

Supplemental Material: Description of matching process for Trauma Center designations

Trauma Center designation data were scraped from the American Trauma Society web site (<http://www.amtrauma.org/?page=FindTraumaCenter>). The data elements in which we were interested come from a JSON-P request, where the data are sent to the browser in JSON, or JavaScript Object Notation. The Javascript objects are at the following URL:
https://fortress.maptive.com/ver4/data.php?operation=get_map_markers&data_id=13417&map_id=13398&bounds=3.621019,159.875214,75.871508,-33.484161&zoom=3&group=all&lat_col=12&lng_col=13&name_col=4&group_col=7&pie_chart=0&aggregation=-1. We copied and pasted the data on that site into a text document, appended a .json extension, then used the RJSONIO package to read the data into R. This returned a 5 element list, one of which ("markers") contained a list of the 2040 hospitals, (names, trauma level, longitude and latitude). We converted this into a dataframe and saved it for merging with the HCUP trauma dataset. As a side note, we had to go back to the original file and search for invalid strings (preceded by back slashes...)

Merging the trauma center data frame to the HCUP injury data frame required a number of steps. First, we used the latitude and longitude variables from the trauma center data with `ggmap::geocode()` to get full information for each entry. Then, we extracted addresses from the resulting complex, nested list object, and extracted out the state and zip codes from the addresses. We then identified all the non-duplicated hospital names in the HCUP trauma data set and created a data frame. We merged the file of 2,040 trauma centers to the 3,706 HCUP injury hospitals using a combination of probabilistic matches on name and exact matches on zip codes. This approach came from Tony Hirst and is described here: <http://www.r-bloggers.com/merging-data-sets-based-on-partially-matched-data-elements/>. This resulted in 1,038 exact matches with an HCUP HOSPID variable and a ATS trauma designation. We merged this to the full HCUP injury file with the HOSPID variable. The full set of code is available online at <http://www.injuryepi.org/resources/Misc/knithCUPCode.pdf>