3.3 Need Category: Improved Reliability (Intercity and Passenger Rail)

Measure: Intercity and Commuter Rail On-time Performance

What it Means: Passenger rail stations or lines where the average on-time performance of rail services is below the operator-specific performance threshold.

Applicable VTrans Travel Market: CoSS

Identification of Needs

- Data Sources:
  - ~~Virginia Department of Rail and Public Transportation (DRPT),~~ Amtrak on-time performance - Stations served by state-sponsored lines: Station-level Annual on-time performance (percent of trains arriving on time) for stations on Amtrak's state-sponsored lines from Amtrak
  - ~~Virginia DRPT,~~ Amtrak on-time performance - Stations served by Amtrak national-sponsored lines only: Daily on-time performance data (on-time status and number of minutes of delay) for stations that are only served by Amtrak's long-distance trains for Amtrak ~~fiscal year 2018~~
  - Virginia Railway Express (VRE), ~~via DRPT,~~ VRE on-time performance: Monthly on-time performance data (~~number of trains arriving on-time~~) for VRE lines
- Year of analysis: ~~Fiscal Year 2018 [based on Amtrak's Fiscal Year (10/2017–09/2018) and VRE's Fiscal Year (07/2017–06/2018)~~
- Period of analysis:
  - Amtrak on-time performance - Stations served by state-sponsored lines: all applicable service hours
  - Amtrak on-time performance - Stations served by Amtrak national-sponsored lines only: all applicable service hours
  - VRE on-time performance: all applicable service hours
- Calculations
  1. Format data:
     - Amtrak on-time performance - Stations served by state-sponsored lines: Monthly, directional on-time performance for state-sponsored arrivals at each Amtrak station.
     - Amtrak on-time performance - Stations served by Amtrak national-sponsored lines only: Daily, directional on-time performance for each train serving each station (Train departures were substituted for train arrivals when arrival data for a specific train was missing~~.~~).
     - VRE on-time performance: Monthly, non-directional on-time performance for VRE lines.
  2. Amtrak on-time performance - Stations served by state-sponsored lines: Average northbound and southbound performance to generate average performance.
  3. Amtrak on-time performance - Stations served by Amtrak national-sponsored lines only: Convert daily statistics to annual average by summing the number of trains delayed by 15 minutes or more per station and dividing by the total number of trains.
  4. VRE on-time performance: Convert monthly statistics to annual average by summing the number of trains delayed by 5 minutes or more per line and dividing by the total number of trains per line. ~~For stations serving both VRE lines, attribute the performance using the least on-time line.~~
  5. **Threshold for Need for Improved Reliability (Intercity and Commuter Rail):**
     i. Amtrak passenger rail stations, with state-sponsored rail service where on-time performance is below 80% are identified as those with VTrans Mid-term Need for Reliability Improvement. Service is considered on-time if they are within 15 minutes of schedule.
     ii. Amtrak passenger rail stations, with Amtrak's long-distance service only where on-time performance is below 70% are identified as those with VTrans Mid-term Need for Reliability Improvement. Service is considered on-time if they are within 15 minutes of schedule.
     iii. VRE passenger rail stations, where on-time performance is below 90% are identified as those with VTrans Mid-term Need for Reliability Improvement. Service is considered on-time if they are within 5 minutes of schedule.
     iv. ~~Assign station level (Amtrak) & line level (VRE) directional rail on-time performance values to the Primary CoSS component.~~
     v. ~~Assign the minimum directional performance value to roadway segments.~~

4.2.3 Prioritization within Improved Reliability (Intercity and Commuter Rail) Need Category

Applicable VTrans Travel Market: CoSS

Utilized for: Establishing Statewide Priority Locations (based on CoSS Needs)

Two criteria, Severity and Magnitude, are utilized to categorize VTrans Mid-term Needs for Improved Reliability (Intercity and Commuter Rail) as *Very High, High, Medium,* and *Low* in the following manner.

Severity of VTrans Mid-term Need for Improved Reliability (Intercity and Commuter Rail)

- Source data: Station-level (Amtrak) & line-level (VRE) directional rail on-time performance used to Identify Need for Improved Reliability (Intercity and Commuter Rail).
- Calculations
  - Identify service by railroad corridor per CoSS definition (Appendix A).
  - Assign station-level (Amtrak) & line-level (VRE) directional rail on-time performance values to the Primary CoSS component.
  - Assign the minimum directional performance value to roadway segments.

Magnitude of VTrans Mid-term Need for Improved Reliability (Intercity and Commuter Rail)

- Source data:
  - Virginia DRPT, station-level boardings and alightings data for Amtrak and VRE.
- Calculations
  - Assign the sum of average daily boarding and alighting (based on applicable service days determined as 365 service days for Amtrak and 248 service days for VRE) to the roadway segments along Primary CoSS components. If a road has no direction listed, the average of the two directional numbers is applied.
  - Northbound and eastbound roadway directions are considered Inbound rail travel for all CoSS's except the East-West CoSS Corridor. Within the East-West CoSS Corridor, within Hampton Roads and Richmond Districts, northbound and westbound rail travel is considered Inbound, and within Staunton and Culpeper Districts, northbound and eastbound rail travel is considered Inbound.

Consideration of Severity and Magnitude Criteria

- Severity (on-time performance) x Magnitude (daily boardings and alightings)

Prioritizing within Improved Reliability (Intercity and Commuter Rail) Need Category

Prioritization within this VTrans Mid-term Needs Category occurs in the following manner:

- For the entire state, sort the product of Severity and Magnitude measures in descending order and assign the following values based on mileage[1] to develop statewide *Very High, High, Medium,* and *Low* categorizations for Need for Improved Reliability (Intercity and Commuter Rail).
  - *Very High* (Score 7): Top 5% of the total mileage
  - *High* (Score 6): 5.001%–10%
  - *High* (Score 5): 10.001%–15%
  - *Medium* (Score 4): 15.001%–20%
  - *Medium* (Score 3): 20.001%–25%
  - *Low* (Score 2): 25.001%–50%
  - *Low* (Score 1): Bottom 50.001%–100%

[1] Where prioritization values do not break exactly at the percentile categories, assign all values to the higher category until there is a new prioritization value. For example, if the top 7% of roadway miles all have the same score, then 7% of miles would be classified as *Very High*.