Commonwealth of Virginia

VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT)

VDOT Dashboard

Business Rules and User's Information

Updated December 2021

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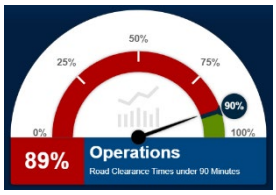
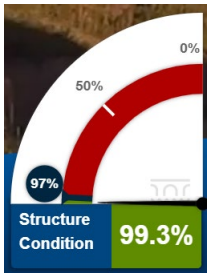
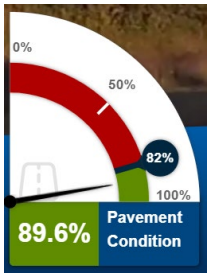
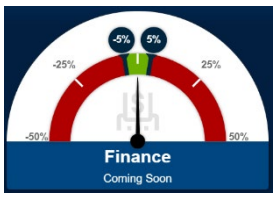
DASHBOARD BUSINESS RULES AND USER'S INFORMATION

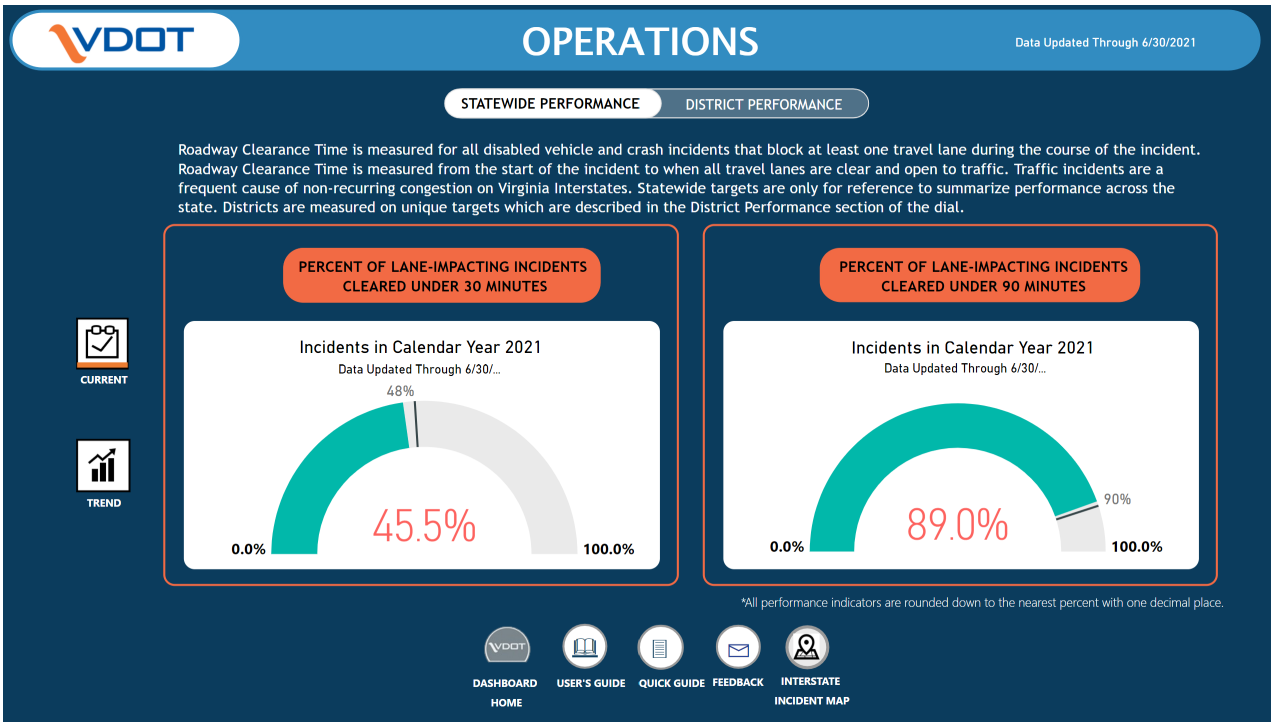
Explanation of Gauges on the Opening Page of the VDOT Dashboard

The information contained here reflects the most current information available. As data and business rules are modified, this document will be updated to reflect those changes at the time the changes become effective, or as close to that time as possible.

Operations Operations Dial 	The Operations gauge calculates the percentage of Interstate clearance time under 90 minutes. Information about Interstate clearance times within 30 minutes is also included in this dial.
Safety 	The Safety gauge displays the number of deaths due to highway crashes for the current year-to-date. The goal of the State of Virginia is to reduce the number of deaths due to crashes. Information about traffic and work zone crashes, serious injuries and fatalities is included in this dial.

Structure Condition 	The Structure Condition gauge refers to the condition of structures and bridges on Virginia's Interstates. For the time period being measured in this example, 99.3% of structures and bridges were in good and fair condition on the Interstate road system.
Pavement Condition 	The Pavement Condition gauge refers to the condition of the pavement on Virginia Interstate and Primary highways. For the time period being measured in this example, 89.6% of the lane miles of Interstate pavement was in excellent, good or fair condition. Scheduled paving work is also included in this dial.
Finance 	Coming Soon
Projects 	The Projects gauge displays the on-time performance for projects in the construction phase. The dial includes information on the on-time and on-budget project performance in the design phase (development) and the construction phase (delivery) for projects in the Six Year Improvement Program. Project information and performance results are available for VDOT, locally administered, and Smart Scale projects.

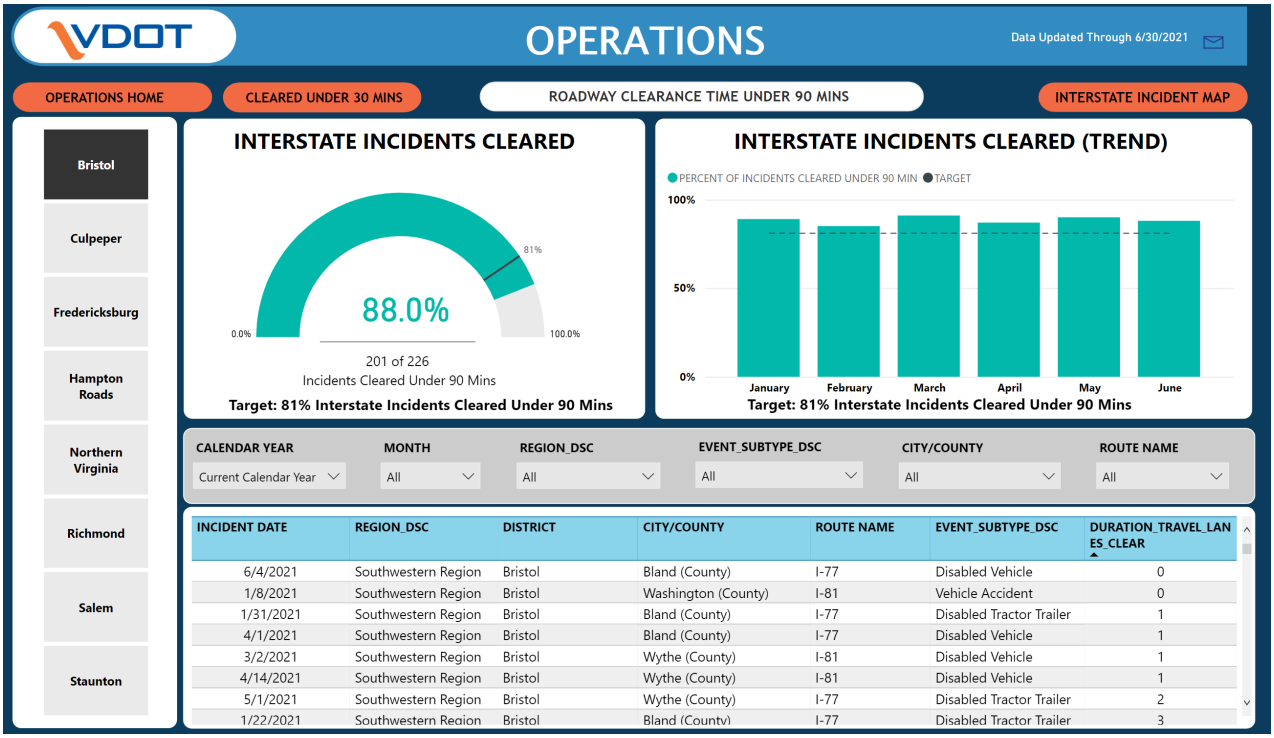
Operations Dial



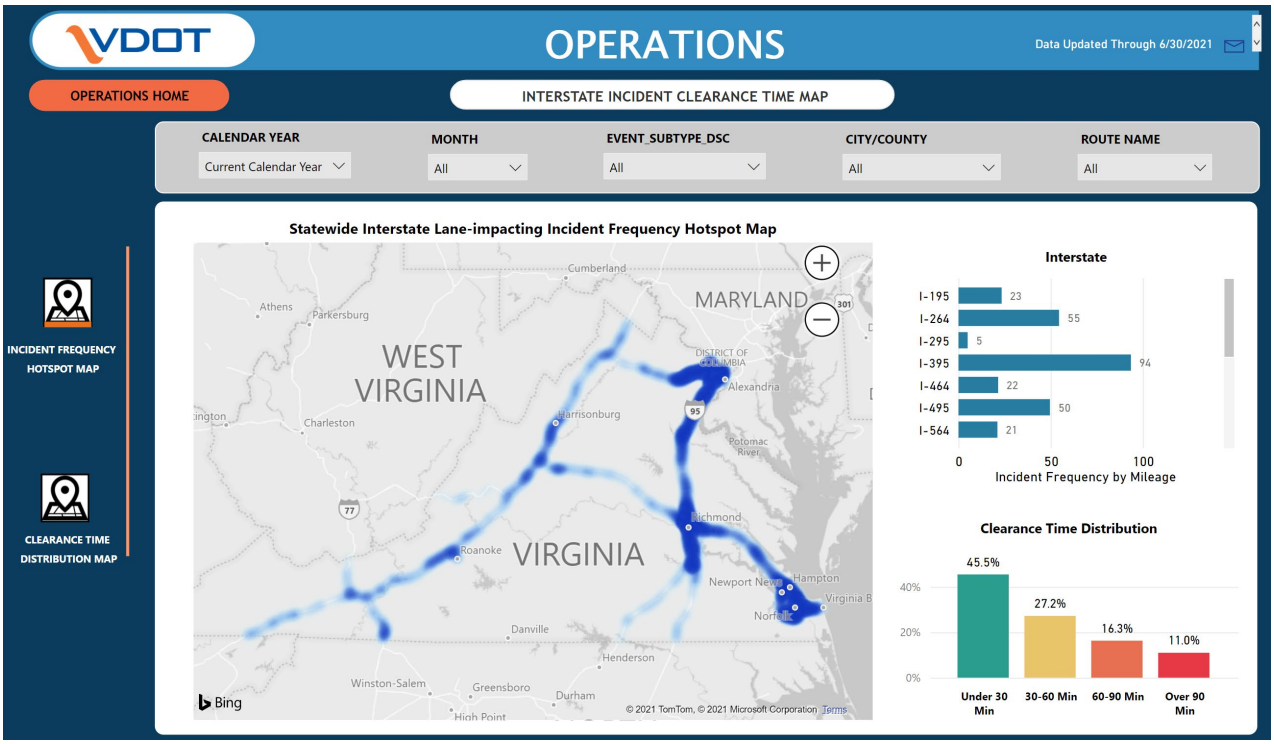
Interstate Roadway Clearance Time

Roadway Clearance Time is measured for all disabled vehicle and crash incidents that block at least one travel lane during the course of the incident. Roadway Clearance Time is measured from the start of the incident to when all travel lanes are clear and open to traffic. Traffic incidents are a frequent cause of non-recurring congestion on Virginia Interstates. Statewide targets are only for reference to summarize performance across the state. Districts are measured on unique targets which are described in the District Performance section of the dial.

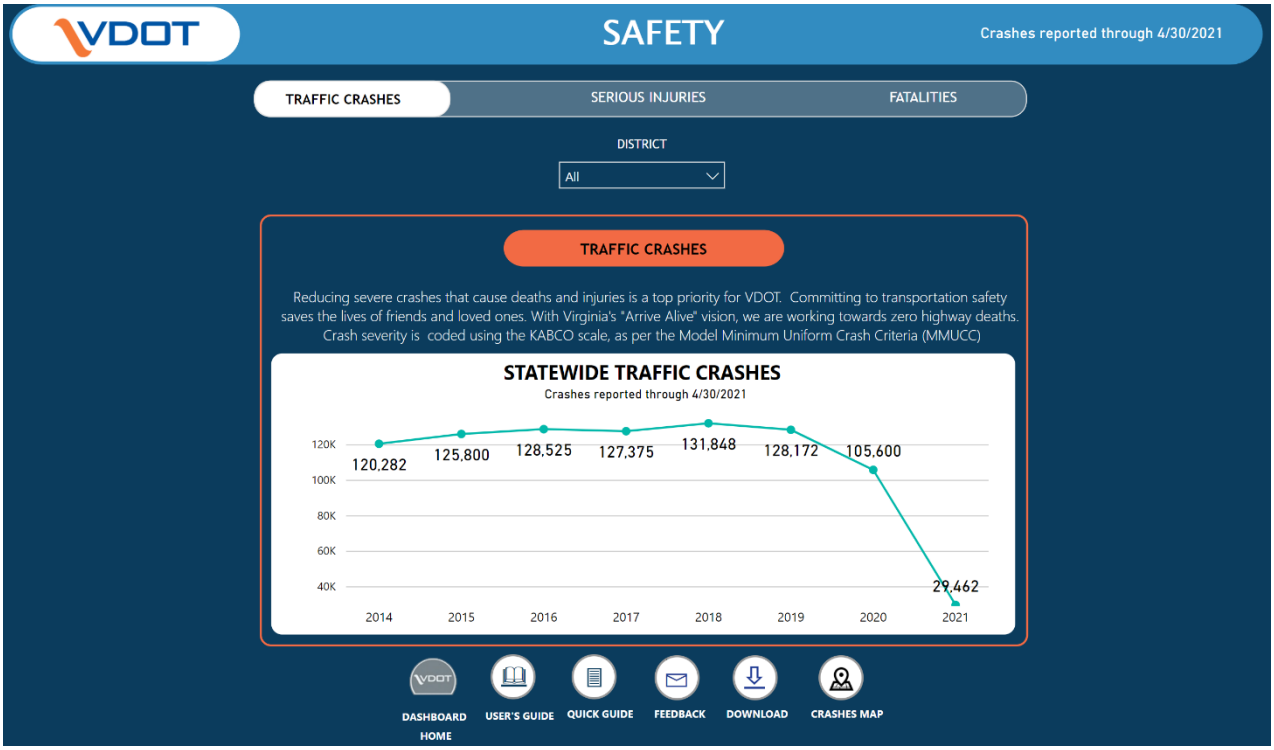
Selecting either of the Percent of Lane-Impacting Incidents Cleared Under 30 minutes or 90 minutes reveals a details view in which filters provide more options for exploration.



Selecting "Interstate Incident Map" provides a statewide view of "Lane Impacting Incident Frequency Hotspot Map," along with "Roadway Clearance Time Distribution Map" and more filters for further exploration.



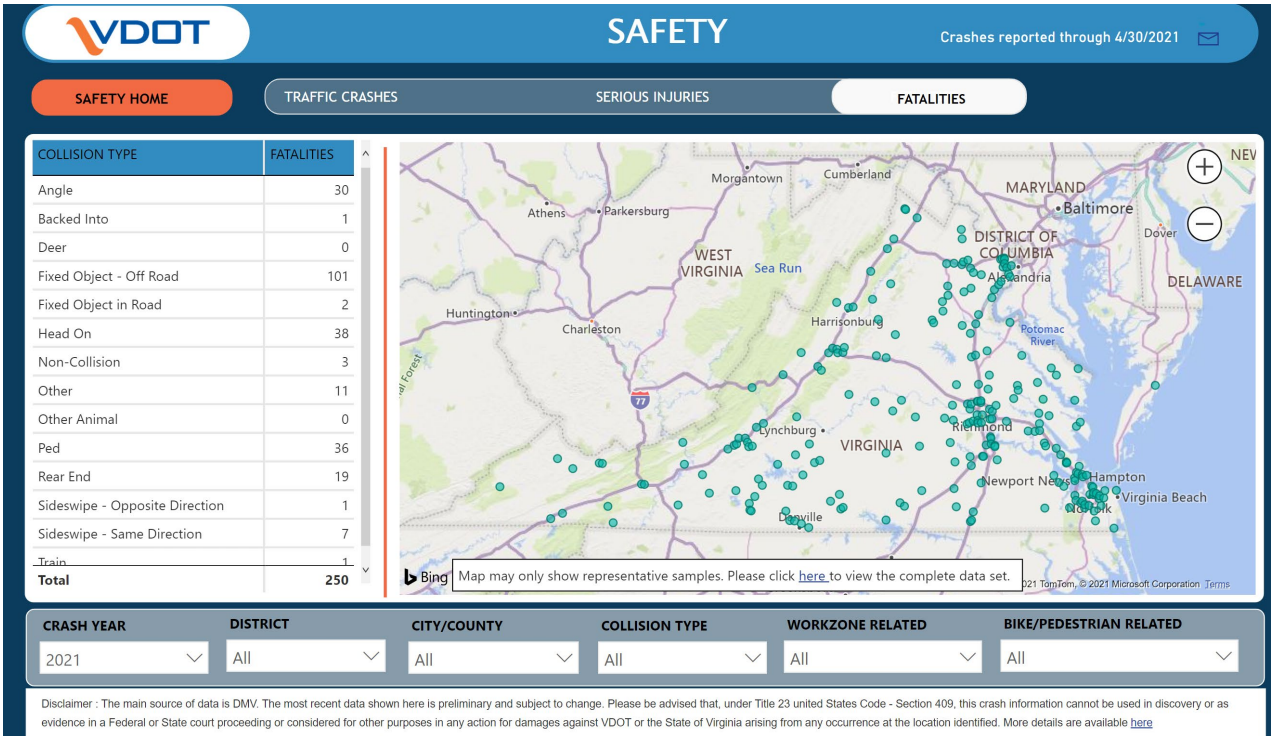
Safety Dial



There are three measures in the Safety section of the Dashboard:

- Number of Crashes
- Serious Injuries from Crashes
- Deaths from Crashes

Collision type, crash year, work zone or pedestrian/bike related crashes can be further reviewed through the use of available filters.



Number of Crashes

Data Source: VDOT crash reporting database (Roadway Network System - RNS), DMV (TREDS)

Records Selected: Calendar year to date of reportable motor vehicle crashes (injury or death of any person or total property damage to an apparent extent of $1,500 or more) for which complete data is available. Historical data is also available.

Business Rule: The number of reportable crashes.

Serious Injuries from Crashes

Data Source: VDOT crash reporting database (RNS), DMV (TREDS)

Records Selected: Calendar year to date of the number of injuries due to reportable crashes (injury or death of any person or total property damage to an apparent extent of $1,500 or more). Historical data is also available.

Business Rule: The number of injuries due to reportable crashes.

Deaths from Crashes

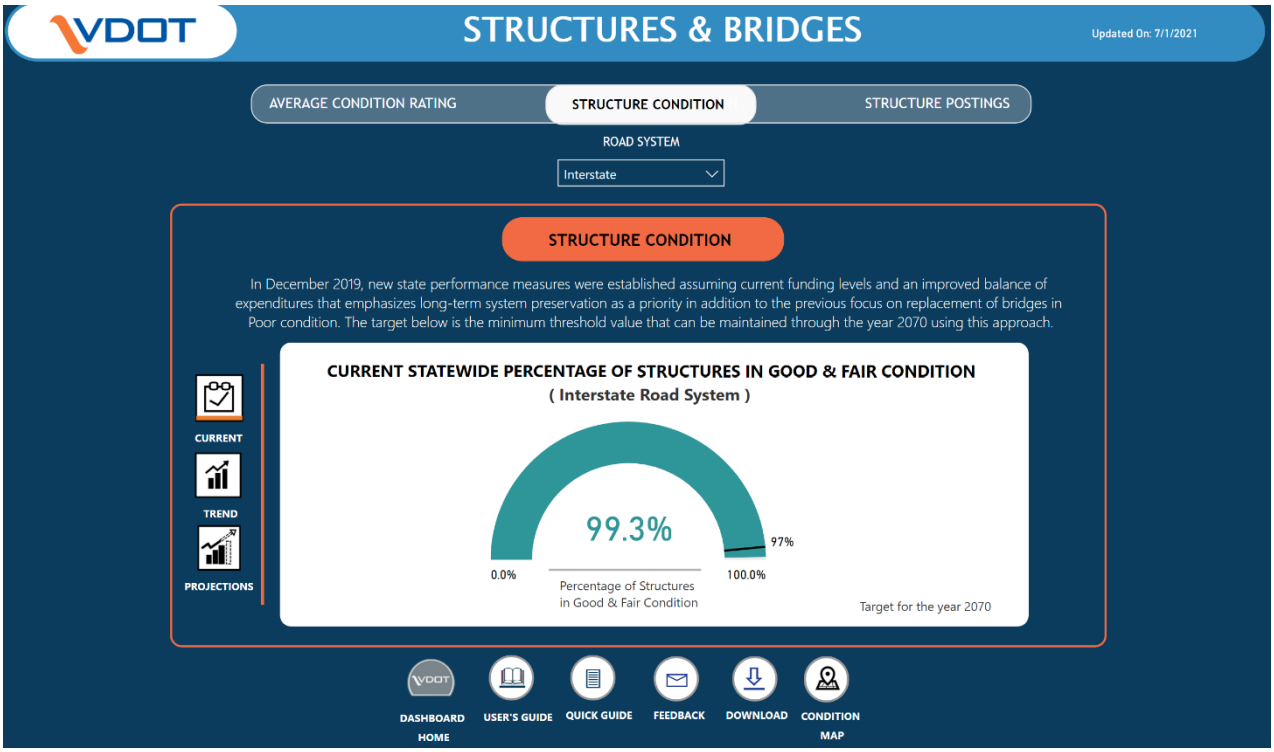
Data Source: The VDOT Daily Accident Report and the VDOT crash reporting database (RNS), DMV (TREDS)

Records Selected: Fatalities due to crashes, YTD for the current calendar year. Historical data is also available.

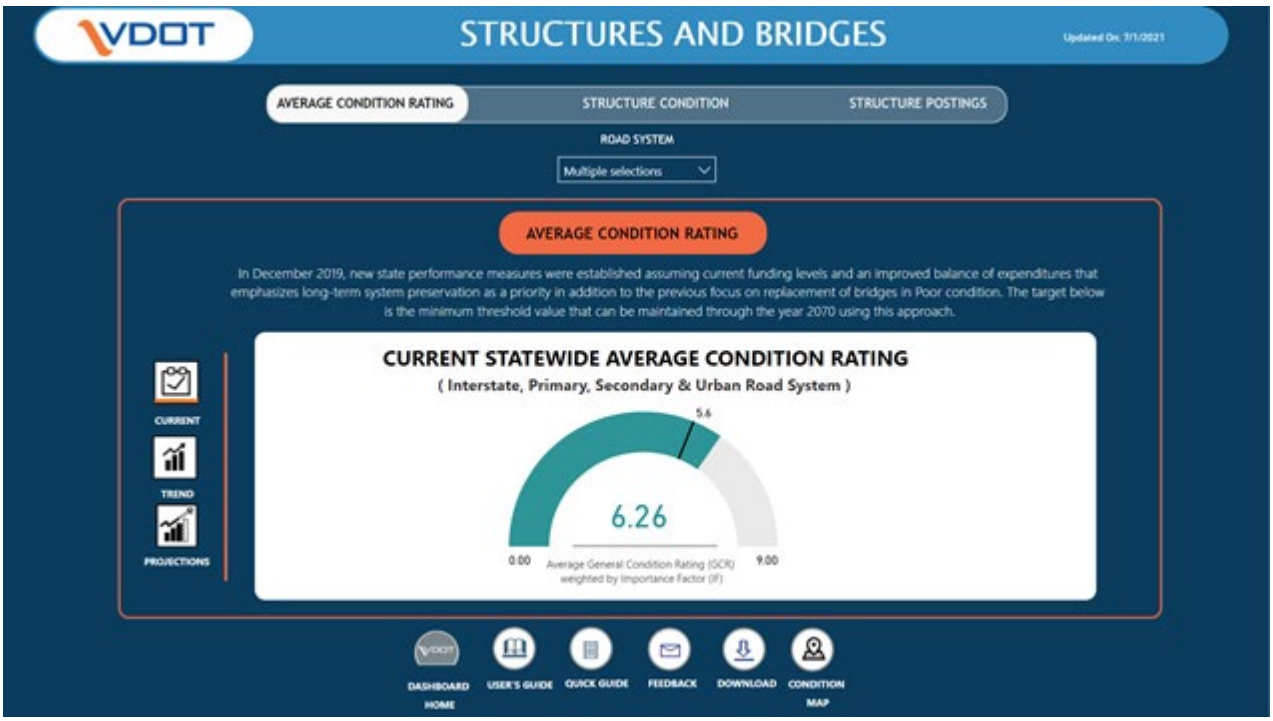
Business Rule: The number of deaths for the current calendar year to date.

Structures and Bridges Dial

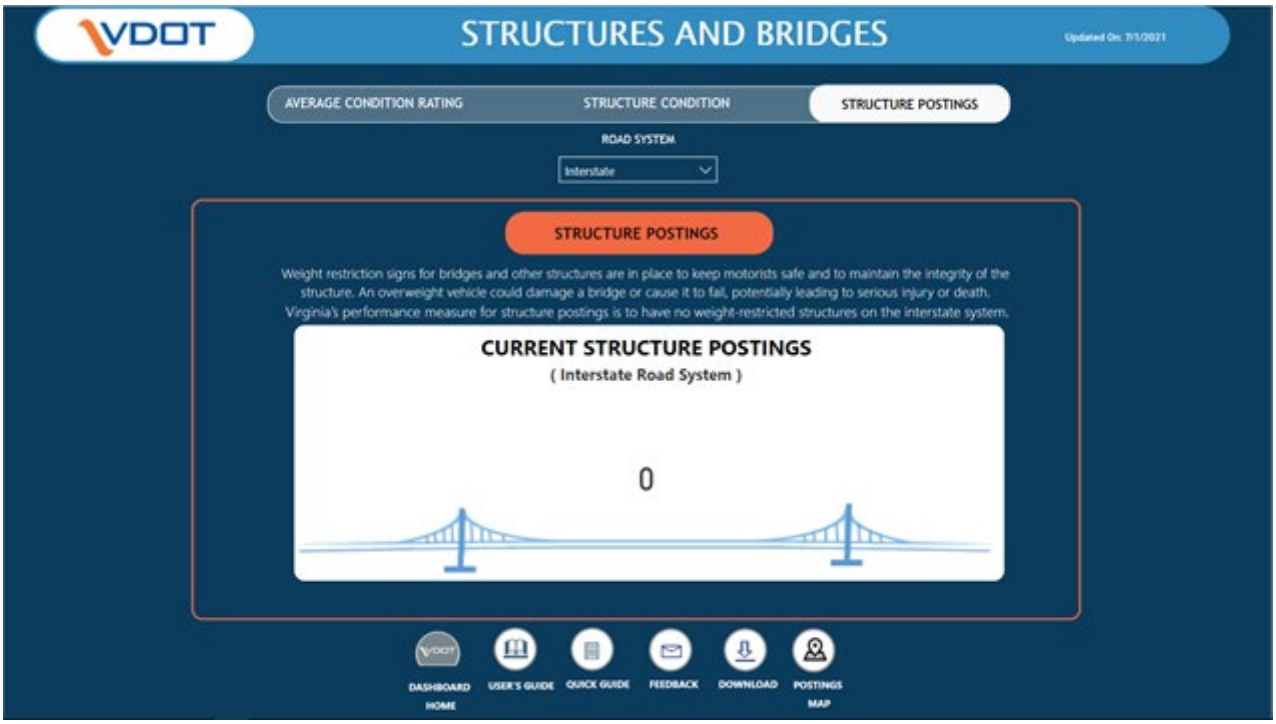
Structure Condition



Average Condition Rating



Structure Postings



Data source: Bridge Management System data curated and approved by S&B Division

Data queried: Data presented in the Structures and Bridges Dial provides information for the population of highway structures referred to as "Virginia Responsible Structures". This term refers to bridges and culverts carrying public traffic that are owned by the Virginia Department of Transportation (VDOT), localities (cities, towns and counties), other state agencies, or other legal entities of the Commonwealth of Virginia. These structures include bridges of any length and culverts with total opening in excess of 36 square feet. Temporarily closed structures are also included.

Business rules: Virginia's current Commonwealth Transportation Board (CTB) approved performance measures (summarized on the next page) are incorporated into three Dashboard screens (average condition rating, structure condition and structure postings). The average General Condition Rating (GCR) of each structure weighted by its Importance Factor (IF) of structures and bridges on Virginia highways is a measure of system preservation. Structure condition focuses on the percentage of structures in good and fair condition and structure postings summarized the count of weight-restricted structures.

During each regularly scheduled safety inspection, the condition of different parts of a bridge (deck, superstructure and substructure) or culvert are rated on a scale of 9 to 0, with nine being the best condition and zero being the worst. The overall condition status of each bridge is based on the lowest GCR received by the superstructure, substructure and deck (for bridges), and the culvert for culverts. As an example, if a bridge received a rating of 5 for the deck, 8 for the superstructure and 6 for the substructure, then the GCR of the deck would control the bridge condition status.

There are three classifications for the purpose of assessing bridge and culvert condition: good, fair and poor. Structures with a minimum GCR of 9, 8 or 7 are classified as in good condition. Structures with a minimum GCR of 6 or 5 are classified as in fair condition. Fair (cusp) structures have a minimum GCR of 5 and are most at risk of deteriorating into poor condition. Structures with a minimum GCR of 4 or less are classified as in poor condition which does not suggest a safety concern but poor structures typically require repair and eventual rehabilitation or replacement to address deficiencies. Poor condition structures are also classified as Structurally Deficient (SD) although FHWA is looking to remove this term. Condition ratings for Structures and Bridges are:

- Green = Good condition
- Yellow = Fair condition
- Orange = ON some screens, fair (cusp) structures are identified separately from those with a minimum GCR of 6 which remain in yellow to emphasize the percentage of "at risk" structures
- Red = Poor condition

The Importance Factor (IF) used to weight the average general condition rating is a measure of the relative importance of each bridge to the overall highway network. Details on the IF can be found in the Virginia Bridge Prioritization Formula document.

Bridge condition ratings on all "current" Structures and Bridges Dial selections are based on the most recent inspection for bridges and culverts in Virginia. Bridges are inspected at a frequency meeting or exceeding federal requirements.

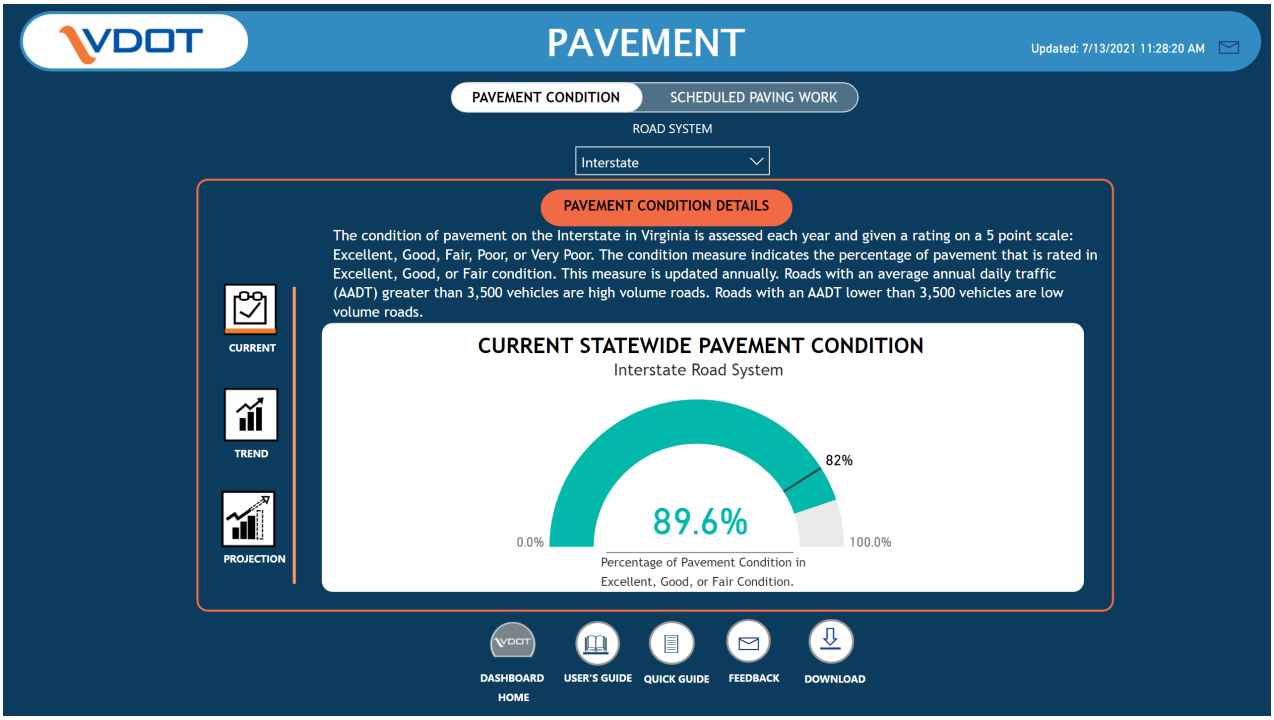
Performance Measures: In December 2019, new state performance measures were established assuming current funding levels and an improved balance of expenditures that emphasizes long-term system preservation as a priority in addition to the previous focus on replacement of bridges in poor condition. The 50-year targets summarized below indicate the minimum threshold value that can be maintained through the year 2070 using this approach.

Interim July 1, 2027 targets summarized below for each road system are based on the current focus on replacement of bridges in poor condition only (i.e., changes to the Code of Virginia are necessary to include long-term system preservation as a priority) and are shown on Dashboard screens.

	CTB approved 50-year targets (2070)		July 1, 2027 interim targets	
	Average Condition Rating	Percentage of Structures in Good and Fair Condition	Average Condition Rating	Percentage of Structures in Good and Fair Condition
All	5.6	N/A	5.6	N/A
Interstate	5.6	97%	5.7	97%
Primary	5.6	93%	5.8	95%
Secondary and Urban	5.6	90%	6.0	92%

Virginia's performance measure for structure postings is to have no weight-restricted structures on the Interstate system.

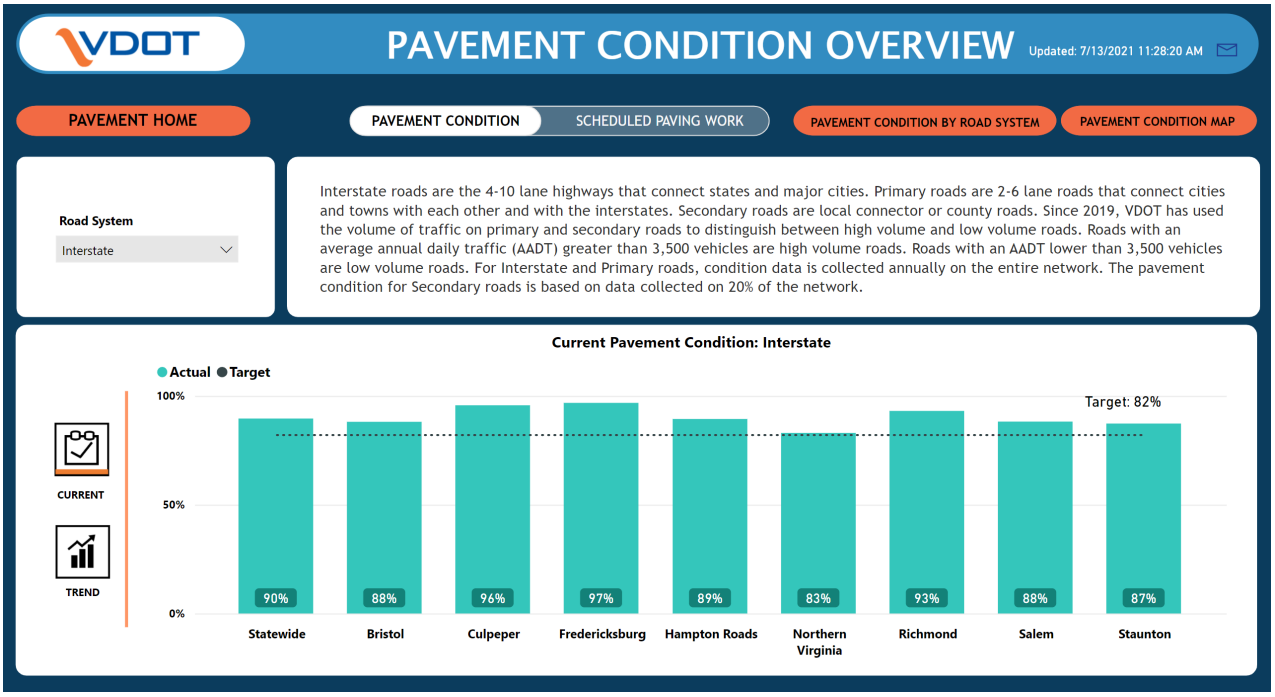
Pavement Dial



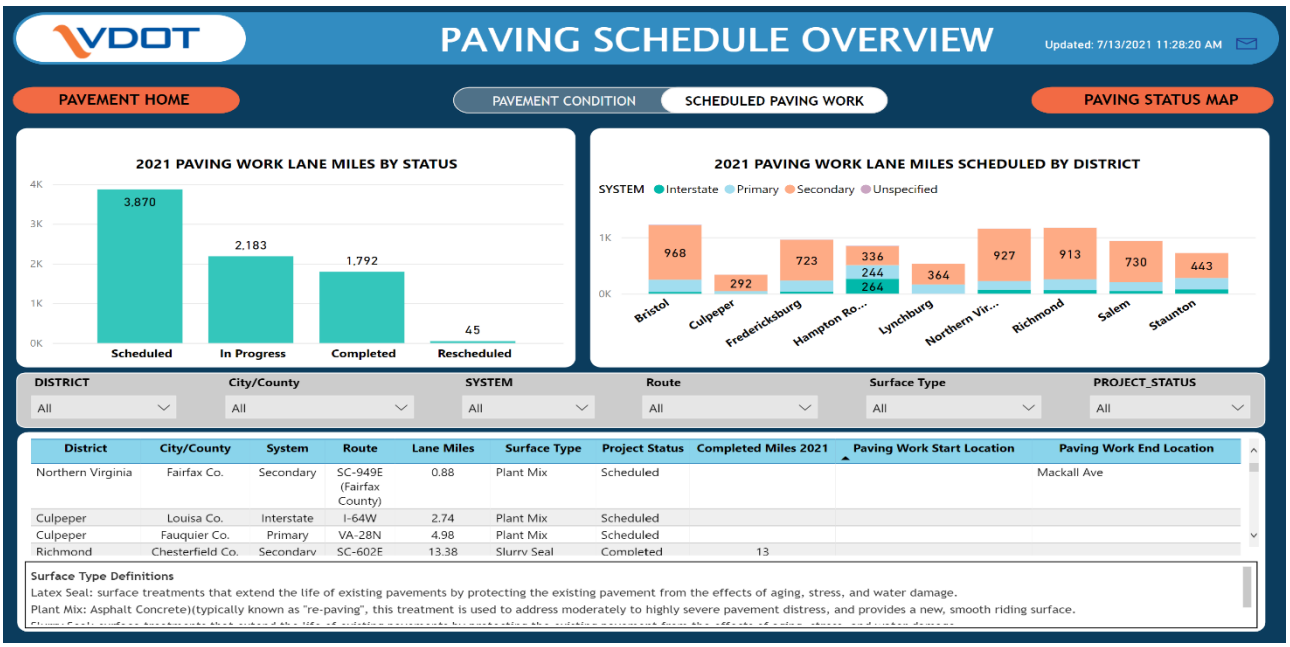
Data Source: Annual spreadsheets provided by VDOT's Maintenance Division. At the summary statewide level, this measure currently applies to the Interstate, Primary road systems an average annual daily traffic (AADT) greater or less than 3,500 vehicles, secondary road systems with an average annual daily traffic (AADT) greater or less than 3,500 vehicles.

Business Rules: The gauge points to the percent of pavement in excellent, good or fair condition. All pavements on the Interstate, Primary road systems, and secondary road systems with an AADT greater than or equal to 3,500 vehicles in Virginia are assessed each year and rated in one of the following categories: Excellent, Good, Fair, Poor, or Very Poor. Secondary road systems with an AADT less than 3500 assessed over a period of five years with approximately 20% every year. These surveys are completed each year from December through May.

The default view for this measure (until some other data filter is applied) is for Interstate lane miles, statewide. Once Pavement Condition Details is selected, a bar chart shows the percentage of pavement in each District that is in Fair or better condition. A trend, pavement condition by road system and a map can be further explored.



Scheduled Paving Work is also available to show the paving plan and progress.



Data Sources for Paving Work: ArcGIS Paving Schedule app.

Contracts Selected: All awarded contracts are placed in the Statewide Paving Status Map. This includes Plant Mix, Slurry Seal, Surface Treatment, Latex Mix, and so on. The contract managers in the districts can edit the details for keeping the information up to date.

Scheduled Paving Sections and Lane Miles – For each road segment, lane miles are computed as linear distance multiplied by the number of lanes. If the number of lanes is not specified, a 12 foot lane width is

assumed. Paving schedules are developed in Pavement Management Scheduling Systems (PMSS), and contracts for the current calendar year are subsequently developed from the paving schedules. Scheduled paving sections and lane miles are those lane miles that are part of a paving schedule for the current calendar year and that were marked to "include" in PMSS (indicated with a numeral 1, rather than a numeral 0). Descriptive information on scheduled sections such as lane miles, District, county, routes, and project description, are gathered from PMSS , and are updated as necessary by contract managers at the district level.

Scheduled contracts for the current paving season are those contracts from PMSS with the current year schedules. So for plan year 20XX in PMSS, the 'included' schedules have an associated UPC (speed type). The lane miles for the road segments for those contracts make up the scheduled lane miles (under contract) on Dashboard, for year 20XX. Some hybrid maintenance/construction contracts may have dates that would appear to put them in some other paving year (season), but the year they were planned and 'included' in PMSS is the determining factor.

In-Progress Paving Sections – For the paving sections where the paving operations have started in the field but have not completed, the District Contract Managers/ Administrators change the status to "In-Progress' in Statewide Paving Status map.

Completed Paving Sections – When all the paving operations are completed in the field for a paving project, the district contract managers/administrators update the status to "Completed" in the Statewide Paving Status Map.

Rescheduled Projects: When a paving project will not be completed in a given year for any reason, the district contract managers/administrators change the status of that paving section to "Rescheduled" in the Statewide Paving Status Map.

Finance Dial

Coming Soon

Projects Dial

Overall performance measures for Development On-Time, Development On-Budget, Delivery On-Time, and Delivery On-Budget are depicted. Users select **Project Development** OR **Project Delivery**. The Users Guide is provided as a link from this page.

For both the Development and Delivery options, information on each project or contract is shown with the ability to **filter on criteria**. Performance measures automatically adjust to the criteria selected.

To navigate to the details of an individual project or contract, **right-click** on a record in listing and select **DRILLTHROUGH > DETAIL**. This will display specific information for that individual project or contract.

Project Development On-Time

Measures the performance of meeting project activities from the time of CTB approval until the Delivery phase begins upon contract award. The initial project kickoff activities (Local Agreement, Start Development, and Determine Requirements) are scheduled and baselined upon CTB funding approval. The remaining scheduled activities become baselined after the project's full scope is finalized and approved for design. Activities missing critical information will be red. Target: 70% of projects developed On-Time (i.e., in Green or Yellow status) .

Activity	Activity Code	Early Finish			Late Finish
Local Agreement	10	> 30 days early	≤ 30 days early	Baseline Finish Date	> 0 days late
Start Development (Authorize PE)	12				
Determine Requirements (Scope Project)	22				
Engage Public (Approve Willingness, Adopt Location/Design)	47, 49				
Start Purchasing Right-of-Way (Authorize R/W & UT Funds)	52				
Utility Relocation	67U				
Complete Purchasing Right-of-Way (Acquire Right-of-Way)	69	> 60 days early	≤ 60 days early		
Obtain Permits	70				
Solicit Bids (Advertise Project)	80				
Start Delivery (Award Contract)	84	> 30 days early	≤ 30 days early		> 0 days late

Project Development On-Budget

Compares the CTB approved budget to the current total project estimate. Project budgets are fixed when the project funding is approved by the CTB. Estimates over one year old will be yellow. Target: 74% of projects developed within an allowable tolerance of budget.

Approved Budget	Current Estimate		
< $5 million	≤ 0	> 0 to < 20%	≥ 20%
$5 million to $10 million	≤ 0	> 0 to > $1M	≥ $1M
> $10 million	≤ 0	> 0 to < 10% or < $5M*	≥ 10% or ≥ $5M*
** Whichever is less*			

Project Delivery On-Time

Measures the performance of completing project milestones from contract award through contract completion. Schedules become baselined at the time of the contract award, when the contractor has committed to a specific schedule for completion of the project. After a project comes due, Project Managers in the field have a period of seven days to enter a Completion Date (during which time the status is Yellow); then if no Completion Date has been entered, the status would change to Red. Target: 77% of projects delivered On-Time (i.e., in Green or Yellow status).

Milestones	Early Finish			Late Finish
Project Specific Interim Milestones	> 14 days	≤ 14 days	Baseline End Date	> 0 days
Complete Delivery	> 0 days			> 0 days

Project Delivery On-Budget

Compares the contract award amount, current contract amount and the cost-to-date. Total project budgets are fixed upon contract award. Target: 85% of projects delivered On-Budget (i.e., in Green or Yellow status).

	Projects have not been executed; no status		
Active	Neither the current contract amount, nor the cost of work to date, exceed the award amount by more than 3%	Either the current contract amount, or the cost of work to date, exceeds the contract award amount by 3% to 10% for construction contracts, or by 3% to 25% for maintenance contracts.	Either the current contract amount, or the cost of work to date, exceeds the contract award amount by +10% for construction contracts, or +25% for maintenance contracts
Completed	Un-audited final cost is within 110% of award amount for construction contracts, or within 125% for maintenance contracts		Un-audited final cost is not known; Either the cost of work to date, or the current contract amount, +10% of the construction contract award amount, or +125% of maintenance contract award amount