After a number of distributions to, and withholdings for, various state accounts and programs related to transportation, the remainder of the MFT fund is distributed to a state construction account and road fund and a township bridge program (45.6%) and to local governments (54.4%). Funds distributed to counties, municipalities, and road districts are based on the following formula[43]:

- 49.1% to municipalities, apportioned according to their share of the population
- 16.7% to counties having a population of 1 million or more (there is only one - Cook County)
- 18.3% to counties having a population of less than 1 million, apportioned in proportion to their share of motor vehicle license fees collected
- 15.9% to road districts and townships, apportioned to each according to their proportion of the total mileage of roads in the state

In fiscal 2020, this resulted in $532.6 million being paid to local governments for their roads[44]:

- Counties: $186.5 million
- Townships and Road Districts: $84.6 million
- Municipalities: $261.5 million

Starting in July 2019, the MFT in Illinois was increased from 19-cents per gallon to 38 cents per gallon on motor fuel. It is annually adjusted based on the Consumer Price Index (CPI) and is now 39.2-cents per gallon. At the same time as the 2019 increase in the tax, the state Transportation Renewal Fund (TRF) was created to receive the additional revenue. The fund distributes it each month to the state construction account, transit and rail programs, and local governments.

The amounts distributed to local governments use the same formula as the MFT. In fiscal 2020, $327.5 million in total allotments were made to counties and municipalities from the TRF:

- Counties: $114.7 million
- Townships and Road Districts: $52 million
- Municipalities: $160.8 million

Under Illinois law, both counties and municipalities have certain restrictions on spending MFT and TRF funds. The Illinois DOT approves and supervises spending of these funds and they must be used for purposes including the construction and maintenance of roads, local mass transit districts, and certain other related costs such as storm sewers, sidewalks, and wages and salaries.[45]

As of 2019, Illinois counties were responsible for 16,443 miles of roads, while townships, road districts, and municipalities accounted for 114,389 total miles. These totals include paved, asphalt, gravel, and earthen roads in both rural and urban areas.[46]

Analysis of Formulas and Funding

Like Wisconsin, our four border states all use formulas to send substantial aid to their local governments, which in turn all spend relatively high per capita amounts on local roads. All of the states finance this aid at least in part through motor fuel taxes. All the states but Illinois also draw on vehicle registration fees for the aid programs discussed here and some states such as Minnesota and Michigan also use other revenues such as certain income or sales tax collections.

One major difference in funding determinations is that legislators in Wisconsin simply appropriate a set amount for state aids for local roads out of the state transportation fund. In all of the border states, however, at least some of the funding going for local roads is a set percentage of the state's overall transportation fund or of a specific transportation revenue source.

The formulas for distributing the aid do share some similarities as well. In the broadest sense, all of the states have at least two formulas and sometimes more than two with counties generally being treated at least somewhat differently from municipalities.

In addition, each of the five states distributes at least part of the aid to local governments based on the road mileage in the territory of at least some local governments. Here there are some differences in that Iowa, for example, looks at not just the road miles but the mileage of various types such as paved, gravel, and dirt roads. Michigan also looks at counties' urban road mileage. Wisconsin, however, stands out for its heavy reliance on mileage as the sole formula factor for determining a significant share – 30.9% – of its payments to municipalities.

All of Wisconsin's neighbors also use the relative population of communities to apportion funds to at least some local governments. Here again there are some differences in that Iowa and Michigan account for the rural population of counties and not simply their total population. Illinois also has a separate formula clause for Cook County, its most populous.

Three states use data from vehicle registrations to divide up road payments. Minnesota and Michigan use the actual number of registrations of vehicles in each local government's territory but Illinois uses the fees paid by the vehicle owners.

Wisconsin uses only two factors – a community's road mileage and its eligible road and other costs – to determine payments. In a sense, that description may be oversimplified as Wisconsin's eligible cost formula is actually much more complex than most factors used by border states and includes certain items such as police costs that other states do not include directly. Wisconsin also has additional steps for maximum and minimum payments that add further complexity to its formulas.

Yet as Table 1 shows, all of the other four states in at least some fashion draw on a larger number of factors than Wisconsin does to determine the core elements of its local aid payments. Some of the other factors used by other states include the land area of the communities in question, the length of local bridges, a snow formula, and an even split of a share of roads aids among local governments.

Table 1: Wisconsin Uses Few Formula Factors To Distribute Aid

Factors used by states to distribute road aids to local governments

State	Local Road Mileage	Population	Registered Vehicles or Fees	Evenly Divided	Land Area	Length of Local Bridges	Need	Past Spending	Type of Road Surface	Vehicle Miles Traveled
Illinois	■	■	■							
Iowa	■	■			■	■			■	■
Michigan	■	■	■	■						
Minnesota	■	■	■	■			■			
Wisconsin	■							■		

Source: State agencies and Wisconsin Policy Forum research; Does not include the snow formula factor used in Michigan for a small amount of payments.

The Effects of Various Formulas

Unlike its border states, Wisconsin awards a large portion of its aid based on road mileage alone – a factor that favors less populous communities and those with narrower, less expensive roads with less traffic and fewer amenities. Wisconsin's approach ignores factors that favor larger communities with wider roads such as population, vehicle registrations, or vehicle miles traveled.

For all counties and larger municipalities, however, Wisconsin does use a complex formula for assessing past spending and awarding aid. In addition, Wisconsin does not distribute funds evenly between localities or by land area – factors that would tend to favor less populated communities.

A full analysis of how each formula would work if applied to Wisconsin would be too complex for this study and without that it is difficult to say fully how the formulas compare and which communities they favor. Compared to its border states, however, Wisconsin's approach likely tends to favor towns and the smallest villages and to be less favorable for larger cities. The fact that Wisconsin leads the nation in per capita road aid payments to towns seems to support that interpretation though as noted it is difficult to compare the treatment of towns across states.

Wisconsin's eligible costs formula is more difficult to assess in relation to the formulas used by other states. One clear distinction, however, can be drawn with Minnesota's formulas for local aid. At least half of the aid in Minnesota is delivered according to a community's construction and maintenance

cost needs. In addition, population and vehicle registrations also play substantial roles. Together, this approach would tend to favor the communities with the largest needs in terms of constructing and maintaining their present road system and the largest overall populations. The resident population factor may in some ways tend to disfavor local governments with large populations of commuters traveling to or through the community.

Wisconsin, on the other hand, awards aid not based on need but on previous road-related spending. That favors communities with high past spending – including in related areas such as police that are not actual road construction or maintenance. One result is at least some wealthier communities with higher spending but lesser needs would likely get larger payments under Wisconsin's formula.

Summary

Wisconsin's overall spending on roads and highways and state aid payments to local governments are high compared to the rest of the country but are more in line with other Upper Midwest states with cold winters, a large share of rural roads, and large numbers of local governments. These states include the Dakotas, Iowa, and Minnesota.

Our review of the systems used by Wisconsin and other Upper Midwest states found:

- Wisconsin ranked sixth highest nationally with $952 per capita state and local highway spending in fiscal year 2017. That highway spending on both operations and capital needs combined was 68% higher than the national average
- Wisconsin provided $119 per capita in state highway aid to local governments in 2017, which was seventh highest nationally. Most other top states were in the Upper Midwest.
- Wisconsin was also tenth highest nationally for state highway aid per capita to counties, thirteenth highest in the nation for aid to cities and villages, and highest nationally in state highway payments to towns, which were $89 per capita. The case of towns should be treated with caution, however, since most states do not have towns and they are given varying levels of responsibility in those that do.
- Compared to Minnesota, Iowa, Michigan and Illinois, Wisconsin uses fewer formula factors to distribute local road aids. Our state relies more heavily on road mileage than its neighbors and less on population, vehicle registrations, or vehicle miles traveled. This may have the effect of favoring less populous communities and those with narrower, less expensive roads with less traffic and fewer amenities. Wisconsin bases the rest of its aids formula on a community's costs associated with roads rather than the approach used by Minnesota that is based on the community's need. That could favor communities with high spending but less actual need.

PART 3: COMPARING MUNICIPAL STREET NETWORKS AND NEEDS

We now examine how readily available data could be used to create a generalized aid model that (1) does not automatically reward higher spending; and (2) distributes funds more equitably in relation to estimated actual needs. This is merely one among many possible alternatives that could be designed to have those characteristics.

This generalized aid model incorporates the main spending categories that exist in the current formula: police, maintenance, capital improvements (construction), lighting, and stormwater maintenance. It also accounts for the different characteristics of the road network in each type of municipality. This is accomplished by combining existing municipal cost data with infrastructure inventory data available from the Wisconsin Information System for Local Roads (WISLR).

The online WISLR system helps local governments and WisDOT manage road data to improve decision-making and meet state requirements for accurate local road inventory and condition data. It provides a system for local officials to report road information (width, surface type, surface year, shoulder, curb, road category, functional classification, pavement condition ratings, etc.) to WisDOT.

To develop this generalized model, researchers selected a sample set of 111 municipalities geographically distributed around Wisconsin and representing 42.4% of the state's population (for the list, see Appendix 1). These municipalities were then divided into eight tiers by population and density, as shown in Table 2. This model was prepared only for municipalities. A similar model could be developed for counties but would require additional study.

Table 2: Sample Municipalities by Tier

Classification	Population Range	Population Density	Sample Size
Milwaukee	n.a.	All	1
Tier 1 City	>=50,000 (ex-Milw.)	All	8
Tier 2a Urban City/Village	25,000-49,999	>1,500/sq. mi	12*
Tier 2b Suburban City/Village	25,000-49,000	<1,500/sq. mi	9
Tier 3 City/Village	5,000-24,999	All	17
Tier 4 City/Village	1-4,999	All	25
Tier 5 Town	> =4,000	All	10
Tier 6 Town	1-3,999	All	29

*Although Superior has a density below 1,500/sq. mile, it was included in the urban group

Available Road Inventory and Condition Data

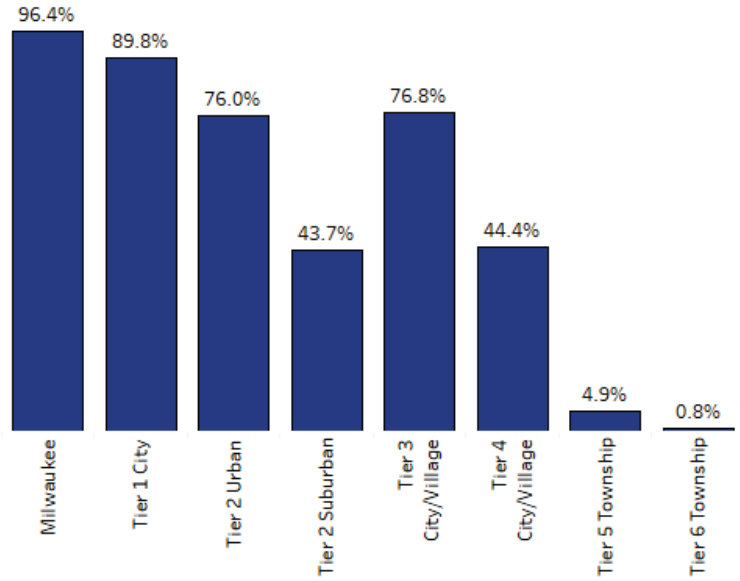
The cost of building and maintaining a local street network is largely dependent on the width, design, pavement type, and functional classification of the streets within that network. The WISLR road data includes width, pavement types, curb and gutter, and functional classification. This analysis only includes those roads which are under the ownership and jurisdiction of the local municipality (i.e. not state or county highways). The study also looks only at the costs for a community's actual GTA road network as it has been built and does not attempt to factor in whether the municipality has built more or less than it needs to carry the vehicles using it.

Figures 11 and 12 show the relative distribution of cross sections and functional classifications (arterial, collector, local) across the various tiers. An urban cross section is a roadway that typically includes curb and gutter, storm sewer, and lighting. A rural cross section typically has gravel shoulders and roadside drainage such as a ditch. Over 95% of all roads in Milwaukee and Tiers 1 through 5 have a paved surface. In Tier 6, approximately 72% of roads are paved. The percentage of paved roads in the Tier 6 sample ranged from 13% to 100%, meaning that some rural towns have predominately gravel roads.

As expected, larger municipalities tend to have wider roads, a higher percentage of paved roads (almost 100%), and more arterial and collector roads. There is a significant break in functional classification for urban cities and villages with a population of greater than 5,000, which all have a ratio of arterial and collector streets that exceeds 25%. All city and village tiers have an average collector share between 10% and 15%. The lower percentage of urban cross sections and arterial/collectors in Tier 2 (suburban) vs. Tier 2 (urban) is due to the more rural and residential nature of the larger suburban municipalities, some of which are incorporated former townships.

Fig. 11: City, Village Roads Have Urban Design Standards

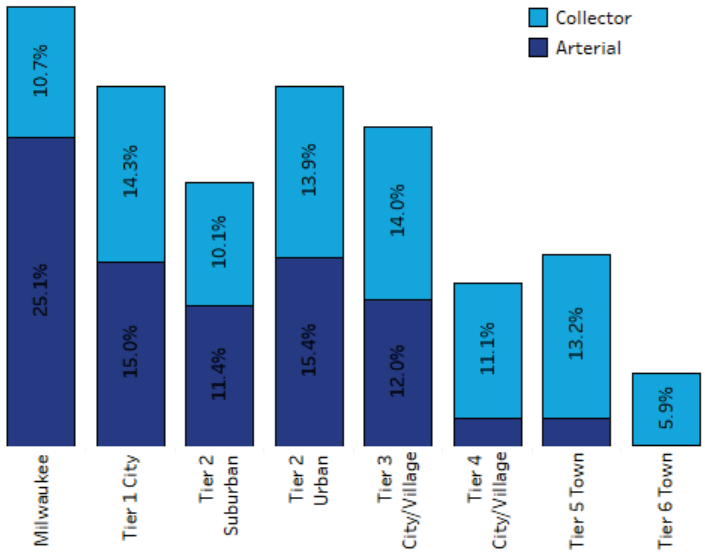
Percent of municipal roads with curb and gutter



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Figure 12: Urban Areas Have Busier Roads

Percent of municipal roads that are arterial and collector



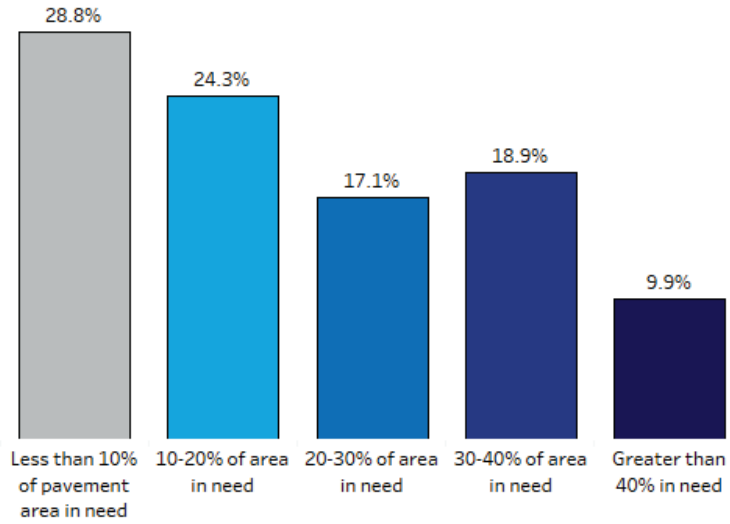
Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Pavement Condition

The WISLR database also contains data about pavement surface condition, as collected and reported by each municipality. Most municipalities report their pavement condition using a 10-point rating system called "PASER." Under the PASER system, paved streets are ranked based on a visual observation of their surface characteristics by local officials or contractors. Rankings are assigned based on the various types of surface distresses that are observed. Although each municipality is responsible for their own rankings, the PASER system, when properly applied, provides a fairly consistent method of condition rating.

Figure 13: Roadway Condition Varies Greatly by Community

Percent of sampled municipalities with a greater or lesser share of roads in need of a capital project*



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns. *Need for a capital project corresponds to paved roads with a PASER rating below 5.

Existing condition data can be helpful to understanding how well the capital needs of the pavement system are being met. Under the PASER system, a rating below 5 for a paved road suggests the need for some form of capital improvement (reconstruction or resurfacing). Figure 13 shows a wide variation in the percentage of pavement area needing a capital improvement across the sampled municipalities. The fact that almost 10% of sampled municipalities have greater than 40% of pavement area needing improvement may be evidence of underinvestment in those communities.

Developing a Generalized Cost Model

Combining the WisDOT WISLR inventory data with expenditure data from DOR Municipal Finance Reports makes it possible to perform a more detailed analysis of the relative maintenance and capital costs of the different tiers, by taking into account:

- Pavement area, rather than just centerline length
- Distribution of functional classification (arterial, collector, local)
- Urban vs. rural cross sections
- Percentage of paved vs. unpaved roads

Not every municipality spends precisely what it needs to maintain its roadway network. Factors such as the priority of transportation versus other services and overall fiscal capacity will affect the budget process. Also, some municipalities may spend their funds more or less efficiently and effectively than others. Our generalized need model attempts to address these disparities by using average costs for various activities for municipalities with similar characteristics. In several instances, averages are

adjusted as described to develop an estimate that is better aligned with the roadway characteristics of a particular tier. The result is a generalized needs model for each tier.

Activities can be roughly divided into two groups: Operations and Maintenance (O&M) and Capital expenditures. The majority of O&M costs can be accounted for in four areas: police, maintenance, lighting (not including capital outlay), and stormwater management. By examining actual reported expenditures in each area, we make an estimate of the system needs for various types of configurations. For capital improvements, we also use a model of estimated needs based on individual roadway life cycles and characteristics.

Operations and Maintenance

Police

As we have noted, the current aid formula allows municipalities to include in their calculation a percentage of total eligible police costs, based on population, as follows:

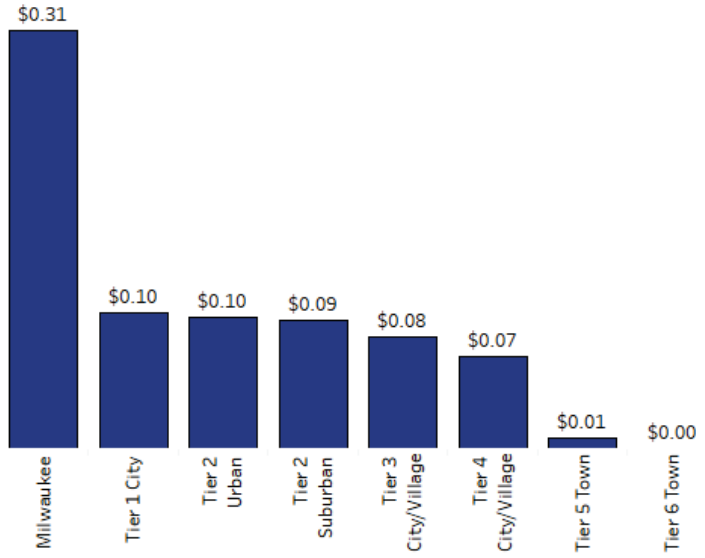
- Population < 10,000 – 50% of specified police costs are eligible
- Population Between 10,000 and 35,000 – 32.5% of specified police costs are eligible
- Population > 35,000 – 26% of specified police costs are eligible

According to the WisDOT GTA manual, these percentages have been in place since the late 1990s. It is beyond the scope of this study to determine the actual percentage of police costs that are dedicated to traffic safety, enforcement, crash investigation, traffic incident management, and other transportation-related activities, versus other police activities such as calls for service and criminal investigations.

Figure 14 shows average eligible police costs for each tier. This figure shows Milwaukee as a significant outlier in eligible police costs per square foot of roadway area. While it is beyond the scope of this report to analyze why Milwaukee's transportation-related police costs are three times higher than the average of other large cities, it is worth noting that the eligible police cost per unit of area for the next largest city, Madison, is approximately half of the Milwaukee cost. This at least suggests the possibility that Milwaukee has unique law enforcement costs, unrelated to transportation, that cause its GTA-eligible police costs to be higher.

Figure 14: Milwaukee Reports High Police Costs

Eligible police costs per square foot of local road pavement

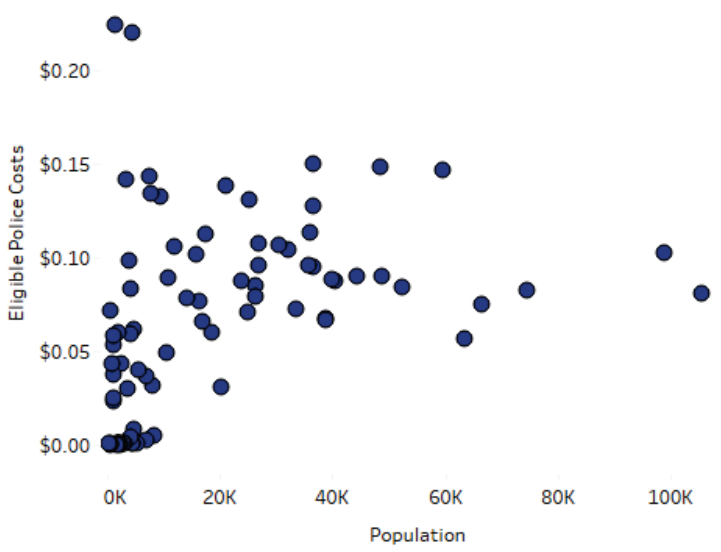


Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Figure 15 shows eligible police costs per square foot for the sample group municipalities versus their population. This figure shows the wide range of police costs for similar-sized communities, making it particularly difficult to distinguish the costs specifically related to traffic enforcement.

Figure 15: Police Costs Vary Greatly By Community

Eligible police cost by community per square foot of pavement vs. population (excludes Milwaukee and Madison)



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

For the purposes of developing our generalized model, we adjust Milwaukee's eligible police cost per square foot to the same amount as the average of the Tier 1 cities, multiplied by a factor to account for the higher percentage of arterial and collector streets in Milwaukee versus Tier 1 (35.8% vs. 29.3%). Because Milwaukee has 22.2% more arterial and collector streets than Tier 1, our model assigns a value for Milwaukee police costs that is 22.2% higher than the average of Tier 1. For all other tiers, our model uses the average eligible cost per square foot for that tier.

Maintenance

These costs include such general maintenance activities as pavement and curb and gutter repair; maintenance of bridges, culverts, and traffic control devices; snow and ice control; mowing, weed control, and ditch maintenance; sweeping and leaf collection; and pavement marking. Figure 16 shows the average annual eligible maintenance costs for each tier.

Fig. 16: Mid-Sized Communities Spend Most on Maintenance

Eligible maintenance costs per square foot of pavement

Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

For the purposes of our generalized model, we use the average eligible costs per square foot for each tier.

Lighting

These expenditures are for the maintenance and energy costs of roadway lighting. Similar to police costs, the eligible amount under the current formula varies by population:

- Population <= 2,500 – 100% of specified lighting costs are eligible
- Population Between 2,501 and 10,000 – 90% of specified lighting costs are eligible
- Population > 10,000 – 80% of specified lighting costs are eligible

Figure 17 shows reported street lighting costs, before the proration for population. Milwaukee's costs are 89% higher than the Tier 1 average. The lower cost in Tier 2 (suburban) is most likely due to a larger number of unlighted streets in the suburban cities and villages.

For our generalized model, we use the average expenditures for each classification except for Milwaukee, which we adjust to be 22.2% greater than Tier 1 to reflect the difference in functional classification, as previously discussed.

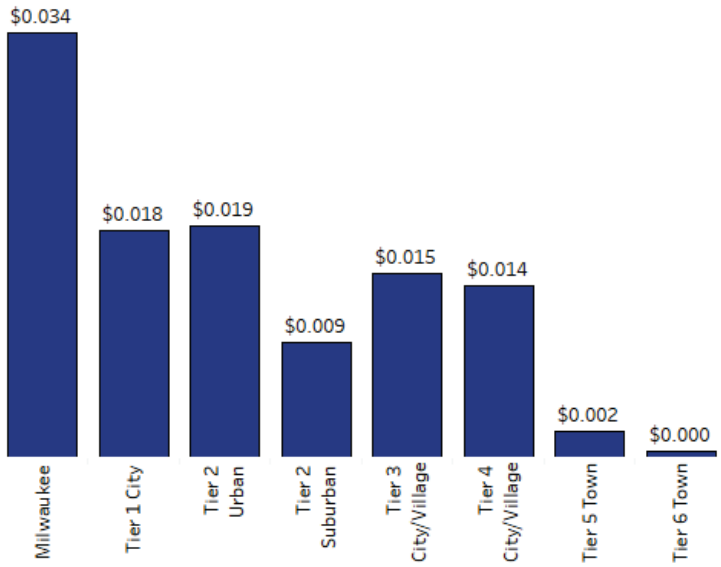
Storm Sewers and Drainage (not including capital outlay)

Under the current GTA formula, stormwater-related costs are divided into four categories: storm sewer maintenance, storm sewer construction, stormwater drainage, and stormwater drainage outlay. These are prorated at 60%, except for storm sewer maintenance, which is 100% eligible. For our generalized model, we include storm sewer maintenance and stormwater drainage only, as the other two categories are capital costs.

Figure 18 shows eligible storm sewer and stormwater drainage costs by tier. It is unclear why Milwaukee is an outlier when compared to other larger municipalities. This could be explained in part by the inclusion of 60% of stormwater utility costs, many of which may be more related to flood control than roadway drainage. Given the way these costs are aggregated in the municipal expenditure report, it is difficult to ascertain the true roadway-

Figure 17: Cities and Villages Have More Lighting

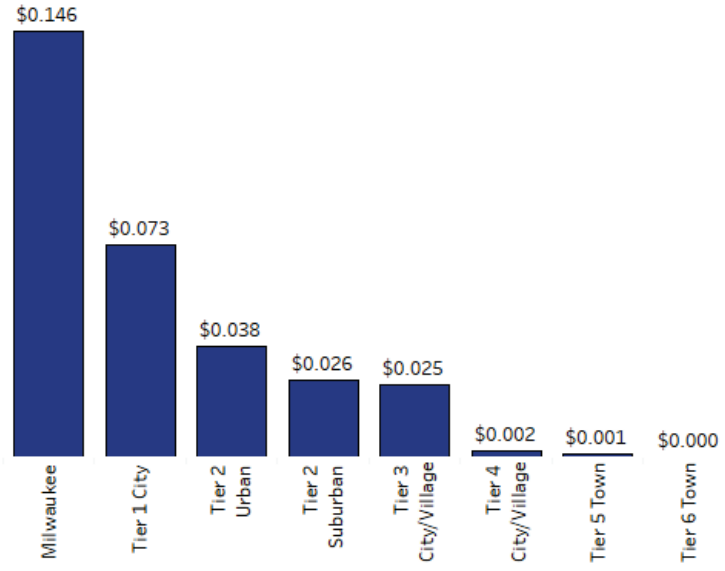
Eligible lighting costs per square foot of pavement



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Figure 18: Stormwater Costs Are Highest in Large Cities

Eligible storm sewer and drainage costs per square foot of pavement



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

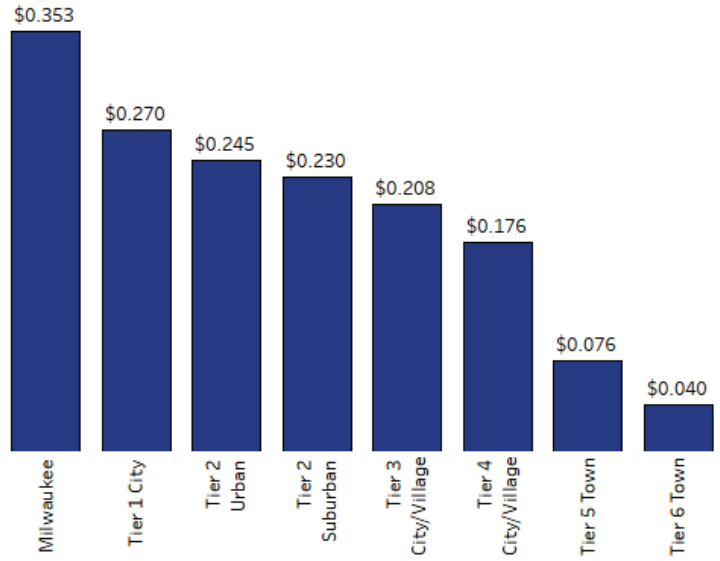
related stormwater costs. The 60% eligible cost share used in the current formula should be examined further. In the absence of that further analysis, we use the average eligible costs for each tier in our generalized model.

Operations and Maintenance Summary

Figure 19 shows the total operations and maintenance costs for each tier under the generalized model. This model uses average costs and other adjustments to "smooth out" the costs by tier. While this model includes the major cost drivers in roadway operations and maintenance, it does not include all costs that are included in the current GTA formula. It also does not completely address the accuracy of the proration factors for police, lighting, and stormwater costs.

Figure 19: Ongoing Needs Increase with Community Size

Modeled operations and maintenance needs per square foot of pavement



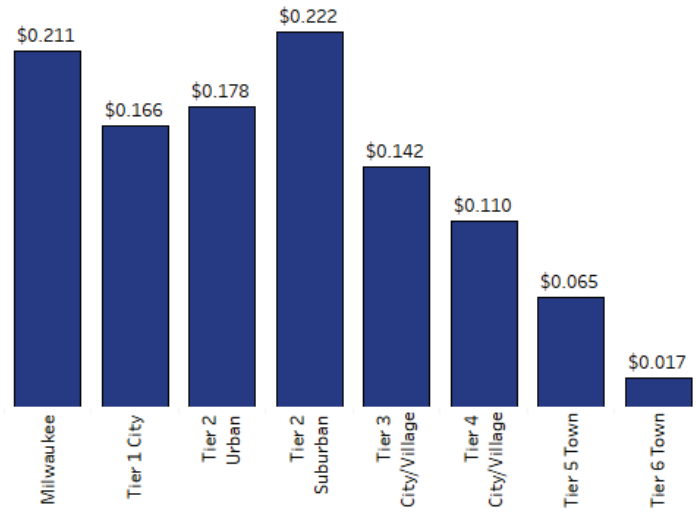
Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Capital Costs

In the current formula, capital costs are generally included in a category labeled "construction." This includes the activities typically involved in road, bridge, and culvert construction. It also includes the following capital and related costs: interest on highway debt, acquisition of vehicles, equipment and machinery, and construction or acquisition of highway-related buildings. These reported expenditures differ among the tiers and functional classifications as shown in Figure 20. Although costs do increase along with functional classification of the roads in the sampled communities, there is clearly a wide variation in their construction investment.

Figure 20: Larger Cities and Villages Report Higher Construction Costs

Eligible construction cost per square foot of pavement



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Generalized Life Cycle Cost Model

Unlike operational expenditures such as police, snow and ice control, and critical maintenance, capital

expenditures can be deferred indefinitely for policy, financial, or other reasons. Therefore, construction expenditures are not necessarily a reliable indicator of capital needs.

To make an assessment of relative capital needs, a generalized life cycle cost model was developed using the following assumptions:

- Roads will undergo one reconstruction and one resurface during their life cycle.
- Assumed lifecycle is 30 years for arterials and collectors, and 40 years for local streets.
- Arterial costs are derived from average arterial reconstruction and resurfacing costs used in the Southeastern Wisconsin Regional Planning Commission 2050 Regional Transportation Plan.
- Collector and local street cost estimates are based on average WisDOT unit prices for the typical major bid items (see Appendix 3).

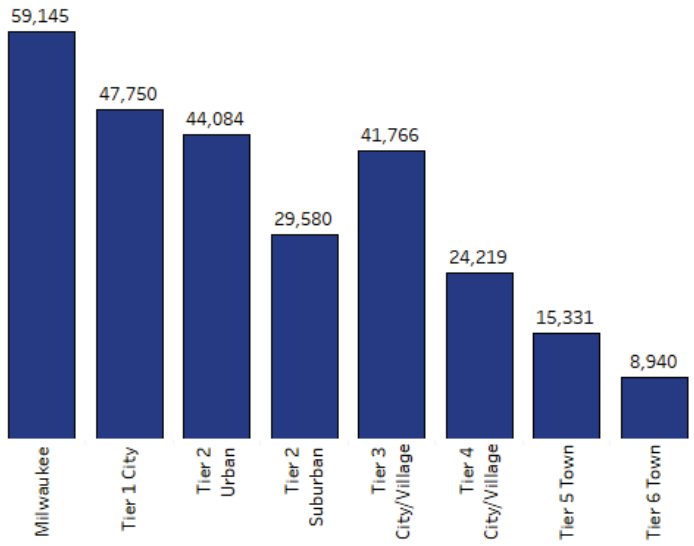
While the above are very generalized assumptions and do not include other cost elements that would be included in many projects, they do provide a rough estimate of current lifecycle costs for the major components needed to maintain roadway condition.

This generalized model takes into account pavement width, pavement life, and functional classification to generate an estimated annual capital expenditure needed to maintain system condition.

Using the assumptions shown above, we developed a formula to estimate the annual capital need for each sampled municipality (the formula is listed in Appendix Two). Figure 21 shows how this generalized life cycle cost model would apply to each tier. Higher estimated costs per mile result from a higher percentage of arterials and collectors, wider streets, and more urban cross-sections. Costs generally decrease as population decreases, with an exception for Tier 2 (suburban) due to its more suburban character compared to other large cities and villages.

Fig. 21: Modeled Capital Needs Highest in Urban Communities

Modeled capital need in $ per mile of local roads



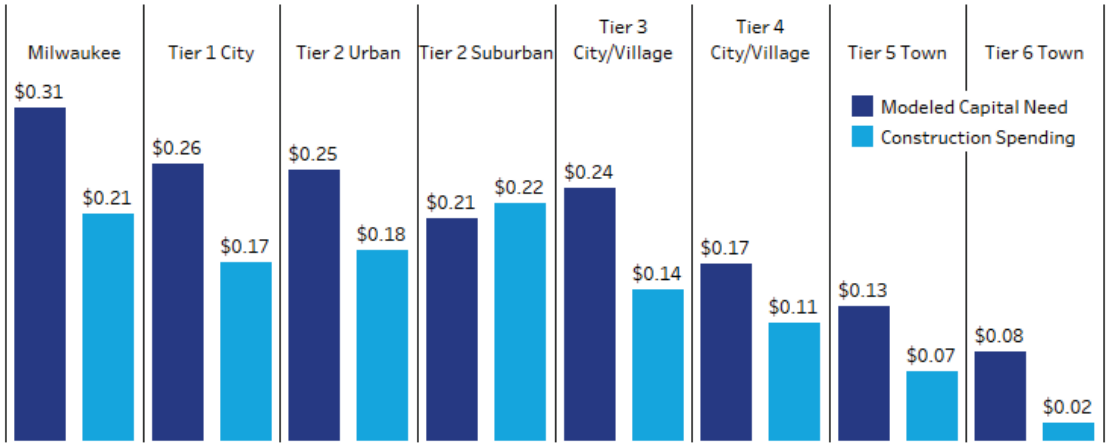
Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Comparing the Model to Actual Eligible Construction Expenditures

Figure 22 compares the generalized annual capital need to actual average annual eligible construction costs, by category. Because the life cycle model does not include all the same costs as the GTA construction category (i.e. equipment and buildings), this chart does not reflect the actual relationship of spending and need. However, it does provide valuable insight into the relative relationship between capital need and current investment in the various groups.

Figure 22: Cities and Villages Have Higher Relative Capital Spending

Modeled capital need versus construction spending in $ per square foot of pavement



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

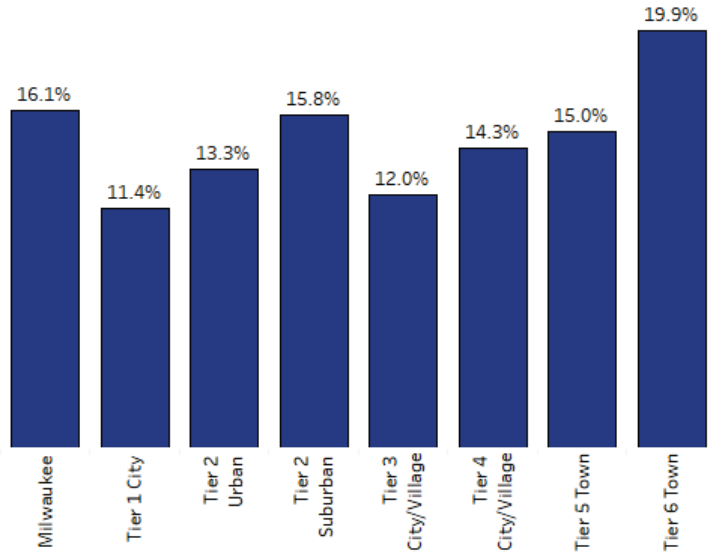
This figure shows a significant disparity for Tier 6 townships. For that tier, eligible construction costs are only about one-fifth of the model estimate, whereas that ratio is 52% for larger towns, and at least 60% for all other tiers. This raises the question of whether smaller towns may be underinvesting in capital improvements.

Summary and Conclusions

Figure 23 shows GTA received as a percentage of total need based on our model (O&M Model plus Life Cycle Capital Model), which again represents just one potential approach to assessing need. Under this analysis, the highest reimbursement rates are received by small rural townships (Tier 6 townships), while the lowest reimbursements are received by urban cities and villages with populations of greater than 5,000 (except Milwaukee).

Fig. 23: Small Towns Receive More State Aid Relative to Need

GTA received as percent of total modeled need



Sources: Wisconsin Department of Transportation and Revenue; based on a sample of 111 cities, villages, and towns.

Our model indicates that rural townships receive 24% more aid as a percentage of their need than Milwaukee, 74% more than other cities with populations greater than 50,000, and 65% more than cities and villages with populations between 5,000 and 25,000. Meanwhile, large suburban municipalities, larger townships, very small cities and villages, and Milwaukee lie in the midrange of reimbursement rates, but still below the smaller towns.

Due to its simplified criteria and reliance on per-mile aid for most towns and very small cities and villages, the current GTA formula does not efficiently distribute aid in proportion to actual need as determined by our model. Further, despite their relatively high reimbursement rates, rural towns have the widest gap between capital needs and actual capital investment, which may indicate they are not taking full advantage of the strong level of road aids they receive from the state when compared to other types of municipalities. We have noted that payments under the mileage formula do not change regardless of the level of construction and maintenance spending by the local government.

The model described in this section is not definitive and could be refined based on further analysis and research. It serves as only one example of the options that would be available for distribution of aid based on actual need, rather than historical spending or a simple per-mile calculation. Given that Wisconsin already has made a significant investment to create and maintain a comprehensive database of road conditions and characteristics in every municipality, an opportunity clearly exists to combine these available data with a uniform method for calculating maintenance and capital needs to potentially distribute GTA funds more fairly and equitably.

Summary

- The current aid formula does not appear to distribute aid in proportion to actual need across all tiers of municipalities.
- Rural towns receive the most aid as a percentage of their modeled need.
- Milwaukee receives higher reimbursement than other large cities, primarily due to its much higher eligible police costs.
- Rural towns have the widest gap between capital needs and capital spending. Their relatively high rate of aid received does not appear to have translated into high levels of capital improvements.
- The relative needs of large suburban municipalities (over 25,000 population) are less than the needs of similar-sized urban municipalities, due to different physical characteristics (width, roadway type, and functional classification).

PART 4: POLICY OPTIONS AND CONCLUSION

As we have seen, Wisconsin provides some of the largest state road aid payments in the country to its local governments but has now gone decades without major revisions to its primary program, General Transportation Aids. Given the steady increases in the state's GTA payments, state and local officials may see a value in reviewing the program and evaluating whether it needs changes to meet its goals.

Our analysis has found that over time, program payments have shifted toward smaller communities and covered greater police costs rather than direct transportation-related costs such as road construction or maintenance. Compared to its four border states, Wisconsin depends much more on a community's road mileage and spending in distributing aid and less on factors such as vehicle registrations, population, and need that might tend to favor larger communities with wider roads that require more improvements.

In addition, despite the additional state funds being directed into the GTA program, a significant share of local roads have deteriorated to the degree that they need major capital investments for reconstruction or resurfacing. Notably, those include a high percentage of streets in Milwaukee, the state's largest city, and some other cities as well as roads in the state's least populated towns.

In light of those facts, we present here some options for modifying the GTA program for state officials to consider, starting with more modest alternatives.

Option 1 – Strengthening Local Input

In the past, local officials had a voice in state transportation policy through the Local Roads and Streets Council. For example, the changes made to the GTA cost formula in the 1990s were done in consultation with this advisory council of more than two dozen members from towns, villages, cities, counties, and regional planning commissions.[47] However, the council is no longer used and has not been replaced by a similar body.

State officials might consider ways to re-incorporate local input in the GTA system – something that is already done within the Local Roads Improvement Program. That could be accomplished either through a permanent body such as the streets council or an ad hoc group of local officials convened to deal with specific major issues. For most of the options presented here, state officials who choose to consider these alternatives would likely benefit from the input of local officials.

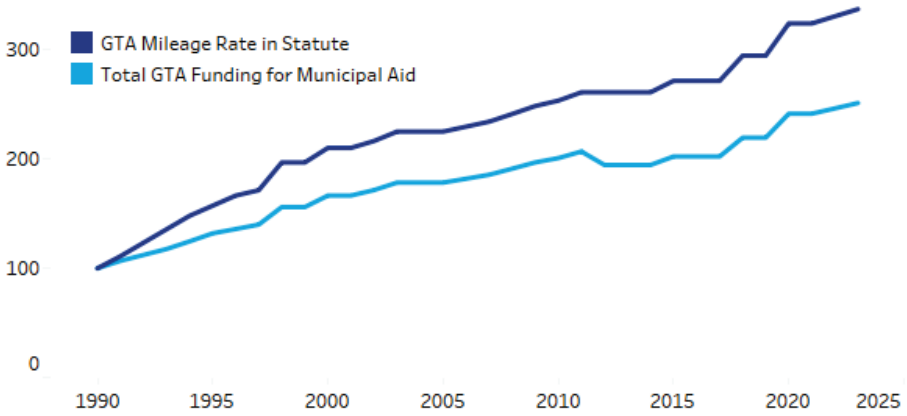
Option 2 – Balancing the Needs of Different Communities

Part One shows how the state has increased the mileage payment rates within the GTA program much more quickly over the past several decades than the overall funding for the program (see Figure 24). Given that mileage payments to municipalities are made before other payments, that means that greater GTA allocations are going to the towns and smaller villages that rely on this formula.

Since 2013, lawmakers have kept percentage increases to the mileage rate within the GTA program to the same overall increase or decrease in the GTA program funding for municipalities. In other words, they have kept the indexed values tracking one another on a chart such as Figure 24 rather than let them diverge further over time. Continuing such an approach would allow communities to share equally in any rise or fall in funding.

Figure 24: Growth in GTA Mileage Rate Exceeds Overall Program

Indexed value of GTA mileage rate versus total municipal aid, 1990 values=100



Source: Wisconsin Department of Transportation; state statues; GTA payments were kept the same in 2001 - effectively suspending mileage rates for one year - so the 2000 mileage rate value was used for both years.

In their "Keep Wisconsin Moving" report in January 2013, public officials and industry representatives on the Wisconsin Transportation Finance and Policy Commission suggested a similar approach of linking the mileage rate and overall GTA funding.[48] In addition, the commission suggested rebalancing the program by decreasing the mileage rate by 6%, the same as the overall 2012 decrease in the GTA program. An actual cut might prove politically difficult, however. If policymakers want to put a greater emphasis on funding for the share of cost formula, they could consider providing a one-time bump in overall GTA funding without increasing the mileage rate.

The commission presented this option as part of a larger series of recommendations to place more emphasis on roads that carry more traffic and went even further in advocating for a reduction to the mileage rate at the time. The commission also suggested lowering the maximum amount of reimbursement that communities could receive under the GTA program to 75% of their average costs over a three-year period instead of the 85% limit that was then in place.

Beyond linking increases in the mileage rate to overall program funding, none of those options ultimately were pursued since 2013. In the case of the 85% reimbursement limit, it was actually raised to 98% for certain towns with low property values in the state's 2021-23 budget. This suggests that many lawmakers have a fundamentally different view of these issues that may make changing state policy unlikely. Still, state officials may wish to have an open debate about these trends and whether they should continue.

Last, policymakers may wish to consider the ongoing potential impacts of levy limits on local communities and whether the levy caps are effectively limiting eligible GTA spending and payments for some slow-growing municipalities and counties. Here, lawmakers could choose to make some change to the levy caps themselves or instead focus on ways to limit the potential impact on GTA payments. One approach might be to further limit the maximum potential loss of GTA payments in any one year (the current maximum is 10%). Another option might be to provide every community with at least a minimal level of eligible cost growth each year (1% for example) even if their actual expenses did not grow.

Option 3 – Overhauling the GTA Formula

For a quarter-century, questions have been raised from time to time about whether the GTA eligible costs formula does enough to promote local spending on construction and maintenance. Concerns about the rising share of police costs within the formula drew the attention of the Legislative Audit Bureau in 1997 and led to changes in the following years to reduce the amount of law enforcement costs that could be included in the formula.

Since then, however, the share of law enforcement costs has gradually risen once again. Some of the same communities highlighted by the Audit Bureau for a high share of police costs within the formula continue to receive larger GTA payments for them today.

Unlike many aspects of GTA policy, the formula factor related to law enforcement can be changed by officials at the state Departments of Transportation and Revenue without any action by lawmakers. If state officials wish to prioritize using GTA funding for road construction and maintenance, they could choose to emphasize those costs to a greater degree within the formula or further reduce the share of law enforcement costs that local governments could count as eligible expenses.

State officials may ultimately decide that traffic patrols are an important way of ensuring safe roads and that police costs may be less of an issue given their smaller increases in 2019 as reported by the Forum in a separate publication.[49] Either way, however, state officials may wish to consult with local officials as they did in the 1990s through what was then the Local Roads and Streets Council.

Last, policymakers may wish to consider the degree to which a "cliff effect" exists within the GTA formula for calculating eligible police and street lighting costs. For example, currently only three population categories for municipalities are used in determining their eligible share of police costs: up to 10,000 (these counties can count 50% of their law enforcement expenses); 10,001 to 35,000 (32.5%); and over 35,000 (26%). Creating several more population categories with a more gradual shift in percentages could allow for more equitable treatment of communities of similar sizes.

Option 4 – Considering a New Formula

Policymakers also may wish to consider several approaches for revising the state's formula for awarding local road aids to make it more fair and effective. Any changes to the formula should be weighed carefully, particularly if they make it more complicated for the public to understand and local and state officials to administer. Still, neighboring states use more formula factors than Wisconsin to allocate aid and state officials may wish to consider those options, including:

Road types and characteristics

As we have noted, the state's current approach emphasizes local road mileage without distinguishing between wide urban roads and the simple dirt or gravel roads that exist within the state. Some neighboring states take into account the characteristics of local roads while distributing aid. Those include Iowa, where the state looks explicitly at which roads are paved, gravel, or dirt, as well as the vehicle miles traveled on certain roads; and Michigan, where certain roads are designated as "primary" because of their importance. Minnesota also implicitly looks at local road types by factoring in their cost to construct and maintain.

Wisconsin could adopt one or more of these approaches. Alternatively, it could account for a road's classification as a collector or arterial or factor in a road's width in addition to its length. Doing so might deliver more aid to the communities with the most traffic and commerce on their roads. Though this approach might disadvantage smaller communities, other factors could be considered for balance such as a community's land mass (a criterion used by Iowa).

Population and vehicle registrations

Other formula factors can serve as a proxy for a community's road needs. Those include the population in the community – a factor used by all four of Wisconsin's neighboring states – or the number of vehicles that are kept there or the registration fees paid on those fees, a criterion used by Illinois, Michigan, and Minnesota.

Like those on roads listed above, these factors are easy to explain and understand and would also tend to deliver aid to areas with well-traveled roads and greater needs. However, these factors may disfavor, at least to a certain degree, some less populated communities that still have large numbers of commuters, travelers, and commercial traffic passing through them.

Need

Wisconsin could also allocate more of its road funding based on the actual construction or maintenance needs of its local communities. The formula presented in Part Three represents one approach to doing that. In general, the formula seeks to factor in average actual maintenance, police, lighting, and other spending by different classes of municipalities by size to arrive at a reasonable figure.

For construction costs, the model looks at the length and width of street segments, their expected life, and their classification as either arterial, collector, or local roads. The model then computes how much it would cost to build and then reconstruct or rehabilitate these roads over their expected life and adds these costs to the other expenses above to arrive at a total need figure for each community.

A major benefit of the model is that it would incorporate an objective standard for assessing a community's actual construction needs and would not be driven purely by the number of road miles in a community or what communities have previously spent on road-related costs. However, this approach is just one of many that could be used; another example would be the complex needs formula employed by Minnesota or a model that also seeks to incorporate the actual current ratings of individual pavement segments.

Under the model put forward in Part Three and based on current GTA funding, most cities and villages would see increases in state payments. The city of Milwaukee, however, and some smaller to midsize suburban cities and villages would receive less in state aid. The smallest cities and villages and largest towns would experience little change and the smallest towns would see a decrease.

The loss for some communities under the change might make it difficult to achieve politically. Legislators might ease the path by providing additional funding to the program to ensure that all communities were held harmless and did not lose GTA funding. However, the additional cost would bring a hurdle of a different type – finding sufficient funding within the larger state budget.

Option 5 – Other Approaches

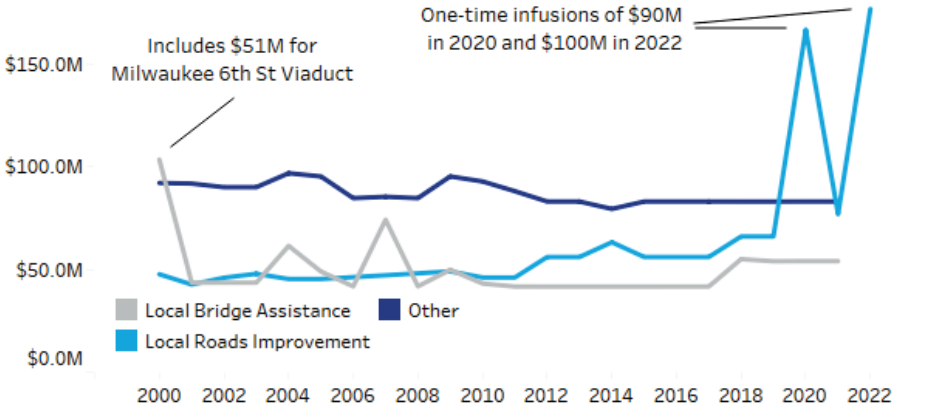
This report has focused on the GTA program and not on other local transportation programs and issues. We note here, however, that some of the challenges facing the GTA program and local governments could be addressed outside of the program itself.

For example, instead of modifying the GTA formula, state officials wishing to place a greater emphasis on improving local roads could continue their relatively recent approach of prioritizing funding for other forms of state aid such as the Local Road Improvement Program. LRIP payments are a significant source of state funding for local road projects, with the state providing up to 50% of the cost and the community in question generally providing the remainder.

Other programs include local bridge assistance, which uses state and federal funds to cover up to 80% of bridge projects that are not on state trunk or connecting highways (urban streets that also have a state highway number). As shown in Figure 25, even before adjusting for inflation, funding over the past two decades has been relatively flat for these programs. That changed in recent years, however, as lawmakers provided a large one-time $90 million increase in funding for communities eligible for the LRIP program in fiscal 2020 and an additional $100 million in 2022.

Figure 25: Other Local Government Transportation Aids See Recent Growth

State and federal transporation aid program funding in nominal $ by fiscal year



Source: Wisconsin Department of Transportation; figures do not include certain one-time stimulus or other federal funds in fiscal years 2000, 2001, 2009, and 2010.

The state could choose to continue this approach of funneling increases in local road funding into LRIP or similar programs rather than GTA payments – another recommendation of the "Keep Wisconsin Moving" report. To some degree, this approach shifts funding toward road construction and related projects away from some other activities such as maintenance and law enforcement that are supported under the GTA formula. By the same token, it would also shift money away from communities that focus more on policing and road upkeep than on new construction and might also give a boost to communities with rapid growth or a backlog of needed construction projects.

Conclusion

As this report has shown, the state of Wisconsin has some of the highest per capita road and highway costs in the country as well as some of the largest state road aid payments to local governments. Despite that, problems with road quality are present in the state's smallest communities as well as Milwaukee, its largest, and dozens of municipalities and counties have turned to local vehicle registration fees to ensure more road funding. In the meantime, state elected officials have made few changes to the state's main road aid program over the past two decades.

In seeking to understand the impacts of the General Transportation Aids program and possible opportunities for improvement, our study found:

- Wisconsin ranked sixth-highest nationally for per capita state and local highway spending on operations and capital in 2017 – a reflection in part of our harsh winters and many rural roads. State highway aid to local governments in Wisconsin was seventh-highest, underlining the importance of ensuring these sizable aid programs are effective and well-constructed.

- While funding for some other prominent sources of state aid to local governments in Wisconsin – such as the state shared revenue program – has eroded over time due to inflation, that has not been the case for the GTA program. It has grown more quickly than inflation since 1990 (though more slowly than road construction costs) and is the second-largest form of state aid for municipalities and one of the largest for counties. However, other state aid programs for transportation have not kept pace and more and more local governments are increasing vehicle registration fees to help pay for roads.

- GTA payments cover more of the eligible road-related costs for small governments such as towns than for the largest cities and villages. Since 1990, the mileage payment system used primarily by towns has seen its funding increase more rapidly than the GTA program as a whole, meaning that a larger share of the program has gone to those communities. This trend may have removed an incentive for smaller communities to invest in their roads since they receive the same mileage payment regardless of their spending on them.

- Over the past two decades, a larger share of the GTA program has also gone toward partial reimbursement of certain costs such as police that are related but not directly tied to roads.

- Compared to Minnesota, Iowa, Michigan, and Illinois, Wisconsin uses fewer formula factors to distribute local road aids, relying more heavily on road mileage than its neighbors and less on population, vehicle registrations, or vehicle miles traveled. This may have the effect of favoring less populous communities and those with narrower, less expensive roads with less traffic and fewer amenities. Wisconsin's greater emphasis on past road-related spending may also favor communities with large road budgets over those with greater need.

- The analysis and needs model in this report suggests the current aid formula does not distribute aid efficiently in proportion to actual need across all classes of municipalities. Rural towns receive aid for a higher proportion of their need than all classes of cities and villages except the city of Milwaukee, which receives more aid because of its relatively high police costs. Yet both the smallest towns and Milwaukee seem to be spending much less than needed to meet their capital road needs.

Overhauling the GTA program poses many challenges given its size and long history. Yet there are also drawbacks to appropriating ever larger amounts of state funds for the current program without ensuring those amounts achieve the best possible outcomes. In exploring the complexities of the GTA program and the opportunities to improve it, we hope to stimulate renewed discussion about how those dollars can best be distributed to ensure Wisconsin residents and businesses enjoy the safe and high-quality roads that are needed to enhance the state's economy and preserve the quality of life of its residents.

APPENDIX 1: COMMUNITY SAMPLE USED IN NEEDS MODEL

Municipality	Type	Primary County
Adams	Town	Adams
Angelo	Town	Monroe
Appleton	City	Outagamie
Ashwaubenon	Village	Brown
Baldwin	Village	St. Croix
Barneveld	Village	Iowa
Beloit	City	Rock
Bloomfield	Village	Walworth
Bridge Creek	Town	Eau Claire
Brillion	Town	Calumet
Brookfield	City	Waukesha
Buchanan	Town	Outagamie
Burlington	City	Racine
Caledonia	Village	Racine
Campbell	Town	La Crosse
Dakota	Town	Waushara
Darien	Village	Walworth
Delafield	Town	Waukesha
Dellona	Town	Sauk
Dover	Town	Racine
Doylestown	Village	Columbia
Dunkirk	Town	Dane
Dunn	Town	Dane
Eden	Town	Iowa
Elk Mound	Town	Dunn
Ellington	Town	Outagamie
Fitchburg	City	Dane
Fond du Lac	City	Fond du Lac
Franklin	City	Milwaukee
Grafton	Village	Ozaukee
Grantsburg	Village	Burnett
Green Bay	City	Brown
Green Bay	Town	Brown
Greenfield	City	Milwaukee
Harding	Town	Lincoln
Hartford	City	Washington
Holmen	Village	La Crosse
Howard	Village	Brown
Hudson	City	St. Croix
Jackson	Town	Washington

Municipality	Type	Primary County
Jamestown	Town	Grant
Janesville	City	Rock
Kenosha	City	Kenosha
Kingston	Village	Green Lake
Kinnickinnic	Town	St. Croix
La Crosse	City	La Crosse
Lemonweir	Town	Juneau
Luck	Village	Polk
Luxemburg	Village	Kewaunee
Madison	City	Dane
Manitowoc	City	Manitowoc
Maribel	Village	Manitowoc
Menasha	City	Winnebago
Menomonee Falls	Village	Waukesha
Menomonie	City	Dunn
Merrimac	Village	Sauk
Merton	Village	Waukesha
Middleton	City	Dane
Milwaukee	City	Milwaukee
Mosinee	City	Marathon
Mosinee	Town	Marathon
Mount Calvary	Village	Fond du Lac
Mount Pleasant	Village	Racine
Muscoda	Village	Grant
Muskego	City	Waukesha
Nashotah	Village	Waukesha
Necedah	Town	Juneau
Neenah	City	Winnebago
New Berlin	City	Waukesha
New Chester	Town	Adams
New London	City	Waupaca
Nichols	Village	Outagamie
Oak Creek	City	Milwaukee
Ogdensburg	Village	Waupaca
Oneida	Town	Outagamie
Osceola	Town	Fond du Lac
Oshkosh	City	Winnebago
Pelican	Town	Oneida
Plainfield	Village	Waushara
Plover	Town	Portage

Municipality	Type	Primary County
Rib Lake	Town	Taylor
Rib Mountain	Town	Marathon
Ringle	Town	Marathon
Ripon	City	Fond du Lac
Russell	Town	Bayfield
Saratoga	Town	Wood
Saukville	Village	Ozaukee
Sheboygan	City	Sheboygan
Shullsburg	City	Lafayette
Somerset	Town	St. Croix
St. Marie	Town	Green Lake
Stevens Point	City	Portage
Sugar Camp	Town	Oneida
Sun Prairie	City	Dane
Superior	City	Douglas
Tomah	City	Monroe
Trempealeau	Town	Trempealeau
Trenton	Town	Dodge
Wagner	Town	Marinette
Washburn	City	Bayfield
Waterford	Village	Racine
Waterloo	City	Jefferson
Watertown	City	Jefferson
Wausau	City	Marathon
Wausaukee	Village	Marinette
Wauwatosa	City	Milwaukee
West Allis	City	Milwaukee
West Bend	City	Washington
Windsor	Village	Dane
Wisconsin Rapids	City	Wood
Wyeville	Village	Monroe

APPENDIX 2: FORMULA FOR ESTIMATING CAPITAL NEEDS

$$Nu = 20.194 * \frac{A}{30} + 8.496 * \frac{C}{30} + 7.052 * \frac{L}{40}$$

$$Nr = 19.642 * \frac{A}{30} + 5.441 * \frac{C}{30} + 4.527 * \frac{L}{40}$$

where

$Nu = Annual\ capital\ need\ (urban\ cross\ section)$

$Nr = Annual\ capital\ need\ (rural\ cross\ section)$

$A = square\ feet\ of\ paved\ arterial\ roadway$

$C = square\ feet\ of\ paved\ collector\ roadway$

$L = square\ feet\ of\ paved\ local\ street\ roadway$

APPENDIX 3: COSTS FOR LOCAL AND COLLECTOR ROADS

Capital Costs per Square Foot for Collector and Local Roads as Used in Model

	Urban Collector		Urban Local		Rural Collector		Rural Local	
	Reconst	Rehab	Reconst	Rehab	Reconst	Rehab	Reconst	Rehab
Pavement Removal	$ 0.347		$ 0.347		$ 0.347		$ 0.347	
Pavement Milling		$ 0.194		$ 0.194		$ 0.194		$ 0.194
Unclassified Excavation	$ 0.238		$ 0.158		$ 0.238		$ 0.158	
Stone Base	$ 0.889		$ 0.593		$ 0.889		$ 0.593	
Asphalt Pavement	$ 1.526	$ 1.335	$ 1.335	$ 1.144	$ 1.526	$ 1.335	$ 1.144	$ 1.144
Curb and Gutter Replacement	$ 1.135	$ 0.341	$ 1.277	$ 0.255				
Shouldering					$ 0.119	$ 0.020	$ 0.162	$ 0.028
Reconstruct Catch Basin	$ 0.833		$ 0.938					
Reconstruct Storm Manhole	$ 0.145		$ 0.163					
Culvert Replacement					$ 0.514		$ 0.541	
Lighting Replacement	$ 0.417							
Topsoil and Seed	$ 0.071		$ 0.079					
Engr/Inspection, etc.	$ 0.840	$ 0.187	$ 0.489	$ 0.080	$ 0.182	$ 0.077	$ 0.147	$ 0.068
Subtotal	**$ 6.439**	**$ 2.057**	**$ 5.378**	**$ 1.674**	**$ 3.814**	**$ 1.627**	**$ 3.092**	**$ 1.435**
Total over analysis period	**$8.496**		**$7.052**		**$5.441**		**$4.527**	

Source of unit price information: https://wisconsindot.gov/hcciDocs/contracting-info/average-unit-price.pdf

APPENDIX 4: ARTERIAL ROAD COSTS

Arterial Construction Costs by Type (Millions of 2020$)

Improvement Type	Cross-section		Cost Per Mile	
	Type	No. of Lanes	Local/County	State
Resurface	Rural	2 Lane	0.49	0.61
		4 Lane-Undivided	0.80	1.03
		4 Lane-Divided	0.93	1.18
		6 Lane-Divided	1.20	1.54
	Urban	2 Lane	0.72	0.89
		4 Lane-Undivided	1.02	1.28
		4 Lane-Divided	1.17	1.47
		6 Lane-Divided	1.52	1.92
		8 Lane-Divided	2.03	2.57
Reconditioning	Rural	2 Lane	0.98	1.10
		4 Lane-Undivided	1.54	1.94
		4 Lane-Divided	1.89	2.40
		6 Lane-Divided	2.51	2.97
	Urban	2 Lane	1.03	1.31
		4 Lane-Undivided	1.83	2.17
		4 Lane-Divided	2.40	2.97
		6 Lane-Divided	2.63	3.31
		8 Lane-Divided	3.54	4.46
Reconstruct Without Added Traffic Lanes	Rural	2 Lane	2.03	2.23
		4 Lane-Undivided	4.07	4.44
		4 Lane-Divided	4.35	4.76
		6 Lane-Divided	6.51	7.12
	Urban	2 Lane	3.56	4.87
		4 Lane-Undivided	5.71	6.24
		4 Lane-Divided	7.45	7.61
		6 Lane-Divided	11.14	11.38
		8 Lane-Divided	14.85	15.17
Reconstruct With Added Traffic Lanes	Rural	4 Lane-Undivided	4.23	4.60
		4 Lane-Divided	4.54	5.21
		6 Lane-Divided	6.78	7.47
	Urban	4 Lane-Undivided	7.20	7.38
		4 Lane-Divided	7.70	7.91
		6 Lane-Divided	11.51	11.81
		8 Lane-Divided	15.35	15.76
New Construction	Rural	2 Lane	4.23	4.34
		4 Lane-Undivided	5.42	5.56
		4 Lane-Divided	6.09	6.26
		6 Lane-Divided	9.14	9.38
	Urban	2 Lane	5.59	5.74
		4 Lane-Undivided	8.30	8.51
		4 Lane-Divided	8.80	9.04
		6 Lane-Divided	13.20	13.55
		8 Lane-Divided	17.60	18.08

Source: Southeastern Wisconsin Regional Planning Commission
Does not apply to freeway projects or include bridge costs.

ENDNOTES

[1] The many other routine responsibilities including providing guardrails and barriers, both sewers and open ditches for storm water, sweeping, and routine maintenance such as grading, crack sealing, mowing, striping, and tree trimming.
[2] See the January 2021 Wisconsin Legislative Fiscal Bureau (LFB) Informational paper "Transportation Aid": https://docs.legis.wisconsin.gov/misc/lfb/informational_papers/january_2021/0039_transportation_aid_general_transportation_and_connecting_highway_aid_informational_paper_39.pdf.
[3] A description of the payments can be found in the LFB's 2019-21 comparative budget summary: https://docs.legis.wisconsin.gov/misc/lfb/budget/2019_21_biennial_budget/200_comparative_summary_of_provisions_2019_act_9_august_2019_by_agency/transportation.pdf.
[4] The GTA payment figures come from state statutes and from LFB information papers. The shared revenue figures come from LFB Informational papers including "Shared Revenue Program": https://docs.legis.wisconsin.gov/misc/lfb/informational_papers/january_2021/0021_shared_revenue_program_county_and_municipal_aid_and_utility_aid_informational_paper_21.pdf.
[5] See LFB "Transportation Aid" informational paper and the Wisconsin Department of Transportation (DOT) publication "General Transportation Aids": https://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/highway/gta.pdf.
[6] The state also relies heavily on federal aid for much of its transportation programs. Borrowing is another important tool for financing projects.
[7] GTA payments to municipalities are made quarterly on the first Monday of January, April, July, and October. Counties receive three payments, with half of their aid paid in on the first Monday of July and one-quarter on the first Mondays of January and October.
[8] The Consumer Price Index is the U.S. city average for all urban consumers. The DOT construction cost index can be found here: https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnslt-rsrces/tools/estimating/wisdot-cci.pdf and a brief description of its methodology can be found here: https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnslt-rsrces/tools/estimating/understanding-the-cci.pdf For more detail, readers can consult the methodology of the federal construction cost index on which the state index is based: https://www.fhwa.dot.gov/policy/otps/nhcci/methodology.cfm.
[9] See the DOT's "2020-2021 Transportation Budget Trends": https://wisconsindot.gov/Documents/about-wisdot/performance/budget/TransportationBudgetTrends2020-21.pdf or Wisconsin Statutes 86.30. Note that unlike elsewhere in the report the GTA payments used here are for state fiscal years.
[10] One exception was 2001, when the state formulas were suspended and communities simply received the same payment as they had received in 2000. See the DOT's "2020-2021 Transportation Budget Trends."
[11] See Wisconsin Legislative Audit Bureau, May 1997 (97-7), "An Evaluation: General Transportation Aid Program."
[12] See the DOT's "2020-2021 Transportation Budget Trends." In addition to police, the GTA formula also restricts how much larger communities can count of their lighting expenses.
[13] See the LFB's 2021-23 comparative budget summary: https://docs.legis.wisconsin.gov/misc/lfb/budget/2021_23_biennial_budget/400_comparative_summary_of_budget_recommendations_governor_and_joint_committee_on_finance_june_2021_by_agency/transportation.pdf.
[14] See the DOT's "2020-2021 Transportation Budget Trends."
[15] For more on local vehicle registration fees, see this June 2018 WPF research brief: https://wispolicyforum.org/research/local-governments-turn-to-wheel-taxes-as-other-revenues-lag/
[16] For a detailed methodology of the data used here and in the "Dollar for Dollar" report, see page 3 of that report: https://wispolicyforum.org/research/dollar-for-dollar-where-does-wisconsin-rank-in-local-government-spending/ For the highway analysis here, we used Census Codes 44 and 45 for highways and toll highways.
[17] This calculation was done by dividing the amount of state highway aid to towns by the number of town residents in each state. Doing the calculation by dividing the highway aid to towns by the number of total state residents yields a similar result.
[18] See the website of the Michigan Department of Treasury as accessed on August 30, 2021 (https://www.michigan.gov/taxes/0,4676,7-238-75545_43715-153955--,00.html) and this 2019 publication

of the Illinois Association of County Board Members on motor fuel taxes: https://ilcounty.org/file/247/Insight%202019%2007-A%20Motor%20Fuel%20Tax_Layout%201.pdf.
[19] For a detailed description of Minnesota state road aid programs to local governments, see this Minnesota Department of Transportation manual: http://www.dot.state.mn.us/stateaid/manual/2015esam.pdf.
[20] For a very brief overview of the Highway Users Tax Distribution Fund, see this Minnesota DOT pamphlet: http://www.dot.state.mn.us/stateaid/admin/sa-hutdf.pdf.
[21] See the July 2020 report "Minnesota Roadway Funding: Revenue Sources and Distribution" by the University of Minnesota Institute for Urban and Regional Infrastructure Finance: https://tpec.umn.edu/publications/documents/RevenuesMN_July20.pdf
[22] See Minnesota DOT "State Highway Jurisdictional Transfer Program": http://www.dot.state.mn.us/stateaid/admin/info/turnback.pdf.
[23] April 2020 research brief by Minnesota House Research Department, "County State-Aid Highway System": https://www.house.leg.state.mn.us/hrd/pubs/ss/sscsah.pdf and Minnesota Department of Transportation "County State Aid Highway Needs" http://www.dot.state.mn.us/stateaid/admin/info/csah.pdf
[24] For more details on the formula factors and results, consult the January 2021 "CSAH Distribution Data" report from the Minnesota DOT: http://www.dot.state.mn.us/stateaid/csah/csah-januarybooks/csah_winter_2021.pdf.
[25] State of Minnesota, "County Screening Board Data": https://www.lrl.mn.gov/docs/2020/other/201053.pdf and also see a description of the needs calculation here: http://www.dot.state.mn.us/stateaid/csah/csah-januarybooks/csah_winter_2021.pdf.
[26] June 2020 research brief by Minnesota House Research Department, "Municipal State-Aid Street System": https://www.house.leg.state.mn.us/hrd/pubs/ss/ssmsas.pdf and Minnesota DOT brief "Municipal State Aid Street Needs": http://www.dot.state.mn.us/stateaid/admin/info/msas.pdf.
[27] For more details on the formula factors and results, consult the January 2021 "Municipal State Aid Street Apportionment Data" report from the Minnesota Department of Transportation: http://www.dot.state.mn.us/stateaid/msas/msas-januarybooks/msas_winter_2021.pdf.
[28] State of Minnesota, "County Screening Board Data" : https://www.lrl.mn.gov/docs/2020/other/201053.pdf
[29] See Iowa Department of Transportation document, "Fiscal Year 2022 Transportation Funding": https://iowadot.gov/about/pdf/pipeline.pdf.
[30] Iowa Code §312.2(1).
[31] See September 2019 Iowa DOT Office of Analytics report "Iowa Miles of Rural Secondary Roads as of January 1, 2019": https://iowadot.gov/analytics/pdf/secbook2019.pdf
[32] See Iowa Code 761-102.2(2): https://www.legis.iowa.gov/docs/iac/rule/761.102.2.pdf
[33] See September 2020 Iowa DOT report "Miles of Public Roads in Iowa by Surface Type": https://iowadot.gov/analytics/images(annual)/MIJAN2020.pdf.
[34] See Iowa DOT "City Funding and Information": https://iowadot.gov/local_systems/City-Reports-and-Funding
[35] See August 2000 Michigan BTP Intermodal Policy Division "Act 51 Made Simple": https://www.michigan.gov/documents/act51simple_28749_7.pdf and Michigan DOT presentation "Michigan Transportation Fund Distribution" https://www.michigan.gov/documents/mdot/MDOT_MTF_Distribution_288779_7.pdf.
[36] March 2021 Michigan DOT "Fiscal Year 2020 Actual Michigan Transportation Fund Distribution Data": https://www.michigan.gov/documents/mdot/2020FLOWCHART_Actual_723310_7.pdf; exact transportation fund revenues and distributions for fiscal 2020 were provided by the Michigan House Fiscal Agency.
[37] March 2021 Michigan House Fiscal Agency "MTF Distribution Formula to Local Road Agencies": https://www.house.mi.gov/hfa/PDF/Alpha/Fiscal_Brief_MTF_Distribution_Formula_to_LRA_Mar2021_Update.pdf.
[38] See Michigan DOT "Road and Highway Facts": https://www.michigan.gov/mdot/0,4616,7-151-9623_11154-129683--,00.html.
[39] August 2000 "Summary Act 51 of the Public Acts of 1951, As Amended": https://www.michigan.gov/documents/act51simple_28749_7.pdf.
[40] See "MTF Distribution Formula."
[41] Michigan Code 247.662(9)
[42] May 2018 Michigan House Fiscal Agency Memorandum "RE: MTF Distribution Formula to Local Road Agencies": https://perma.cc/BQ2Y-AABQ.
[43] June 2018 Bureau of Local Roads & Streets "Chapter 4: Local Roads and Streets Funding": https://www.idot.illinois.gov/Assets/uploads/files/Doing-Business/Manuals-Split/Local-Roads-and-Streets/Chapter%2004.pdf.

[44] See Illinois DOT "MFT Allotments for Fiscal Year 2020": https://idot.illinois.gov/Assets/uploads/files/Transportation-System/Pamphlets-&-Brochures/Local-Roads/MFT/Yearly/FY/Fiscal%20Year%202020.pdf.
[45] Illinois DOT "Motor Fuel Tax Funds: Source, Distribution & Uses for County 2020": https://idot.illinois.gov/Assets/uploads/files/Doing-Business/Manuals-Guides-&-Handbooks/Highways/Local-Roads-and-Streets/MFT/Motor%20Fuel%20Tax%20Funds%20Source,%20Distribution%20and%20Uses%20for%20County.pdf.
[46] December 2019 Illinois DOT "Illinois Highway and Street Mileage Statistics December 31, 2019": https://idot.illinois.gov/Assets/uploads/files/Transportation-System/Reports/OP&P/Travel-Stats/2019HighwayStreetMileageStatistics.pdf.
[47] "Wisconsin's Local Roads and Streets Council: Prototype for Intergovernmental Cooperation and Decision Making," Mary Forlenza, Chariti Gent, and Scott Bush, Transportation Research Record, January 2002: https://journals.sagepub.com/doi/abs/10.3141/1812-16.
[48] For the report and more on the Transportation Finance and Policy Commission, go to: https://wisconsindot.gov/Pages/about-wisdot/who-we-are/comm-couns/tfp.aspx.
[49] For more on the slowdown in police costs in Wisconsin in 2019, see the key findings within WPF's latest edition of the Municipal DataTool: https://wispolicyforum.org/research/municipal-datatool-examining-and-comparing-wisconsin-cities-and-villages/.