

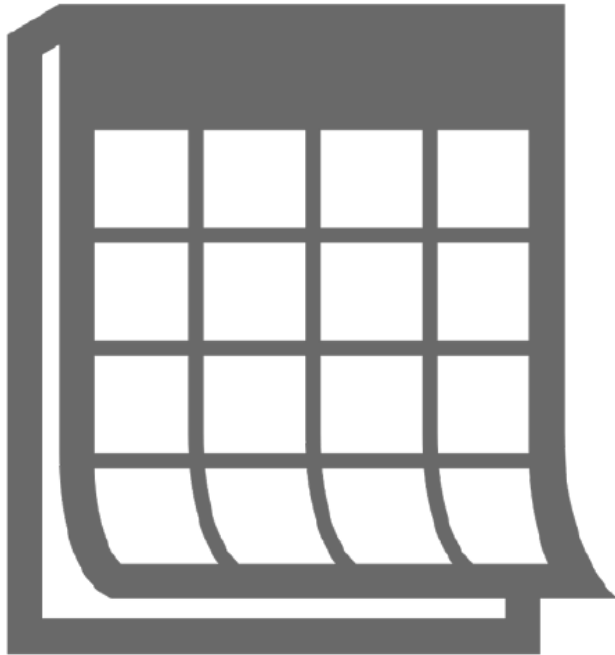
- Bridge Condition
- Pavement Condition
- Roadway Performance
- **Freight**

- Four-Year Target for:
  - **Truck Travel Time Reliability (TTTR) Index on the Interstate system**

- The metric used is Truck Travel Time Reliability (TTTR), which is the ratio of the 95<sup>th</sup> percentile travel time for trucks to the mean (50<sup>th</sup> percentile) travel time for trucks over five time horizons.

## Five Time Horizons

Full Year (Jan 1-Dec 31)



Weekdays (Mon – Fri)

Weekends

**6 – 10am**

**10am – 4pm**

**4 – 8pm**

Overnight (all days)  
**8pm – 6am**

**6am – 8pm**

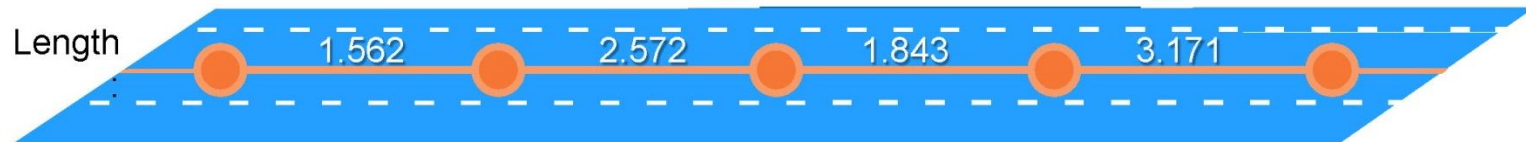
Five Total Time Periods

## TTTR Calculation Example

$$\frac{\text{Longer Truck Travel Time (95th)}}{\text{Normal Truck Travel Time (50th)}} = \frac{\# \text{ seconds}}{\# \text{ seconds}} = \text{TTTR Ratio}$$

TTTR: Single Segment, Interstate Highway System		
Monday – Friday	6 – 10 a.m.	$\text{TTTR} = \frac{63 \text{ sec}}{42 \text{ sec}} = 1.50$
	10 a.m. – 4 p.m.	$\text{TTTR} = \frac{62 \text{ sec}}{45 \text{ sec}} = 1.38$
	4 – 8 p.m.	$\text{TTTR} = \frac{85 \text{ sec}}{50 \text{ sec}} = \mathbf{1.70}$
Weekends	6 a.m. – 8 p.m.	$\text{TTTR} = \frac{52 \text{ sec}}{40 \text{ sec}} = 1.30$
Overnight	8 p.m. – 6 a.m.	$\text{TTTR} = \frac{46 \text{ sec}}{38 \text{ sec}} = 1.21$
<b>Maximum TTTR</b>		<b>1.70</b>

## Freight Reliability Measure Example



TTTR	1.50	2.10	1.45	1.56
	1.38	1.83	1.71	2.30
	1.70	1.79	1.62	2.12
	1.30	1.42	1.22	1.82
	1.21	1.03	1.01	1.27

TTTR

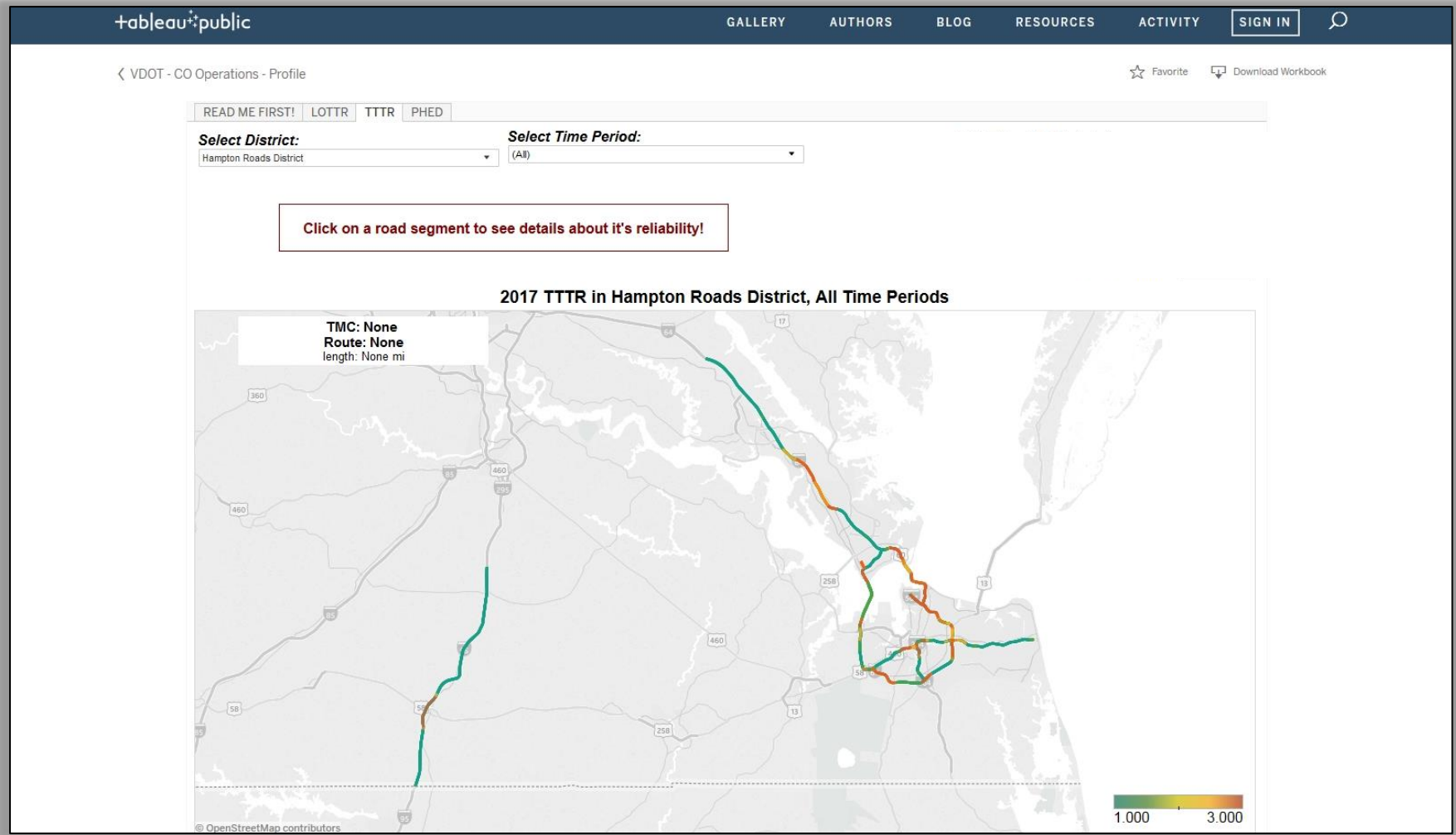
$$= \frac{(1.70 \times 1.562) + (2.10 \times 2.572) + (1.71 \times 1.843) + (2.30 \times 3.171)}{(1.562 + 2.572 + 1.843 + 3.171)}$$

$$= \frac{2.655 + 5.401 + 3.152 + 7.293}{9.148}$$

$$= 2.022$$

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## 2017 TTTR Map, Hampton Roads VDOT District



## Freight Reliability Measure Example

	2016	2017	2019	2021
<b>Statewide (growth 1.06% TTTR)</b>	<b>1.49</b>	<b>1.50</b>	<b>1.53</b>	<b>1.56</b>
Winchester-Frederick County MPO	1.096	1.096		
Blacksburg-Christiansburg-Montgomery Area MPO	1.093	1.091		
Bristol MPO	1.107	1.129		
Tri Cities Area MPO	1.116	1.142		
Richmond Area MPO	1.437	1.447		
Staunton-Augusta-Waynesboro MPO	1.106	1.108		
Roanoke Valley MPO	1.207	1.227		
National Capital Region Transportation Planning Board	2.884	2.914		
Charlottesville-Albemarle MPO	1.145	1.13		
Hampton Roads Transportation Planning Organization	2.03	2.051		
Fredericksburg Area MPO	2.604	2.61		
Harrisonburg-Rockingham MPO	1.06	1.061		



Measure	Statewide Current Value	CTB Approved 4-Year Target	HRTPO Current Value	HRTPO Approved 4-Year Target
TTTR Index	1.50	1.56	2.05	2.13