In order to create a graph of ozone and elevation, you'll need to attach ozone means and DEM 30 values to the air quality stations point layer. Use Join and Multi-values to Points tool to do this.

Join the ozone\_average table to attribute table of air\_quality\_locations point feature layer, by right clicking the layer > Joins and Relates > Join (check "keep only matching records" to exclude null values) (Join by ‘site’ for air\_quality\_locations and by ‘site\_ID’ for ozone\_averages; results in 187 records)

Make this join permanent by again right clicking air\_quality\_locations layer > Data > Export Data (named air\_quality\_locations\_ozone.shp)

Attach elevation field from DEM raster to the attribute table of the air\_quality\_locations\_ozone layer using Extract Multi-values to Point tool

Input feature class: air\_quality\_locations\_ozone; input raster: dem\_30\_ca (don't select the option to interpolate values)

Create a TIN and raster for ozone concentrations to compare the ozone data with the household income

3D Analyst > Data Management > TIN > Create TIN

Input feature class: air\_quality\_locations\_ozone; height field: avg\_ozone\_2010\_2011

(coordinate NAD\_1983\_California\_Teale\_Albers); Output TIN: Airquality\_Ozone\_to\_TIN

Convert TIN to raster: 3D Analyst > Conversion > TIN > TIN to Raster

Input TIN: Airquality\_Ozone\_to\_TIN; Output Raster: aq\_tin\_raster (Float, Linear, Sampling Distance = CELLSIZE 30)

In order to create a graph of ozone and household income, use Zonal statistics as table tool to create a table of mean ozone values using census tracts as your zones: Spatial Analyst tools > Zonal statistics as Table tool

Input raster or feature zone data: census\_tracts\_with\_income; zone field: GEOID

Input value raster: aq\_tin\_raster; statistic type: Mean

Output table: census\_tracts\_with\_income\_ozone

Joined this table with census\_tracts\_with\_income using GEOID field where join was based and exported it as permanent data layer census\_tracts\_with\_income\_ozone

Created graph household\_income (Y axis) vs ozone concentration (X axis) with trend line using attribute table from census\_tracts\_with\_income\_ozone (ended up deleting zero value records using the Delete row tool because too many outliers in graph)

Created graph of ozone concentration (Y axis) vs elevation (X axis) from attribute table of air\_quality\_locations\_ozone

Dissolved census\_tract\_with\_income\_ozone to county level (using block\_id, giving 175 records)

Data management > Dissolve tool

Input feature: census\_tract\_with\_income\_ozone; output feature class: census\_income\_ozone\_dissolved

Dissolve field: block\_id; Field: ozone\_mean (statistics type – mean)

(ended up dissolving on the census\_tracts\_with\_income layer with the temporary attached mean ozone field because it retained null values for a subset of ozone values, which were removed when dissolved – however, the census\_tract\_with\_income\_ozone layer replaced null values with zero values when the ozone field was joined, and that were included in the dissolved layer and effected symbology on map)