

VTrans Vulnerability Assessment Interactive Weighting Tool

About the VTrans Vulnerability Assessment Weighting Interactive Tool: This interactive weighting tool found at www.vtrans.org is meant to support the development of the VTrans Vulnerability Assessment, and allows users to modify the weightings for the three input component scores (Exposure, Sensitivity, and Adaptive Capacity) used to calculate the Vulnerability score for roadways and structures.

Purpose of the Interactive Weighting Tool: The purpose is to:

- To provide a better understanding of how different components impact the vulnerability assessment; and
- Allow for different users to customize vulnerability scores based on unique needs.

How to Use: The vulnerability scores are grouped into three categories of high, medium, and low in order to see roadways and bridges that may be more vulnerable to sea level rise, storm surge, or inland/riverine flooding. More information about the Vulnerability Assessment methodology can be found in the Draft Vulnerability Assessment Technical Memorandum at www.vtrans.org/long-term-planning/vulnerability.

- Step 1: Select one of the three hazards - (1) sea level rise; (2) storm surge; and, (3) inland/riverine flooding.
- Step 2: Select one of the three scenarios associated with that hazard.
 - Sea level rise scenarios
 - Extreme
 - Intermediate-high
 - Intermediate
 - Storm surge scenarios
 - Category 4
 - Category 3
 - Category 2
 - Inland/riverine flooding scenarios
 - 500 year floodplain + buffer
 - 500 year floodplain
 - 100 year floodplain
- Step 3: Modify weighting for one or more of the three components. Note, weighting for three components should add up to 100%. The default weighting which is also used for the Draft Vulnerability Assessment is:
 - Exposure - 40%
 - Sensitivity - 20%
 - Adaptive Capacity - 40%
- Step 4: View results and zoom into different areas.

Noteworthy Items:

1. Please ensure that the sum of percentages adds up to 100%.
2. Depending on a user's internet speed, the interactive weighting tool can be slower due to the computational requirements.
3. Calculations can only be performed for a relatively small geographic area.
4. Vulnerability scores for a roadway segment were developed only if it is exposed to the selected hazard under the selected scenario.
5. The VTrans Vulnerability Assessment methodology categorizes vulnerability for exposed roadways and bridges based on the total mileage: top 33% of scores mileage to high, middle 33% of scores mileage to medium, and lowest 33% of scores mileage to low. However, this interactive weighting tool relies on the following pre-established categories to categorize the results (see Table), which is a noteworthy distinction.

Hazard	Scenario	Vulnerability - Low	Vulnerability - Medium	Vulnerability - High
Sea level rise	Extreme	Less than 1.60	1.60 - 2.00	2.01 or higher
Sea level rise	Intermediate-High	Less than 2.00	2.00 - 2.40	2.41 or higher
Sea level rise	Intermediate	Less than 2.00	2.00 - 2.40	2.41 or higher
Storm surge	Category 4	Less than 1.40	1.40 - 1.80	1.81 or higher
Storm surge	Category 3	Less than 1.40	1.40 - 1.80	1.81 or higher
Storm surge	Category 2	Less than 1.40	1.40 - 1.80	1.81 or higher
Inland/riverine flooding	500 year floodplain + buffer	Less than 2.60	2.60 - 2.80	2.81 or higher
Inland/riverine flooding	500 year floodplain	Less than 2.60	2.60 - 2.80	2.81 or higher
Inland/riverine flooding	100 year floodplain	Less than 2.60	2.60 - 2.80	2.81 or higher