Illinois Statewide Congestion Analysis Study

CLIENT:
Illinois Department of Transportation

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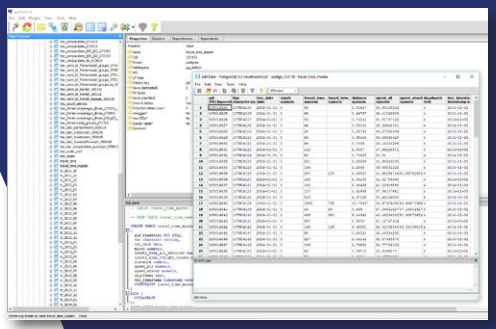
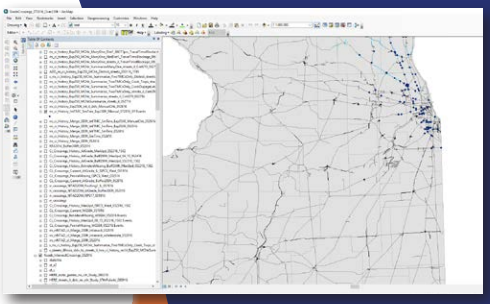
CONTRACT:
PTB 168, Item 29 - $1.49 million

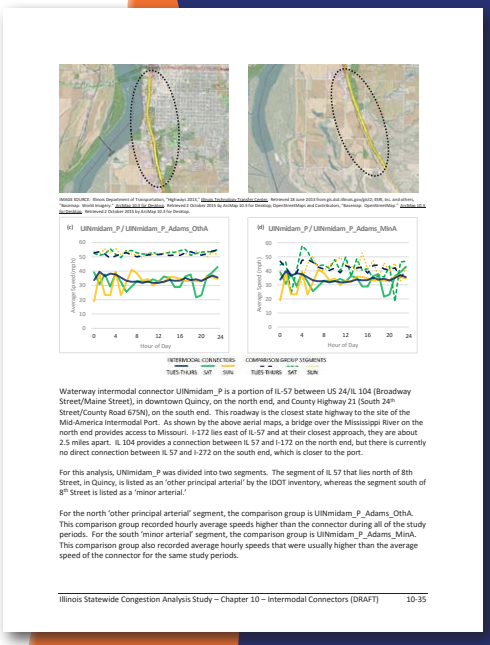
PROJECT PURPOSE:
- Determine Where and When Traffic Congestion Occurs
- Determine Reasons Why Traffic Congestion Occurs
- Identify Successful Approaches to Mitigate Congestion

The Illinois Congestion Analysis Study required DAMA Consulants, Inc., to work with very large and varied data sets. The FHWA National Performance Management Data Set (NPMRDS) provides travel time observations every five minutes for thousands of roadway segments. The monthly NPMRDS data set archived over 20 million individual records. DAMA used PostgreSQL, an Open Source enterprise database package; SAS statistical software; and ArcGIS spatial analysis software to manage this data set, relate the data set to other sources, and extract data calculate performance measurements and conduct congestion and crash analysis. This data was stored on an Amazon Web Services (AWS) RD instance and managed using extract, transform, and load scripts developed in the EC2 (elastic computing cloud) service.

DAMA has used ArcGIS and the NPMRDS data set to characterize conditions at particular intersections and along particular road segments. These methods have also helped to identify how roadway attributes, weather conditions, and vehicle types could contribute to safety and incident recovery times and to assess the costs and benefits of potential investment scenarios.







Waterway intermodal connector UINmidam_P is a portion of IL-57 between US 24/IL 104 (Broadway Street/Maine Street), in downtown Quincy, on the north end, and County Highway 21 (South 24th Street/County Road 675N), on the south end. This roadway is the closest state highway to the site of the Mid-America Intermodal Port. As shown by the above aerial maps, a bridge over the Mississippi River on the north end provides access to Missouri. I-172 lies east of IL-57 and at their closest approach, they are about 2.5 miles apart. IL 104 provides a connection between IL 57 and I-172 on the north end, but there is currently no direct connection between IL 57 and I-272 on the south end, which is closer to the port.

For this analysis, UNImidam_P was divided into two segments. The segment of IL 57 that lies north of 8th Street, in Quincy, is listed as an 'other principal arterial' by the IDOT inventory, whereas the segment south of 8th Street is listed as a 'minor arterial.'

For the north 'other principal arterial' segment, the comparison group is UINmidam_P_Adams_OthA. This comparison group recorded hourly average speeds higher than the connector during all of the study periods. For the south 'minor arterial' segment, the comparison group is UINmidam_P_Adams_MinA. This comparison group also recorded average hourly speeds that were usually higher than the average speed of the connector for the same study periods.