The Importance of Highways to U.S. Agriculture

APPENDIX B:

Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

Read the full report:
http://dx.doi.org/10.9752/TS295.12-2020
Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

This appendix visualizes conditions, performance, and commodity flow data for each of the 17 analysis corridors presented in the report The Importance of Highways to U.S. Agriculture. The report draws from these data to inform the analysis and narratives included in Section 4: Agricultural Freight Flows and Performance.

This appendix will help readers:
- Visualize key information about the condition and performance of the 17 analysis corridors;
- Understand in greater detail how agricultural commodities move along the corridors; and
- Identify performance challenges affecting the movement of agricultural commodities along the corridors.

Approach

This report uses a novel approach to combining agricultural commodity flow, infrastructure condition, and highway performance data to analyze corridor performance for domestic agricultural freight. This appendix visualizes these data using linearly-referenced strip charts and corridor context maps which allow readers to quickly see information from multiple datasets for each location along the analysis corridors.

This approach demonstrates the potential for using highway conditions and performance data to better understand how highway infrastructure and performance affects agricultural freight movements. Transportation agencies may consider a similar approach to conduct their own corridor analyses using this appendix as an example. With the exception of the agricultural commodity data from IHS Markit’s Transearch database, all datasets used are available to State Departments of Transportation from the U.S. Department of Transportation. For details about the methodology used to develop the data presented in this appendix, see Appendix C: Methodology.

How to Read these Visualizations

Data for each corridor is presented alongside a context map describing the route, mileage, major cities and urbanized areas along the corridor. Nearby agricultural processing centers and intermodal transfer locations are also included in the maps for context.

Strip charts below the context maps visualize data from various sources and are linearly-referenced to the mile markers shown in the maps. Some strip charts contain two lines of data, showing information for both directions of travel.
Conditions and Performance Data

The first page of each corridor includes strip charts showing data about the physical infrastructure conditions and performance of the corridor. Highway segments with Travel Time Index (TTI) > 1.2 or Truck Travel Time Reliability (TTTR) > 2.0 are also shown as the shaded areas across all datasets to help readers identify areas with congestion and reliability performance challenges on the agricultural commodity flow strip charts on the commodity flow data pages.

Figure 1 below shows an example visualization. See Table 1 for additional details.

Source: U.S. Department of Transportation, John A. Volpe National Transportation Systems Center (Volpe Center)
<table>
<thead>
<tr>
<th>Diagram Number</th>
<th>Label</th>
<th>Data</th>
<th>Description</th>
<th>Data Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AADT</td>
<td>Average Annual Daily Traffic</td>
<td>Average annual number of all vehicle traffic on the corridor on a daily basis, expressed in thousands of miles</td>
<td>2017-2018</td>
<td>Highway Performance Monitoring System (HPMS)</td>
</tr>
<tr>
<td>2</td>
<td>Urban/Rural</td>
<td>Urban/Rural Designation</td>
<td>Indicates if the segment of highway is within an urban area or rural area</td>
<td>2017-2018</td>
<td>HPMS</td>
</tr>
<tr>
<td>3</td>
<td>PAV. Condition</td>
<td>Pavement Condition (good/fair/poor)</td>
<td>Describes the conditions of pavement on each segment of roadway in the corridor</td>
<td>2017-2018</td>
<td>HPMS</td>
</tr>
<tr>
<td>4</td>
<td>Bridge Condition</td>
<td>Bridge Condition (good/fair/poor)</td>
<td>Describes the conditions of each bridge on the corridor</td>
<td>2018</td>
<td>National Bridge Inventory (NBI)</td>
</tr>
<tr>
<td>5</td>
<td>TTTR</td>
<td>Truck Travel Time Reliability</td>
<td>Describes the reliability of travel times on the segment for trucks (how consistent congestion levels are over time). An index value of 1 means that the 95th percentile travel time is the same as the 50th percentile travel time</td>
<td>2018</td>
<td>National Performance Monitoring Research Data System (NPMRDS)</td>
</tr>
<tr>
<td>6</td>
<td>TTI</td>
<td>Travel Time Index</td>
<td>Describes the ratio of peak congestion to free flow traffic where 1 is free flow traffic during peak congestion, and a higher value indicates longer travel times. For example, a TTI of 1.25 would indicate that travel time during peak congestion would take about 25% longer than in free flow traffic.</td>
<td>2018</td>
<td>NPMRDS</td>
</tr>
<tr>
<td>7</td>
<td>TRUCK FATAL.</td>
<td>Roadway fatality involving a single or double unit truck</td>
<td>Fatalities on the corridor that involved a truck</td>
<td>2014-2018</td>
<td>Fatal Analysis Reporting System (FARS)</td>
</tr>
<tr>
<td>8</td>
<td>TTTR &gt; 2.0</td>
<td>Truck Travel Time Reliability Index</td>
<td>Highway segments experiencing among the top 3% TTTR index values among all analysis corridors (i.e., least reliable segments on analyzed)</td>
<td>2018</td>
<td>NPMRDS</td>
</tr>
<tr>
<td>9</td>
<td>TTI &gt; 1.2</td>
<td>Travel Time Index</td>
<td>Highway segments experiencing among the top 3% TTI index values among all analysis corridors (i.e., most congested segments analyzed)</td>
<td>2018</td>
<td>NPMRDS</td>
</tr>
</tbody>
</table>

Source: Volpe Center analysis
Commodity Flow Data

The second, third, and fourth page of each corridor present 2018 data describing domestic agricultural freight tonnage, market value, and truck unit data from the IHS Markit Transearch database, for the focus commodities traveling in significant quantities across that corridor (Table 2). Highway segments with TTI > 1.2 or TTTR > 2.0 are also overlaid on agricultural commodity data strip charts to help readers identify performance challenges that affect movement of specific commodities.

Table 2: Agricultural Commodities Studied

<table>
<thead>
<tr>
<th>Commodity Group</th>
<th>Commodity</th>
<th>Standard Transportation Commodity Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grain</td>
<td>Corn</td>
<td>01132</td>
</tr>
<tr>
<td></td>
<td>Soybeans</td>
<td>01144</td>
</tr>
<tr>
<td></td>
<td>Wheat</td>
<td>01137</td>
</tr>
<tr>
<td>Fruits</td>
<td>Apples</td>
<td>01221</td>
</tr>
<tr>
<td></td>
<td>Strawberries</td>
<td>01293</td>
</tr>
<tr>
<td></td>
<td>Oranges</td>
<td>01214</td>
</tr>
<tr>
<td></td>
<td>Watermelons</td>
<td>01392</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Lettuce</td>
<td>01335</td>
</tr>
<tr>
<td></td>
<td>Dry Onions</td>
<td>01318</td>
</tr>
<tr>
<td></td>
<td>Potatoes other than sweet</td>
<td>01195</td>
</tr>
<tr>
<td>Milk &amp; Dairy Products</td>
<td>Dairy farm products</td>
<td>0142</td>
</tr>
<tr>
<td></td>
<td>Processed whole milk, skim, cream or fluid products</td>
<td>2026</td>
</tr>
<tr>
<td>Meat Perishables</td>
<td>Meat, fresh or chilled</td>
<td>2011</td>
</tr>
<tr>
<td></td>
<td>Meat, fresh-frozen</td>
<td>2012</td>
</tr>
<tr>
<td></td>
<td>Dressed Poultry, fresh or chilled</td>
<td>2015</td>
</tr>
<tr>
<td></td>
<td>Dressed Poultry, fresh-frozen</td>
<td>2016</td>
</tr>
<tr>
<td>Livestock</td>
<td>Livestock</td>
<td>0141</td>
</tr>
<tr>
<td>Poultry</td>
<td>Live poultry</td>
<td>0151</td>
</tr>
</tbody>
</table>

Source: Volpe Center analysis
## Context Map

Each page contains a context map of the corridor. The maps are oriented so that the corridor is horizontal on the page (as opposed to north arrow facing upward) to help the reader more directly reference the strip chart data to locations on the corridor.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Source Dataset</th>
<th>Date</th>
<th>Dataset Name</th>
<th>Data Provider</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>⬆️</td>
<td>Rail Intermodal Facilities</td>
<td>2019</td>
<td>Intermodal Freight Facilities Rail</td>
<td>Bureau of Transportation Statistics (BTS)</td>
<td></td>
</tr>
<tr>
<td>■</td>
<td>Meat Processing Facilities</td>
<td>2019</td>
<td>Listed Slaughter and Rendering Establishments</td>
<td>U.S. Department of Agriculture</td>
<td>Volpe Center compilation of approximate grain elevator location from publicly-available data sources in 2014</td>
</tr>
<tr>
<td>+</td>
<td>Grain Elevators</td>
<td>2014</td>
<td>Grain Elevators</td>
<td>Volpe Center Analysis</td>
<td></td>
</tr>
<tr>
<td>⭕️</td>
<td>Ports Handling Agricultural Tonnage</td>
<td>2019</td>
<td>Ports Dataset</td>
<td>BTS</td>
<td>Dataset filtered to remove ports estimated to have low likelihood of handling agricultural goods</td>
</tr>
<tr>
<td>——</td>
<td>Inland Waterways</td>
<td>2019</td>
<td>Navigable Waterway Lines</td>
<td>BTS</td>
<td></td>
</tr>
<tr>
<td>———</td>
<td>High-Volume Domestic Agriculture Highway (HDAH) Route</td>
<td>2018</td>
<td>n/a</td>
<td>Volpe Center Analysis</td>
<td>See main report, Section 4: Agricultural Freight Flows and Performance for additional information</td>
</tr>
<tr>
<td>———</td>
<td>Analysis Corridor</td>
<td>2018</td>
<td>n/a</td>
<td>Volpe Center Analysis</td>
<td>See main report, Section 4: Agricultural Freight Flows and Performance for additional information</td>
</tr>
<tr>
<td>———</td>
<td>Metropolitan Area</td>
<td>2018</td>
<td>U.S. Urban Areas</td>
<td>U.S. Census Bureau</td>
<td></td>
</tr>
<tr>
<td>———</td>
<td>State Boundaries</td>
<td>2018</td>
<td>U.S. State Boundaries</td>
<td>U.S. Census Bureau</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Volpe Center analysis*
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Corridor #1: CA/OR Border to I-5/State Road-99 Interchange

CONDITIONS & PERFORMANCE

California/Oregon Border

I-5/SR-99 Interchange

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND
- Congestion and Reliability
  - TTI > 1.2
- Bridge and Pavement (PVMT) Condition
  - “Good” Condition
  - “Fair” Condition
  - “Poor” Condition
- Traffic Direction (TTTR/TTI)
  - OR/CA Border to I-5/SR-99
  - I-5/SR-99 to OR/CA Border
- Safety
  - 1 fatality involving a truck, 2014 - 2018

The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #2: Jackson, MS, to Charlotte, NC

CONRAD & PERFORMANCE

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND

Congestion and Reliability
- TTI > 1.2
- TTTR > 2.0

Bridge and Pavement (PVMT) Condition
- “Good” Condition
- “Fair” Condition
- “Poor” Condition

Traffic Direction (TTTR/TTI)
- Jackson to Charlotte
- Charlotte to Jackson

Safety
- 1 fatality involving a truck, 2014-2018

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

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Corridor #2: Jackson, MS, to Charlotte, NC

TONNAGE (in millions of tons)

DATA LEGEND

Congestion and Reliability

Traffic Direction

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

The Importance of Highways to U.S. Agriculture
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

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Corridor #2: Jackson, MS, to Charlotte, NC

VALUE (in millions of dollars)

DATA LEGEND

Congestion and Reliability

- TTI > 1.2
- TTTR 2.0

Traffic Direction

- Jackson to Charlotte
- Charlotte to Jackson
Corridor #2: Jackson, MS, to Charlotte, NC

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #3: Omaha, NE, to Chicago, IL

CONDITIONS & PERFORMANCE

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND
- Congestion and Reliability
  - TTI > 1.2
  - TTTR > 2.0

- Bridge and Pavement (PVMT) Condition
  - “Good” Condition
  - “Fair” Condition
  - “Poor” Condition

- Traffic Direction (TTTR/TTI)
  - Omaha to Chicago
  - Chicago to Omaha

- Safety
  - 1 fatality involving a truck, 2014 - 2018

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

B-18
Corridor #3: Omaha, NE, to Chicago, IL

VALUE (in millions of dollars)

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND

Congestion and Reliability

Traffic Direction

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #4: Davenport, IA, to Memphis, TN

CONDITIONS & PERFORMANCE

Map Legend
- Grain Elevator
- Meat Processing Facility
- Analysis Corridor
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND
- Congestion and Reliability
  - TTI > 1.2
  - TTTR > 2.0
- Bridge and Pavement (PVMT) Condition
  - “Good” Condition
  - “Fair” Condition
  - “Poor” Condition
- Traffic Direction (TTTR/TTI)
  - Davenport to Memphis
  - Memphis to Davenport
- Safety
  - 1 fatality involving a truck, 2014 -2018

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #4: Davenport, IA, to Memphis, TN

**Valuation (in millions of dollars)**

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #5: Toledo, OH, to E. Stroudsburg, PA

**CONDITIONS & PERFORMANCE**

**Map Legend**
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

**Data Legend**
- **Congestion and Reliability**
  - TTI > 1.2
  - TTTR > 2.0
- **Bridge and Pavement (PVMT) Condition**
  - “Good” Condition
  - “Fair” Condition
  - “Poor” Condition
- **Traffic Direction (TTTR/TII)**
  - Toledo to East Stroudsburg
  - East Stroudsburg to Toledo
- **Safety**
  - 1 fatality involving a truck, 2014 - 2018

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

**Data Legend**

- **Congestion and Reliability**
  - TTI > 1.2
  - TTTR > 2.0

- **Traffic Direction**
  - Toledo to East Stroudsburg
  - East Stroudsburg to Toledo

**Map Legend**

- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

**Corridor #5:**

Toledo, OH, to E. Stroudsburg, PA

**TONNAGE (in millions of tons)**

- **Toledo to East Stroudsburg**
  - Total
  - Corn
  - Soybeans
  - Wheat
  - Fruit
  - Meat
  - Milk
  - Vegetables

- **East Stroudsburg to Toledo**
  - Total
  - Corn
  - Soybeans
  - Wheat
  - Fruit
  - Meat
  - Milk
  - Vegetables

The Importance of Highways to U.S. Agriculture
Corridor #5: Toledo, OH, to E. Stroudsburg, PA

VALUE (in millions of dollars)

Corridor Mile Marker

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Data Legend
- Congestion and Reliability
  - TII > 1.2
  - TTTR > 2.0

Traffic Direction
- Toledo to East Stroudsburg
- East Stroudsburg to Toledo

The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #5:
Toledo, OH, to E. Stroudsburg, PA

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

DATA LEGEND

Congestion and Reliability
- TTI > 1.2
- TTTR > 2.0

Traffic Direction
- Toledo to East Stroudsburg
- East Stroudsburg to Toledo
Corridor #6: Flagstaff, AZ, to Oklahoma City, OK

CONDTIONS & PERFORMANCE

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND
- Congestion and Reliability
  - TTI > 1.2
  - TTTR > 2.0
- Bridge and Pavement (PVMT) Condition
  - "Good" Condition
  - "Fair" Condition
  - "Poor" Condition
- Traffic Direction (TTTR/TTI)
  - Flagstaff to Oklahoma City
  - Oklahoma City to Flagstaff
- Safety
  - 1 fatality involving a truck, 2014-2018

The Importance of Highways to U.S. Agriculture
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #6: Flagstaff, AZ, to Oklahoma City, OK

TONNAGE (in millions of tons)

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

The Importance of Highways to U.S. Agriculture

Flagstaff to Oklahoma City

Oklahoma City to Flagstaff

Data Legend

Congestion and Reliability
- TTI > 1.2
- TTTR > 2.0

Traffic Direction
- Flagstaff to Oklahoma City
- Oklahoma City to Flagstaff
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

The Importance of Highways to U.S. Agriculture

Corridor #6: Flagstaff, AZ, to Oklahoma City, OK

VALUE (in millions of dollars)

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND

Congestion and Reliability

| TTI > 1.2 | TTTR > 2.0 |

Traffic Direction

- Flagstaff to Oklahoma City
- Oklahoma City to Flagstaff

The Importance of Highways to U.S. Agriculture
Corridor #6: Flagstaff, AZ, to Oklahoma City, OK

UNITS (in thousands of trucks)

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

The Importance of Highways to U.S. Agriculture

DATA LEGEND
Congestion and Reliability
TTI > 1.2  TTTR > 2.0
Traffic Direction
Flagstaff to Oklahoma City  Oklahoma City to Flagstaff

MAP LEGEND
Grain Elevator
Meat Processing Facility
Analysis Corridor
Intermodal Rail Facility
Coastal or River Port
Other HDAH Corridors
Urbanized Area
Corridor Mile Marker
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

Corridor #7: Florence, SC, to Jacksonville, FL

DATA LEGEND

<table>
<thead>
<tr>
<th>Congestion and Reliability</th>
<th>Bridge and Pavement (PVMT) Condition</th>
<th>Traffic Direction (TTTR/TTI)</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTI &gt; 1.2</td>
<td>“Good” Condition</td>
<td>Florence to Jacksonville</td>
<td></td>
</tr>
<tr>
<td>TTTR &gt; 2.0</td>
<td>“Fair” Condition</td>
<td>Jacksonville to Florence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“Poor” Condition</td>
<td></td>
<td>1 fatality involving a truck, 2014 -2018</td>
</tr>
</tbody>
</table>

The Importance of Highways to U.S. Agriculture
Corridor #7: Florence, SC, to Jacksonville, FL

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #7: Florence, SC, to Jacksonville, FL

UNITS (in thousands of trucks)

Florence to Jacksonville

Jacksonville to Florence

DATA LEGEND

Congestion and Reliability

Traffic Direction

The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #8:
Kansas/Oklahoma Border to Amarillo, TX

**CONDITIONS & PERFORMANCE**

- *Map Legend*
  - Grain Elevator
  - Intermodal Rail Facility
  - Meat Processing Facility
  - Coastal or River Port
  - Analysis Corridor
  - Other HDAH Corridors
  - Urbanized Area
  - Corridor Mile Marker

- *DATA LEGEND*
  - Congestion and Reliability
    - TTI > 1.2
    - TTTR > 2.0
  - Bridge and Pavement (PVMT) Condition
    - “Good” Condition
    - “Fair” Condition
    - “Poor” Condition
  - Traffic Direction (TTTR/TTI)
    - KS/OK Border to Amarillo
    - Amarillo to KS/OK Border
  - Safety
    - 1 fatality involving a truck, 2014 -2018

Corridor Mile Marker
Amarillo to KS/OK Border

**Conditions & Performance**

- "Good" Condition
- "Fair" Condition
- "Poor" Condition

1 fatality involving a truck, 2014 -2018
Corridor #8: Kansas/Oklahoma Border to Amarillo, TX

TONNAGE (in millions of tons)

Map Legend

- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #8: Kansas/Oklahoma Border to Amarillo, TX

The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

**Corridor #9: Kentucky/Tennessee Border to Ocala, FL**

**CONDITIONS & PERFORMANCE**

**DATA LEGEND**

- **Congestion and Reliability**
  - TTI > 1.2
  - TTTR > 2.0

- **Bridge and Pavement (PVMT) Condition**
  - "Good" Condition
  - "Fair" Condition
  - "Poor" Condition

- **Traffic Direction (TTTR/TII)**
  - KY/TN Border to Ocala
  - Ocala to KY/TN Border

- **Safety**
  - 1 fatality involving a truck, 2014 - 2018
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

Corridor #9: Kentucky/Tennessee Border to Ocala, FL

Kentucky/Tennessee Border

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

The Importance of Highways to U.S. Agriculture

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

B-43
Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Corridor #9: Kentucky/Tennessee Border to Ocala, FL

UNITS (in thousands of trucks)

The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

Corridor Mile Marker
Corridor #10: Mason City, IA, to Des Moines, IA

CONDITIONS & PERFORMANCE

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND
- Congestion and Reliability
  - TTI > 1.2
  - TTR > 2.0

- Bridge and Pavement (PVMT) Condition
  - “Good” Condition
  - “Fair” Condition
  - “Poor” Condition

- Traffic Direction (TTTR/TTI)
  - Mason City to Des Moines
  - Des Moines to Mason City

- Safety
  - 1 fatality involving a truck, 2014 - 2018

The Importance of Highways to U.S. Agriculture
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #10: Mason City, IA, to Des Moines, IA

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND

Congestion and Reliability
- TTI > 1.2
- TTTR > 2.0

Traffic Direction
- Mason City to Des Moines
- Des Moines to Mason City

The Importance of Highways to U.S. Agriculture
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #11: Minot, ND, to Chicago, IL

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

The Importance of Highways to U.S. Agriculture

Minot to Chicago

Chicago to Minot
Corridor #11: Minot, ND, to Chicago, IL

UNITS (in thousands of trucks)

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

The Importance of Highways to U.S. Agriculture
Corridor #12: Pittsburgh, PA, to Clinton, NJ

**CONDITIONS & PERFORMANCE**

### Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

### Data Legend
- **Congestion and Reliability**
  - TTI > 1.2
  - TTTR > 2.0

- **Bridge and Pavement (PVMT) Condition**
  - “Good” Condition
  - “Fair” Condition
  - “Poor” Condition

- **Traffic Direction (TTTR/TTI)**
  - Pittsburgh to Clinton
  - Clinton to Pittsburgh

- **Safety**
  - 1 fatality involving a truck, 2014 - 2018

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**The Importance of Highways to U.S. Agriculture**

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

Pittsburgh, PA, to Clinton, NJ

TONNAGE (in millions of tons)

Data Legend

Congestion and Reliability

Traffic Direction

Pittsburgh to Clinton

Clinton to Pittsburgh

Map Legend

- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Corridor #12:

0
50
100
150
200
250
300

Total

Corn

Soybeans

Fruit

Meat

Milk

Vegetables

The Importance of Highways to U.S. Agriculture
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

The Importance of Highways to U.S. Agriculture

Corridor #12: Pittsburgh, PA, to Clinton, NJ

DATA LEGEND

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<td>Clinton to Pittsburgh</td>
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Value (in millions of dollars)
Corridor #12: Pittsburgh, PA, to Clinton, NJ

UNITS (in thousands of trucks)

Pittsburgh

Clinton

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND

Congestion and Reliability
- TTI > 1.2
- TTTR > 2.0

Traffic Direction
- Pittsburgh to Clinton
- Clinton to Pittsburgh
Corridor #13: Salt Lake City, UT, to Omaha, NE

Conditions & Performance

Map Legend
- Grain Elevator
- Meat Processing Facility
- Analysis Corridor
- Urbanized Area
- Corridor Mile Marker

Data Legend

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<th>Traffic Direction (TTTR/TTI)</th>
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<td>1 fatality involving a truck, 2014 - 2018</td>
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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #13: Salt Lake City, UT, to Omaha, NE

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Corridor Mile Marker
- Total
- Corn
- Soybeans
- Wheat
- Livestock
- Fruit
- Vegetables
- Meat
- Milk

TTI > 1.2
TTTR > 2.0
Salt Lake City to Omaha
Omaha to Salt Lake City
Corridor #13: Salt Lake City, UT, to Omaha, NE

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #13: Salt Lake City, UT, to Omaha, NE

UNITS (in thousands of trucks)

Map Legend
- Grain Elevator
- Meat Processing Facility
- Intermodal Rail Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #14: Portland, OR, to Salt Lake City, UT

UNITS (in thousands of trucks)

The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #15: Stockton, CA, to Los Angeles, CA

CONDITIONS & PERFORMANCE

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Corridor Mile Marker

DATA LEGEND

Congestion and Reliability
- TTI > 1.2
- TTTR > 2.0

Bridge and Pavement (PVMT) Condition
- “Good” Condition
- “Fair” Condition
- “Poor” Condition

Traffic Direction (TTTR/TTI)
- Stockton to Los Angeles
- Los Angeles to Stockton

Safety
- 1 fatality involving a truck, 2014 - 2018

The Importance of Highways to U.S. Agriculture
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #15: Stockton, CA, to Los Angeles, CA

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #16:
Sioux Falls, SD, to St. Louis, MO

 CONDITIONS & PERFORMANCE

Data Legend

- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Map Legend

- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Data Legend

- TTI > 1.2
- TTR > 2.0
- “Good” Condition
- “Fair” Condition
- “Poor” Condition
- Sioux Falls to St. Louis
- St. Louis to Sioux Falls
- 1 fatality involving a truck, 2014 - 2018

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #16:
Sioux Falls, SD, to St. Louis, MO

UNITS (in thousands of trucks)

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations

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Sioux Falls to St. Louis

St. Louis to Sioux Falls
Corridor #17: Wilmington, DE, to Norfolk, VA

CONDITIONS & PERFORMANCE

Map Legend
- Grain Elevator
- Meat Processing Facility
- Analysis Corridor
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND
- Congestion and Reliability
  - TTI > 1.2
  - TTTR > 2.0
- Bridge and Pavement (PVMT) Condition
  - “Good” Condition
  - “Fair” Condition
  - “Poor” Condition
- Traffic Direction (TTTR/TTI)
  - Wilmington to Norfolk
  - Norfolk to Wilmington
- Safety
  - 1 fatality involving a truck, 2014-2018

The Importance of Highways to U.S. Agriculture

Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #17: Wilmington, DE, to Norfolk, VA

VALUE (in millions of dollars)

Map Legend
- Grain Elevator
- Intermodal Rail Facility
- Meat Processing Facility
- Coastal or River Port
- Analysis Corridor
- Other HDAH Corridors
- Urbanized Area
- Corridor Mile Marker

DATA LEGEND
- Congestion and Reliability
  - TTI > 1.2
  - TTTR 2.0
- Traffic Direction
  - Wilmington to Norfolk
  - Norfolk to Wilmington

The Importance of Highways to U.S. Agriculture
Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
Corridor #17: Wilmington, DE, to Norfolk, VA

UNITS (in thousands of trucks)

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Appendix B: Analysis Corridor Condition, Performance, and Commodity Flow Data Visualizations
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Appendix B
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