

### **General description:**

Transearch User Interface is an interactive web-like app designed for freight transportation analysis. Currently, Transearch Analytics offers a Freight Flow Mapping, a Highway Mapping, and a Summary Tables and Charts Page.

The Freight Flow Mapping Page estimates and maps freight flow by flow directionality and spatial resolution for various parameters.

The Highway Mapping Page estimates, and maps truck flows on highway networks.

Finally, the Summary Tables and Charts Page generates table summaries using selected units and groupings and offers various estimation methods for comprehensive data analysis.

### **The Freight Flow Mapping Page:**

Upon accessing the Freight Flow Mapping page, users will encounter:

- A comprehensive general description, accessible via a yellow question mark icon. A click on this icon triggers a pop-up with detailed information.
- In the top left corner, users are provided with background map options, which including dark, light, and open streets.
- The left panel shows the selection parameters generated from the Transearch database, allowing users to tailor their analysis.
- Next, maps are processed based on one of the selected units (Tons, Values, units, and, if available, CO2 tons).
- Maps are estimated using one of the given years.
- Information icons accompanying each input parameter provide users with valuable insights upon hovering.
- Various selection options are provided to user such as four-digit STCC codes, two-digit STCC codes, Equipment, Trade Types, Modes, Originating and Destination States, Regions, and Counties.

The dropdown menu is smart. Whenever one selection is selected, the others will update accordingly, ensuring that users always have options available based on the data in the database.

- An "exclude" switch, facilitating selective exclusion from the total selection.
- In the top middle panel, users can choose the direction of freight flow—originating, terminating, or both. Additionally, they can select from four geographical resolutions: county, region, state, or country.

Additionally, users can customize map colors, opacity, and color scale through the panel to the right.

Finally the far right panel allows users to save scenarios typing the name and clicking the add scenario button.

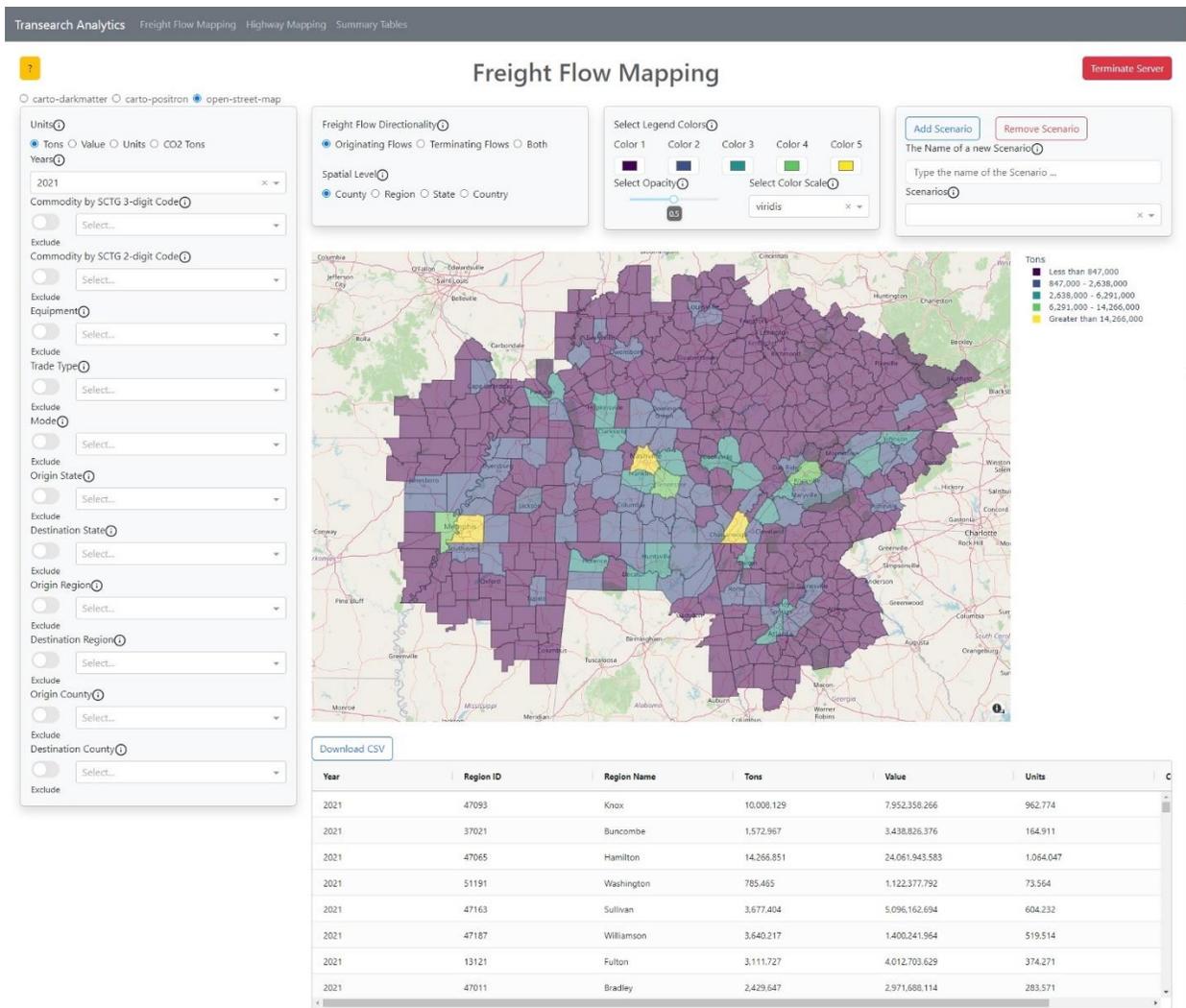
One of the benefits of interactive maps is that they allow users to hover over displayed features for detailed information. The following feature shows county names, their IDs, and other metrics such as tons, value, units, and CO2 Tons.

- Legends are automatically generated based on natural breaks, which can be interactively adjusted to hide selected legend items.

- Users can easily export maps by hovering over the map's right corner and clicking the photo icon.

Finally, users can access a table of processed data, including region ID, name, and units, facilitating further analysis or integration into different GIS mapping software.

- Export data as a CSV table, enabling users to utilize the data for various analytical purposes.



### **The Highway Mapping Page:**

Similar to the previous page, the left panel displays selection parameters that are generated from the Transearch database.

-The top panel to the right enables users to customize various aspects of the visualization. This includes adjusting the colors of legends, widths of lines, and color scales, allowing for enhanced visual clarity and interpretation.

-Similar to previous maps, the features are interactive and display information for each link of the network. Such as route number, link ID, and the other metrics.

-Users are also provided with an output table by link ID with estimates values, which can be exported using the download CSV button.

Transearch Analytics Freight Flow Mapping Highway Mapping Summary Tables

## Highway Mapping

Terminate Server

Units  Tons  Value  Units  CO2 Tons

Years

Commodity by SCTG 3-digit Code

Exclude Commodity by SCTG 2-digit Code

Exclude Equipment

Exclude Trade Type

Exclude Modi

Exclude Origin State

Exclude Destination State

Exclude Origin Region

Exclude Destination Region

Exclude Origin County

Exclude Destination County

Exclude

Select Legend Colors

Color 1  Color 2  Color 3  Color 4  Color 5

Select Color Scale

Select width of Lines

The Name of a new Scenario

Type the name of the Scenario ...

Scenarios

Tons

- Less than 12,000,000
- 12,000,000 - 33,000,000
- 33,000,000 - 57,000,000
- 57,000,000 - 79,000,000
- Greater than 79,000,000

L Id	RTE/SGN	Tons	Value	Units	CO2 Tons
435974	US231	1,979,134	2,214,796,514	150,720	112,524
163874	TN153	21,974,453	35,780,914,281	1,960,422	1,403,525
164457	I40	49,046,418	112,652,916,577	2,968,081	9,779,506
165837	US41	4,115,085	3,434,745,070	408,923	199,937
163998	US64	1,712,316	1,857,731,306	129,970	189,104
164203	US641	1,927,044	982,244,792	173,297	101,889
164652	US25W	178,712	275,781,214	19,865	11,855
165347	I40	39,221,900	107,759,820,408	2,198,813	9,158,294

### The Summary Tables Page:

- Similar to previous pages, the left panel provides users with selection options sourced from the Transearch database.

- Two main ways to perform estimations:

1. Selecting one or many input parameters such as commodity, trade type, and others.
2. Summarizing by one of many fields by clicking on the "summarize" button.

Unlike the previous pages, users can now select multiple years instead of just one.

- The "summarize" checkbox on the left panel summarizes values by year and unique inputs. This button also allows users to select options at the top panel.

- Various summary options, including:

- Totals: Estimates the total sum of value for each of the years.
- Shares: Estimates shares as a percentage of the total value.
- Top Values: Displays only the selected top number of values ordered by the Top Field.
- All Others: Estimates the summation of values not included in the top list.
- Top Totals: Estimates the total sum of the top values.
- CAGR: Estimates compound annual growth rate.
- GR: Estimates annual growth rate.
- Charts: Creates a unit bar chart, a pie chart for shares for one of the selected years, and a line chart for CAGR and GR.

Additionally, users can:

- Export tables, both unformatted and formatted.

**Units**  
 \* Tons Value Units CO2 Tons  
 Year: 2021 2020

**Commodity by SIC10 & High Code**  
 Summarize Exclude  
 Commodity by SIC10 & High Code Select...

**Equipment**  
 Summarize Exclude  
 Equipment Select...

**Trade Type**  
 Summarize Exclude  
 Trade Type Select...

**Mode**  
 Summarize Summarize by Group  
 Mode Select...

**Origin State**  
 Summarize Exclude  
 Origin State Tennessee USA

**Destination State**  
 Summarize Exclude  
 Destination State Tennessee USA

**Origin Region**  
 Summarize Exclude  
 Origin Region Select...

**Destination Region**  
 Summarize Exclude  
 Destination Region Select...

**Origin County**  
 Summarize Exclude  
 Origin County Select...

**Destination County**  
 Summarize Exclude  
 Destination County Select...

### Summary Tables

Top Number Value: 10 Top Field: Tons 2021

All Others  
 Shrink  
 Change  
 Total  
 Align  
 Top Rank  
 All

Add Scenario Remove Scenario  
 The Name of a new Scenario:  
 Type the name of the Scenario:  
 Scenario:  
 Top 10 (through-line by (origin/destination and...

Top	SIC10	SIC10 Description	Origin State	Destination State	Tons 2021	Tons 2020
1	199	Other products of petrol...	Texas	New York	1,203,729	1,079,273
2	700	Crude petroleum oil and...	Southwestern	Alabama	1,026,261	1,223,927
3	700	Crude petroleum oil and...	Alabama	Louisiana	1,026,261	1,156,004
4	120	Gravel and crushed ston...	Virginia	North Carolina	874,292	810,880
5	300	Rail Intermodal Drayage	Arkansas	Arkansas	854,881	1,176,208
6	200	Organic chemical(s) or...	Illinois	Indiana	800,000	622,749
7	300	Soy beans	Arkansas	Indiana	792,857	776,583
8	100	Crustal and crushed ston...	Arkansas	Mississippi	758,650	964,161
9	220	Fertilizers and fertili...	Indiana	Guantanamo	678,700	487,453
10	500	Warehouse & Distribut...	Illinois	Georgia	587,340	661,078
Top State					6,674,224	5,182,208
All Others					212,039,994	420,647,439
TOTAL					240,714,118	425,829,647

