

2019 Pavement Condition Report

Keeping New York Moving

Most New York residents' daily activities take place outside of their homes. This is made possible by New York State's transportation highway system, which allows people to engage in many activities that wouldn't otherwise be accessible. In New York, drivers log approximately 330 million miles annually on its highway system. The New York State highway system supports the mobility needs of public agencies, private businesses, educational institutions and health care services. It opens the door to leisure activities and is integral to a mobile workforce. The New York State highway system is more than moving vehicles, it's about moving people and providing access to goods and services that are vital to their daily activities.

The New York State Department of Transportation (NYSDOT) is responsible for maintaining and operating the 38,408 lane miles of state-owned highways in New York State (the number of lane miles of a highway section is its centerline length multiplied by its number of lanes). By using advanced asset management strategies, modern data collection technologies, and sophisticated modeling techniques, NYSDOT optimizes investments to maintain this pavement network to ensure safety; mobility; and regional economic competitiveness.

Within an overarching emphasis on safety and accessibility, NYSDOT's pavement management strategy is guided by four key principles.

- Preserving existing infrastructure by using low-cost treatments that slow the rate of deterioration.
- Considering impacts to the overall transportation system to ensure that work done on individual projects is coordinated with work done elsewhere.
- Maximizing the benefit of every investment by ensuring that the right treatment is performed at the right time and by emphasizing work that benefits the most travelers at the lowest cost.
- Considering and including the environment and social benefits of the work when developing projects in a manner that will enhance the economy and quality of life for all New Yorkers.

Pavement Condition Highlights

This report includes 2019 pavement program funding, construction accomplishments, and pavement conditions on the NYSDOT-Maintained System.

63% of vehicle miles traveled were on smooth pavement.

2,445 lane miles of pavement were treated.



Highways in New York

The highways in New York State are grouped into categories based on how each highway serves its users. The NYS Touring Route System includes 43,181 lane miles of the approximately 239,000 total lane miles of public roads in New York State. The NYS Touring Route System connects the cities, towns and villages in the state with other regions of the state and with other states. These roads include Interstates, US Routes, NY State Routes, most Parkways and some local roads. Many entities contribute to the maintenance of the NYS Touring Route System including NYSDOT; the New York State Thruway Authority (NYSTA); county, town, and village governments; and other independent authorities. As shown in *Chart 1*, NYSDOT maintains approximately 89 percent of the NYS Touring Route System, or 38,408 lane miles, and others are responsible for the remaining 4,773 lane miles. The 38,408 lane miles of the NYS Touring Route System maintained by NYSDOT is referred to as the NYSDOT-Maintained System for the remainder of this report.

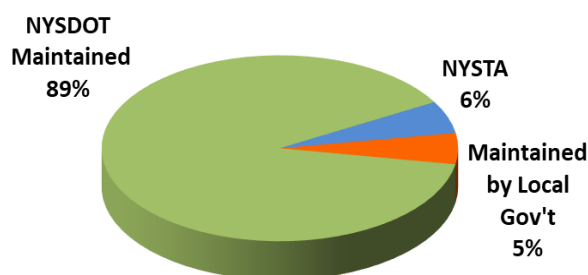


Chart 1 - NYS Touring Route System by Jurisdiction (43,181 Lane Miles)

The National Highway System

A subset of the NYS Touring Route System, known as the National Highway System (NHS), has the most important roads for interregional travel and for access to other transportation facilities, such as airports, train stations, and shipping ports. The Federal Highway Administration (FHWA) is particularly interested in the NHS because those roads have high national significance for the nation's economy and connectivity; and are a critical part of the national defense system.

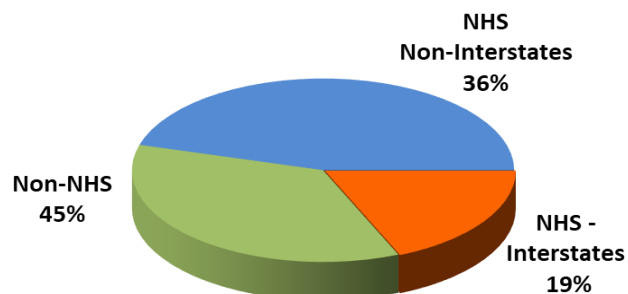


Chart 2 - NYS Touring Route System by NHS Classification (43,181 Lane Miles)

Pursuant to federal statute, highways on the NHS typically receive higher priority for maintenance and repair. As shown in *Chart 2*, about 55 percent of the entire NYS Touring Route System is part of the NHS.

Type of Pavement

There are three primary types of pavement on the NYS Touring Route System: asphalt, concrete, and asphalt over concrete (also called “composite” pavement). There are no unpaved or gravel roads on the NYS Touring Route System. Today, most roadways on the NYS Touring Route System are composite pavements as illustrated in *Chart 3*.

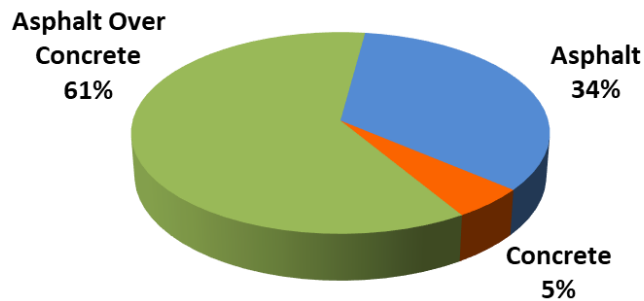


Chart 3 - NYS Touring Route System by Type of Pavement (43,181 Lane Miles)

Functional Class

Functional Class is another way to group or categorize roads and highways, in this case by the type of service and access that they are intended to provide. Examples include interstates, arterials, collectors, and local roads; each distinguished between urban and rural environments as illustrated by *Chart 4*. About 47 percent of the NYS Touring Route System has an urban functional class and about 53 percent a rural functional classification.

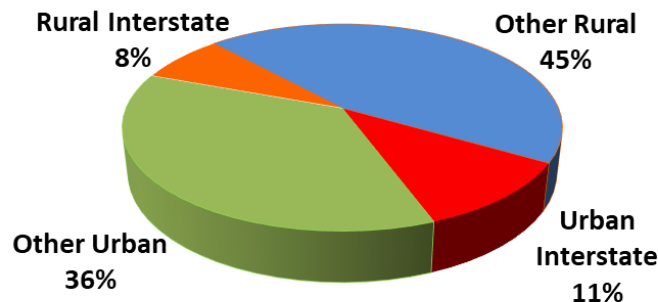


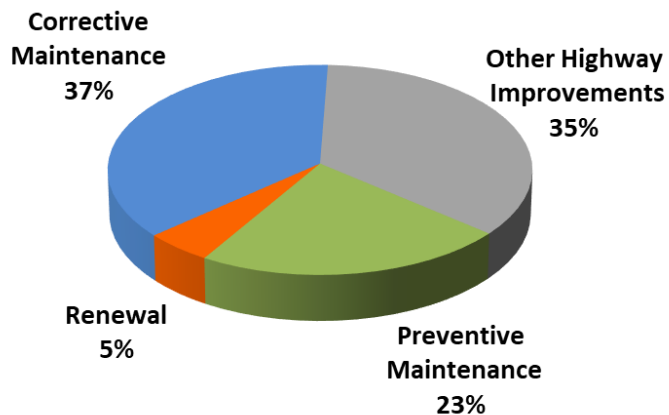
Chart 4 - NYS Touring Route System by Type of Pavement (43,181 Lane Miles)

NYSDOT Maintained Pavement Program and Funding

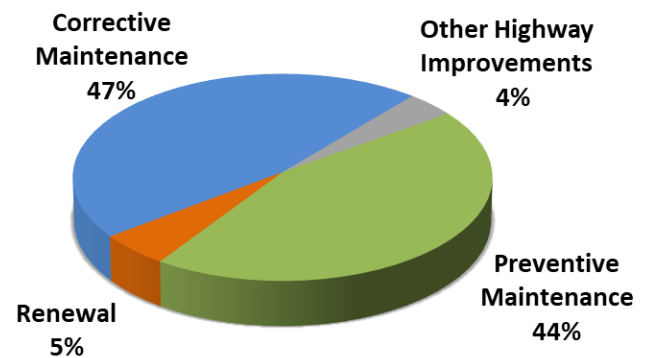
As mentioned earlier in this report, NYSDOT is responsible for maintaining 38,408 lane miles of the 43,181 total lane miles of the NYS Touring Route System. Maintenance improvements are grouped into three primary categories of work treatments:

- *Preventive Maintenance Treatments* – These are the least expensive treatments and typically cover more lane miles of pavement for the money spent than other treatments. These include several types of thin overlay treatments typically placed on pavements in Good condition with only minor amounts of cracking. Preventive treatment at this stage extends the life of the pavement by keeping water out, refreshing the riding surface, and slowing the rate of deterioration. Much like seal-coating your driveway, they help the pavement last longer for relatively little cost.
- *Corrective Maintenance Treatments* – These treatments are used to address more significant pavement distresses, such as moderate cracking or rutting, and are typically costlier than preventive maintenance treatments. Treatment usually involves removing the top layer of the pavement and replacing it with new material.
- *Renewal Treatments* – This work usually involves major rehabilitation or reconstruction of the pavement and may include improvements to enhance safety and mobility. Renewal projects are typically the most expensive and address fewer lane miles of pavement for the investment made but are necessary to address more serious pavement distresses as a pavement ages.
 - ❖ *Rehabilitation* – Treatments are applied to pavements in Fair or Poor condition. These treatments usually involve addressing multiple layers of the existing pavement structure to increase the strength.
 - ❖ *Reconstruction* – Typically done to pavements that have deteriorated to Poor condition where the structure of the pavement is damaged beyond repair due to the infiltration of water. Pavement reconstruction is the most expensive.

A consistent, preventive and corrective maintenance program significantly delays the need for expensive renewal projects. In calendar year 2019, approximately \$653 million was provided for NYSDOT administered highway projects. Of the Funding, \$421 million was expended primarily on preventive maintenance, corrective maintenance, and renewal treatments as shown in *Chart 5*. The remaining \$232 million was primarily for other highway improvements with secondary pavement benefits. This includes safety and mobility enhancement projects, such as interchange improvements that typically include significant bridge work, drainage improvements, and retaining walls. The paving accomplishments, as measured by lane miles of improved pavement condition rating between the 2018 and 2019 pavement data collections, are shown in *Chart 6*.



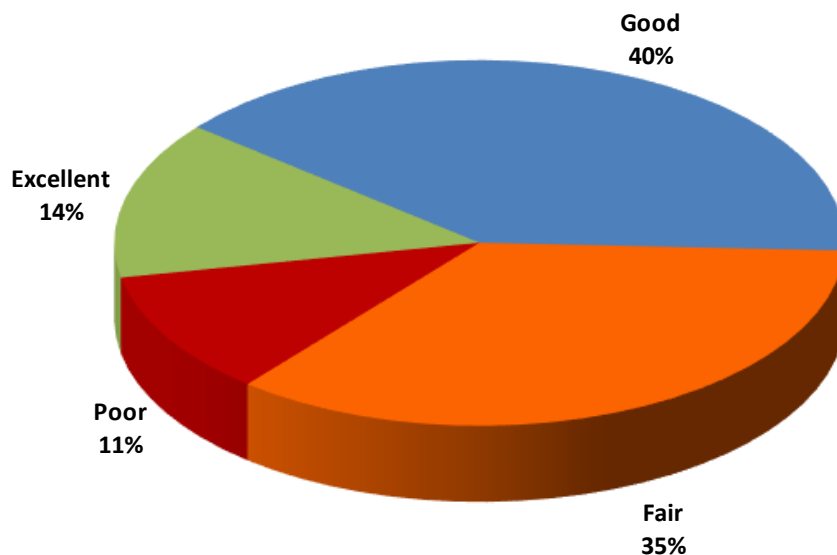
**Chart 5 - 2019 Paving Program (\$653M)
NYSDOT Maintained**



**Chart 6 - 2019 NYSDOT Paving
Accomplishments (2,445 Lane Miles)**

Condition Measures

NYSDOT identifies the locations where work is needed on pavements and what type of work should be done based on a surface rating system that considers the frequency (amount), severity, and type of cracks on the surface of the pavement. *Chart 7* gives the percentages of the 2019 pavement conditions for the NYSDOT-Maintained System. The pictures following Chart 7 give a visual representation of excellent, good, fair, and poor pavement.



**Chart 7 -2019 Surface Condition by Lane Miles
NYSDOT Maintained**

Surface Condition:



Excellent
No Cracking



Good
Infrequent
Minor Cracking



Fair
Frequent
Minor Cracking



Poor
Very Frequent
Severe Cracking

It is important to know how much of the system is in Fair and Poor condition because the costs to improve those pavements will require a more significant investment than needed for a pavement in Good condition. In 2019, 54% of the NYSDOT-Maintained System was in Good or Excellent condition and 46% was in Fair or Poor condition as shown in *Chart 8*. Those Good to Excellent pavements carried approximately 63% of the vehicle miles traveled as shown in *Chart 9*. These percentages vary significantly depending on whether the pavements were part of the NHS and an Interstate, as shown in *Charts 10 through 12*.

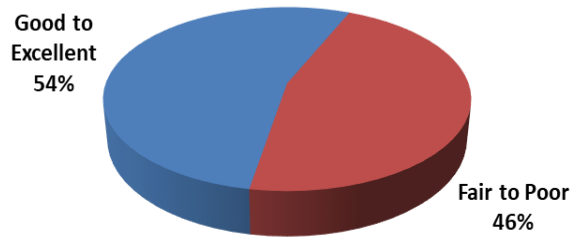


Chart 8 - 2019 Surface Condition by Lane Miles NYSDOT Maintained

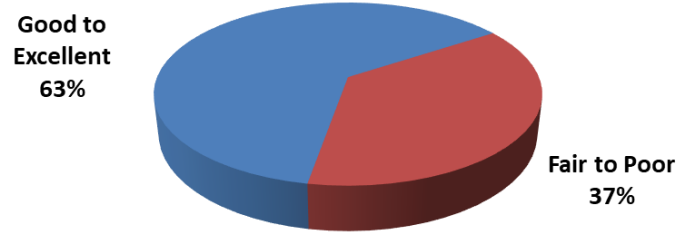


Chart 9 - 2019 Surface Condition by Vehicle Miles Travel NYSDOT Maintained

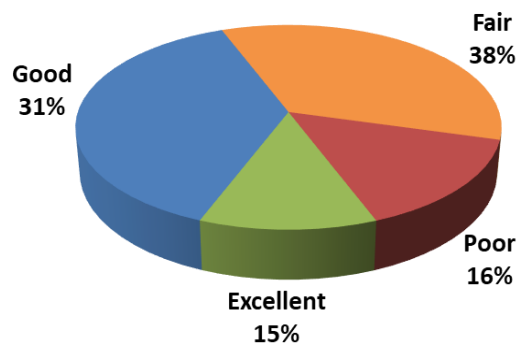


Chart 10 - 2019 Surface Condition by LM Non-NHS

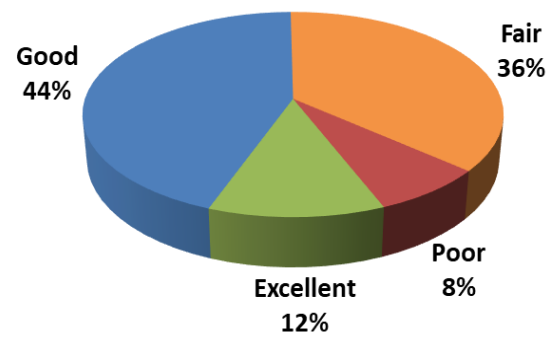


Chart 11 - 2019 Surface Condition by LM NHS - Non-Interstates

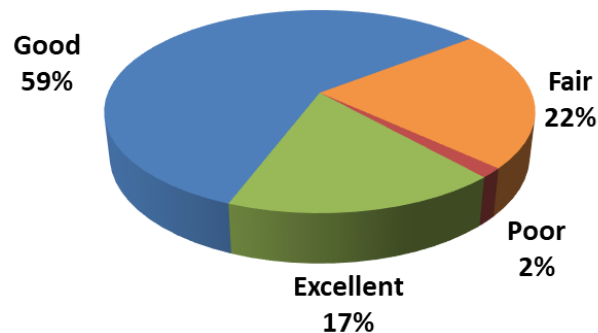


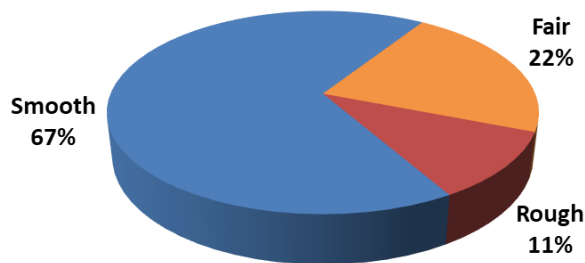
Chart 12 - 2019 Surface Condition by LM NHS - Interstates

Ride Quality

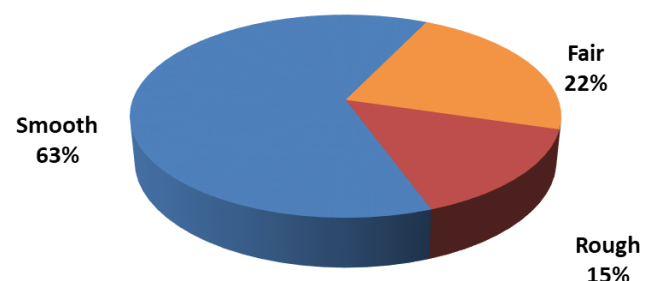
Pavement ride quality is an indicator of customer satisfaction with the quality and performance of a pavement. This is because most travelers will notice how rough or smooth a pavement is to ride on and not necessarily the number of cracks on the surface. The “Pavement Ride Quality” graphic below gives an indication of how the road feels to an operator of a vehicle at different roughness ratings.



The ride quality of the NYSDOT-Maintained System is evaluated annually and considered when prioritizing projects so NYSDOT can serve its customers with the best experience when traveling the highway system. *Chart 13* shows the percentage of lane miles for smooth, fair, and rough pavements on the NYSDOT-Maintained System. In 2019, the percentage of the NYSDOT-Maintained System lane miles that were rated rough was 11%, which is slightly less than in 2018. Those same pavements carry about 15% of the total vehicle miles traveled as shown on *Chart 14*. The total vehicle miles traveled that are affected by rough pavements was the same as 2018.



**Chart 13 - 2019 Ride Quality by Lane Miles
NYSDOT Maintained**



**Chart 14 - 2019 Ride Quality by Vehicle Miles
Traveled NYSDOT Maintained**

What happens if roads are not maintained?

If a pavement is left untreated, it will deteriorate to a point where normal travel is impaired. The pavement surface may become so rough that vehicles will be forced to travel at slower speeds.

The pavement structure shown here is deteriorated to the point that it needs major rehabilitation work or complete reconstruction. Currently, there are 201 lane miles maintained by NYSDOT that require reconstruction, an increase of 6 lane miles from 2018.



NYSDOT Maintained Pavement Needs

The work needed to bring a pavement back to a State of Good Repair depends on the types and severity of cracking and other distresses in a pavement. A pavement with little cracking requires maintenance work, while a pavement with potholes and large cracks may require costly reconstruction. Based on the definitions given on pages 3 and 4 of this report, *Chart 15* shows the percent of lane miles for each of the general categories of treatments that are required to address the current pavement needs on the NYSDOT-Maintained System. The cost to address all treatment needs on the system is \$5.9 billion.

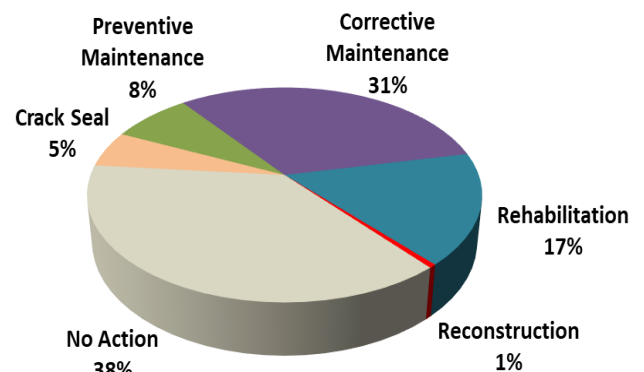


Chart 15 - 2019 NYSDOT-Maintained Treatment Needs by Category of Work

Conclusion

New York State highways are a valuable asset and are an integral part of every New Yorker's way of life. They provide safe and efficient passage for people, goods and services that is expected every day. The total value of the NYSDOT-Maintained pavements is estimated at \$38 Billion. The Department will continue to manage this valuable asset to best serve its residents and all travelers within New York State.