A novel, web-based, visual analytics tool called the Incident Cluster Explorer (ICE) was developed as an application that affords sophisticated yet user-friendly analysis of transportation incident datasets. Interactive maps, histograms, two-dimensional plots and parallel coordinates plots are four featured visualizations that were integrated together into ICE to allow users to interact with and see relationships between multiple visualizations. With a rich set of filters, users can create custom conditions to filter data and focus on a smaller dataset. Normal identification of interesting relationships and outliers in multivariate datasets can be time-consuming; however ICE adopts a rank-by-feature framework to quantify the strength of relationships between the different data fields. ICE follows the general design guidelines “overview first, zoom and filter, then details-on-demand.” This presentation will give an overview of the tool in a live demo showing multiple state incident data sets at the same time, discuss the underlying rank-by-feature framework, and conclude with an overview of ongoing research and next steps for integration for congestion monitoring applications.