

North Carolina Department of Transportation



Performance Dashboard Documentation

**Definitions, Rationale and Supporting Information
for the Performance Dashboard**

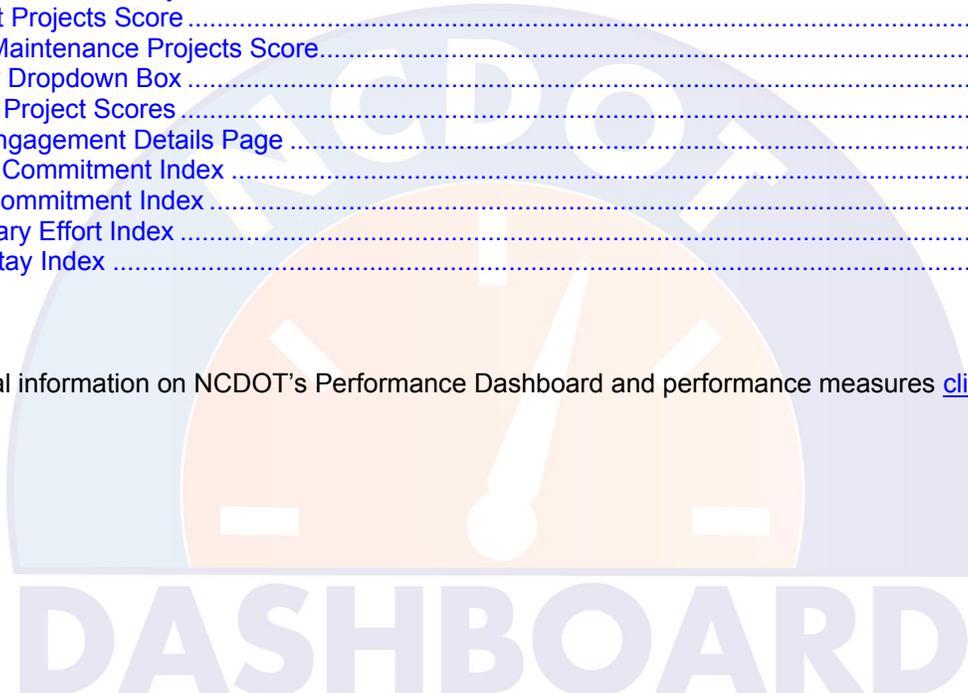
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DASHBOARD

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For additional information on NCDOT's Performance Dashboard and performance measures [click here](#) ([contact us](#)).



Performance Dashboard Home Page

The starting page of North Carolina Department of Transportation's Organizational Performance Dashboard displays one primary executive performance measure for each of the department's five goals:

- Make our transportation network safer
- Make our transportation network move people and goods more efficiently
- Make our infrastructure last longer
- Make our organization a place that works well
- Make our organization a great place to work

The performance measurement definitions are as follows:

Make Our Transportation Network Safer: Fatality Rate

The fatality rate measures the number of fatalities for the current calendar year to date divided by the estimated Vehicle Miles Traveled (VMT) in 100 millions. The acronym VMT (100MVM) is used for displaying the Vehicle Miles Traveled with a scale of 100 Million Vehicle Miles. For example there were 1,555 fatalities on NC roads in 2006, and 101,648 Million Vehicle Miles were traveled on NC roads in 2006, which is same as 1,016.48 100MVM. The fatality rate for 2006 is: 1,555 divided by 1,016.48 which are equal to 1.53 fatalities per 100MVMT.

The fatality rate gauge compares North Carolina's current year to date fatality rate with the previous year's National Fatality Rate (see mark labeled Nat. Avg. on gauge).

The data for this gauge is sourced from the DMV Crash Database and managed by the Traffic Engineering and Accident Analysis System (TEAAS).

By clicking on the "click here for additional performance information" the viewer will be linked to detailed transportation network safety performance data.

Make Our Transportation Network Move People and Goods More Efficiently: Incident Duration

Incident duration measures non-recurring congestion. Highway congestion can be categorized into either recurring congestion (such as rush hour traffic) or non-recurring congestion (such as congestion caused by accidents, weather, work zones, etc.). This gauge depicts the average time in minutes it takes to clear a major incident (i.e. one that causes significant or unusual delays) from a North Carolina highway.

By clicking on the "click here for additional performance information" the viewer will be linked to detailed performance data on transportation mobility in North Carolina, including highway, ferry and rail service reliability and public transit utilization.

Make Our Infrastructure Last Longer: Infrastructure Health

Infrastructure Health Index measures the condition of NCDOT highway system assets against the goals of making our infrastructure lasts longer. The infrastructure health index is defined as a composite score based on pavement condition, bridge health index and roadside feature condition. Three comprehensive statewide surveys are used to evaluate the condition of the state highway system: (1) the Maintenance Condition Survey, (2) the Bridge Condition Survey, and (3) the Pavement Condition Survey. The surveys provide the following metrics:

- Pavement condition is defined as the percent of highway lane miles in good condition. Good condition for pavement is defined as a Pavement Condition Rating (PCR) value of 80 or higher.
- Bridge health is defined as the percent of bridges in good condition. A bridge is considered to be in good condition if the Level of Service (LOS) for Deck, Sub-Structure and Super Structure are all greater than or equal to 6.
- The Roadside Feature Condition is defined as a weighted value score that represents the physical condition of all highway features and elements excluding pavement and bridges.

The infrastructure health index is a weighted average of the three metrics described above. It is calculated as follows:

- Pavement Condition (40%) + Bridge Health Index (35%) + Roadside Feature Condition (25%)

Notes:

- This index does not currently assess agency capital assets such as buildings and equipment.
- The infrastructure health scores do not reflect the actual safety of the highway structures and features.

By clicking on the “click here for additional performance information” the viewer will be linked to detailed performance data on North Carolina’s highway infrastructure.

Make Our Organization A Place That Works Well: Delivery Rate

The delivery rate measures the performance of NCDOT for the “works well” goal. Delivery rate is defined as the average completion percentage of the four project delivery related metrics including:

- Project development letting success rate (percent of projects let on schedule)
- Right of way plan delivery rate (percent of right of way plans delivered on schedule)
- Construction schedule completion delivery rate (percent of construction projects completed on schedule)
- Construction budget completion delivery rate (percent of construction projects completed on budget)

The delivery rate is updated quarterly in July, October, January, and April of each year and is a cumulative result based on the state fiscal year. Therefore, the metric is reset at the start of the fiscal year. Each metric is weighted equally to calculate the composite delivery rate score.

By clicking on the “click here for additional performance information” the viewer will be linked to detailed performance data related to our project and program delivery efforts.

Make Our Organization A Great Place to Work: Employee Engagement

The employee engagement index measures the average level of engagement of agency employees. “Employee engagement” is defined as the extent to which employees commit to something or someone in the organization and how hard they work and long they stay as a result of that commitment. The employee engagement index is calculated by averaging an employee’s emotional commitment, rational commitment, discretionary effort and intent to stay at NCDOT. The results are generated through a department-wide employee survey conducted annually that measures the feelings and attitudes of employees.

By clicking on the “click here for additional performance information” the viewer will be linked to detailed employee engagement performance data.

Fatality Rate Details Page

This page displays the crash count and rate, the fatality count and rate, the injury count and rate and the vehicle miles traveled. The data is current as of the date displayed at the bottom of the page and is sourced from the DMV Crash Database. The “data current as of:” date defines the most recent time period associated with the metric displayed in the gauge. Due to the complexity of collecting the data, highway safety information will always have a two month lag to post the most up-to-date performance results.

All data on this page is sourced from the DMV Crash Database and managed by the Traffic Engineering and Accident Analysis System (TEAAS).

Crash Count

This is defined as the total number of crashes on North Carolina roads for the calendar year to date (CYTD). The gauge is accompanied by a trend chart of the total number of crashes by year. This chart is based on the data displayed in the yearly statistics table in the row labeled crashes.

Fatality Count

This is defined as the total number of fatalities on North Carolina roads for the calendar year to date (CYTD). The gauge is accompanied by a trend chart of the total number of fatalities by year. This chart is based on the data displayed in the yearly statistics table in the row labeled fatalities.

Injury Count

This is defined as the total number of injuries on North Carolina roads for calendar year to date (CYTD). The number of injuries includes severe (Class A) and moderate (Class B) injuries only. The gauge is accompanied by a trend chart of the total number of injuries by year. This chart is based on the data displayed in the yearly statistics table in the row labeled injuries.

Statistics Table

This table displays the following metrics by calendar year. The last column displays “year to date” values of the current year based on the “Data current as of” date at the bottom of the page:

- Crashes – Total number of crashes on North Carolina roads for the calendar year. The value of the last column is displayed in the CYTD Crash Count Gauge.
- Fatalities – Total number of fatalities on North Carolina roads for the calendar year. The value of the last column is displayed in the CYTD Fatality Count Gauge.
- Injuries – Total number of severe and moderate injuries on North Carolina roads for the calendar year. The value of the last column is displayed in the CYTD Injury Count Gauge.
- VMT (100MVM) – Total number of Vehicle Miles Traveled on North Carolina roads for the calendar year in 100 Million Vehicle Miles scale. Therefore, a value of 1,016.48 for 2006 means that 101,648 Million Vehicle Miles were traveled on North Carolina roads in 2006.
- Crash Rate – This is computed as total crashes divided by VMT (100MVM).
- Fatality Rate – This is computed as total fatalities divided by VMT (100MVM).
- Injury Rate – This is computed as total injuries divided by VMT (100MVM).

Filter By Dropdown Box

The “Filter By” dropdown box allows the user to filter all the data displayed on the page to a county level. By default, the page displays statewide data. Selecting a county filters the three gauges, trend charts and the yearly statistics table to show values for the selected county.

Incident Duration Details Page

This page displays the Department's performance of moving people and goods more efficiently. These gauges are key performance measures of how well the Department is accomplishing this goal. The target for these performance measures, data sources, and effective time periods are identified below.

Incident Clearance Time

Highway congestion can be categorized into either recurring congestion (such as rush hour traffic) or non-recurring congestion (such as congestion caused by accidents, weather, work zones, etc.). Incident clearance time measures non-recurring congestion. National studies show that over 50 percent of all congestion is non-recurring. This gauge depicts the average time in minutes it takes to clear a major incident (i.e. one that causes significant or unusual delays) from a North Carolina highway.

This data is sourced from NCDOT's Traveler Information Management System (TIMS), which includes real time traffic information from across the state. NCDOT has established a target of 90 minutes or less to re-open the facility to traffic, which is also the national goal. The dropdown box allows the user to filter the incident clearance time data by county. By default the gauge displays the statewide average incident clearance time.

Ferry Service Reliability

Ferry service reliability measures the success rate of each ferry meeting its daily scheduled runs. NCDOT has established a target of delivering 97 percent of its scheduled runs. The NCDOT Ferry Division schedules over 75,000 ferry trips per year. This measure is defined as the total number of scheduled ferry runs divided by the actual number completed during the state fiscal year. The results are based on a running total beginning in July each year. This data is maintained by the Ferry Division and updated monthly.

Rail Service Customer Satisfaction

Rail service customer satisfaction measures the percent of surveyed rail passengers that were satisfied with the services and accommodations provided to them. This performance measure can be distinguished by NCDOT sponsored trains, the Carolinian or the Piedmont, or by Amtrak. The NCDOT Rail Division serves over 500,000 intercity rail passengers per year from various North Carolina cities. The primary gauge scale begins at 50 percent.

The gauge displays the most recent available performance results by quarter for the state fiscal year (July-June). The drop down menu allows the user to filter by the two rail lines that the Rail Division sponsors primarily, the Carolinian and Piedmont, and by Amtrak. By default the drop down menu displays the combined score of all rail lines. A target or goal line also appears on the chart at 87%, which is how the Rail Division expects to perform each quarter.

In addition, the rail service customer satisfaction gauge displays the number of rail service passengers served per quarter in North Carolina for the state fiscal year. Rail service ridership continues to increase each year.

Public Transit Utilization

The public transit utilization gauge measures the total annual commuter vehicle miles traveled (VMT) saved through implementing various transportation options such as mass transit, vanpools, carpools and light rail. The goal, based on year 2000 data as the foundation, is to reduce the VMT growth by 25 percent by July 1, 2009 as directed by NC Senate Bill 953. Currently NCDOT has exceeded that goal.

What is VMT? VMT (or vehicle miles traveled) is defined as total distance traveled in miles by all motor vehicles in a selected region in a given period of time.

Highway Reliability

The highway reliability pie chart measures the percent of miles of recurring congestion on the "Strategic Highway Corridors." By clicking on the pie chart, the user is redirected to a state map outlining each county. To view recurring congestion levels within a specific region, simply click on a county to take the user to an

appropriate color coded map with the recurring congestion levels on the identified Strategic Highway Corridors.

Within the pie chart and maps, the green depicts the percent that has *little or no* recurring congestion (a volume to capacity ratio of less than 0.80). The yellow depicts the percent that has *some* recurring congestion (a volume to capacity ratio of 0.80-1.00). The red depicts the percent that has *strong* recurring congestion (a volume to capacity ratio of greater than 1.00). The gray depicts the percent that no data currently exists.

What are the Strategic Highway Corridors? The Strategic Highway Corridors (SHC) initiative represents a timely effort to preserve and maximize the mobility and connectivity on a core set of highway corridors, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods. The initiative offers NCDOT and its stakeholders an opportunity to consider a long-term vision when making land use decisions and design and operational decisions on the transportation system. The 5,400 miles of designated Strategic Highway Corridors, which include existing and proposed interstates, account for only 7 percent of the state's total highway system, but carry 45 percent of the traffic.

Infrastructure Health Details Page

This page displays the metrics of pavement condition, bridge health conditions, and the roadside features conditions.

Pavement Condition Rating

Pavement Condition is defined as the percent of lane miles in good condition. A good condition for pavement is defined as a Pavement Condition Rating (PCR) value of 80 or higher (on a 0 to 100 scale). The PCR score displays a composite score determined using a pavement condition survey performed annually for interstate routes and every two years for primary and secondary routes. The survey uses the complete roadway length for all asphalt surface roadways and a sampling of every mile of concrete pavement.

Bridge Health Index

Bridge Health Index is defined as the percent of bridges in good condition. A bridge is considered to be in good condition if the Level of Service (LOS) for the Deck, Sub-Structure and Super Structure are all greater than or equal to 6 (on a 1 to 9 scale). Bridge health indices are determined using a bridge condition survey in which each bridge in the state is surveyed every two years. The results displayed are the most recent composite scores for the surveys. A low score does not correlate to an unsafe bridge.

Roadside Feature Condition Score

The Roadside Feature Condition is defined as a weighted value score that represents the physical condition of all highway features and elements, excluding pavement and bridges, which are captured by the two previous metrics described above. The roadside feature Level of Service (LOS) for roads is determined, for the most part, by evaluating samples of 0.2 mile segments of roads for various elements such as:

- Shoulders and Ditches (i.e. Low Shoulder, High Shoulder, Lateral Ditches)
- Drainage (i.e. Blocked or Damaged Pipes and Gutters)
- Roadside (i.e. Mowing, Brush and Tree Control, Litter and Debris, Slope and Guardrail)
- Traffic Control Devices (i.e. Traffic signs, Pavement Markings, Traffic Signals)
- Environmental (i.e. Turf Condition, Miscellaneous Vegetation Management)

The survey results provide a LOS value on a statewide basis for the interstate system, and by county for the primary and secondary systems. The LOS value reflects a composite score of the surveyed elements (as described above) that were in acceptable range (on a 0 to 100 scale).

Trend Chart

The trend chart displays the values for the Infrastructure Health Index (Pavement Condition, Bridge Health Index, and Roadside Feature Condition) as defined above for years 2004, 2006 and 2008. The surveys from 2004 do not have a breakdown by county. As a result the trend chart always shows the statewide numbers. The results for all three features are produced biannually and reported on even years.

Data Table

The data table shows the values from the trend chart. The data table is not updated by county dropdown and shows only the statewide numbers.

Filter By Dropdown Box

The "Filter By" dropdown box allows the user to filter the Pavement Condition, Bridge Health Index and Roadside Feature Condition by desired county for the most recent completed survey. By default, this page displays statewide data. Selecting a desired county will filter the three gauges to show values for the selected county for the most recent survey.

Delivery Rate Details Page

This page displays the metrics defined below. The source and effective time period for each metric is explained with the definition.

Letting Success Rate

The Letting Success Rate displays the percentage of projects which were “advertised for bid” on schedule in the previous quarter of the state fiscal year (July-June). The chart displays cumulative results for the state fiscal year. The occurrence of “advertising for bid” is also referred to as letting (i.e. a project was “Let” to the contractor). The project development phase of a project is complete once it has been awarded to a contractor for construction. The Letting Success Rate is computed by comparing the number of projects that were planned for Let at the beginning of the year to the actual number of projects that were Let in the year. This data is compiled and managed by the Schedule Management Office in the Technical Services Division. The data is updated quarterly with a two month delay.

Right of Way Plan Delivery Success Rate

The Right of Way Plan Success Rate displays the percentage of projects which completed Right of Way plans on schedule in the previous quarter of the state fiscal year (July-June). The Right of Way Plan Success Rate is computed by comparing the number of projects that were scheduled for completing Right of Way plans at the beginning of a year to the actual number of projects that Right of Way Plans were completed in the year. Once a Right of Way plan is complete, the process of acquiring right of way for a project can advance. This data is compiled and managed by the Schedule Management Office in the Technical Services Division. The data is updated quarterly with a two month delay.

Construction Project Schedule Delivery Rate

This Construction Project Schedule Delivery Rate metric displays the percent of all highway construction projects that were completed on schedule within the state fiscal year. A project is on schedule if it is completed within 15 days of the contract completion date, including authorized contract time extensions. This data is sourced from HiCAMs. The data is updated quarterly with a two month delay.

Construction Project Budget Delivery Rate

This Construction Project Budget Delivery Rate metric displays the percent of all highway construction projects that were completed on budget within the state fiscal year. A project is on budget if it is completed within 3 percent of the budgeted amount for the project. This budget measurement includes both the payments to the Contractor and NCDOT engineering and inspection costs. This data is sourced from HiCAMs and the SAP Accounting System. The data is updated quarterly with a two month delay.

Environmental Compliance Score

The Environmental Compliance Score displays the calendar year-to-date average score for all construction and maintenance projects statewide as inspected and graded by the Sedimentation and Erosion Control Program. This represents a statewide compliance composite score for Field Maintenance, Contract (TIP), and Bridge Maintenance projects. NCDOT has established a target range of 7.5 to 8.8. The data for this gauge is sourced from the Sedimentation and Erosion Control Inspection Database and updated monthly.

Environmental Compliance Details Page

This page displays the categories included in calculating the overall environmental compliance score. The data is current as of the date displayed at the bottom of the page and is updated monthly from the Department’s Sedimentation and Erosion Control Inspection Database. The “Data current as of:” defines the time period associated with the metric displayed in the gauge. If the data is current as of 03/30/2010, then the gauge is showing the metric value from 1/1/2010 to 03/30/2010. The bar chart for “Monthly Averages for Project Compliance Scores” displays each calendar year’s monthly average score for the three major project categories. As projects are inspected monthly and data entered into the inspection database the charts will be

populated and adjusted accordingly. If no inspections were conducted for a specific criterion, then “no data” will be labeled on the chart in the appropriate location.

Field Maintenance Projects Score

This is the average score for sediment and erosion control compliance for all projects and activities conducted or administered by field maintenance personnel. Field Maintenance projects typically include activities such as pavement maintenance, drainage maintenance and secondary road improvements. Projects are reviewed on a monthly basis to check for compliance with the North Carolina’s Sedimentation and Pollution Control Act (SPCA). An overall grade is given to each project with the grading scale as follows: 10-Excellent, 9-Very Good, 8-Good, 7-Fair, 6 or below-unacceptable.

Contract Projects Score

This is the average score for sediment and erosion control compliance for all roadway and bridge projects constructed through the Department’s Transportation Improvement Program (TIP). These projects are typically constructed through major contracts administered by Department field personnel. Projects are reviewed on a monthly basis to check for compliance with the North Carolina’s Sedimentation and Pollution Control Act (SPCA). An overall grade is given to each project with the grading scale as follows: 10-Excellent, 9-Very Good, 8-Good, 7-Fair, 6 or below-unacceptable.

Bridge Maintenance Projects Score

This is the average score for sediment and erosion control compliance for all projects and activities conducted by field Bridge Maintenance personnel. Bridge Maintenance projects typically include maintenance and repair activities for pipes, culverts, and bridges, and the replacement of small, non-TIP bridge projects. Projects are reviewed on a monthly basis to check for compliance with the North Carolina’s Sedimentation and Pollution Control Act (SPCA). An overall grade is given to each project with the grading scale as follows: 10-Excellent, 9-Very Good, 8-Good, 7-Fair, 6 or below-unacceptable.

Filter By Dropdown Box

The Filter By: dropdown box allows the user to filter all the data displayed on the page to a county. By default, the page displays statewide data. Selecting a county filters the three gauges and the trend chart to show values for the selected county.

Monthly Project Scores

This bar chart display a monthly breakdown for the three metrics defined above, for the current calendar year.

Employee Engagement Details Page

The primary measure for measuring the goal of making our organization a great place to work is the Employee Engagement Index. This index measures the average level of engagement of agency employees and is a composite score of four various indicators.

“Employee engagement” is defined as the extent to which employees commit to something or someone in the organization and how hard they work and long they stay as a result of that commitment. The employee engagement index is calculated by averaging an employee’s emotional commitment, rational commitment, discretionary effort and intent to stay at NCDOT. The results are generated through a 42 question department-wide employee survey conducted annually that measures the feelings and attitudes of employees. The survey is administered by the Corporate Leadership Council in partnership with the North Carolina Office of State Personnel.

In September 2009 the Department conducted its first Employee Engagement Survey among all employees of the Department. Employees with an active e-mail account were invited to take the survey via an online questionnaire. Employees who do not have e-mail accounts were given a paper questionnaire to complete. A total of 8,676 employees chose to participate in the survey. This number represents a response rate of 62 percent.

Emotional Commitment Index

Emotional commitment is defined as the extent to which employees derive pride, enjoyment, inspiration, and meaning from their work, manager, team, and the organization. It is an employee’s “commitment of the heart” and is a key driver of their level of discretionary effort. Employees who are emotionally committed are more likely to help others with their workloads, volunteer for additional work, and find ways to perform their jobs more efficiently. The emotional commitment index is derived using the responses from a series of questions asked as part of the employee engagement survey.

Rational Commitment Index

Rational commitment is defined as the extent to which employees believe their managers, teams, and organization have their best interests in mind. Rational commitment is seen as an employee’s “commitment of the mind” and therefore plays a major role in the decision to stay with the organization. Rationally committed employees believe the organization, as well as their managers and teams provide developmental, financial and/or professional rewards that serve employees’ best interests. The emotional commitment index is derived using the responses from a series of questions asked in the employee engagement survey.

Discretionary Effort Index

Discretionary effort is defined as an employee’s willingness to expend him/her beyond typical expectations. The level of this extra effort is directly linked to and driven by the pride, motivation, enjoyment, and inspiration one receives from the organization, the team, the manager, and the work performed (i.e., emotional commitment). The emotional discretionary effort index is derived using the responses from a series of questions asked as part of the employee engagement survey.

Intent to Stay Index

Intent to stay is defined as the extent to which employees are either actively looking for another position or are passively considering other opportunities. This measure is directly tied to an employee’s perception about how the organization, the manager, or the team has their best interests in mind (i.e., rational commitment). The intent to stay index is derived using the responses from a series of questions asked as part of the employee engagement survey.