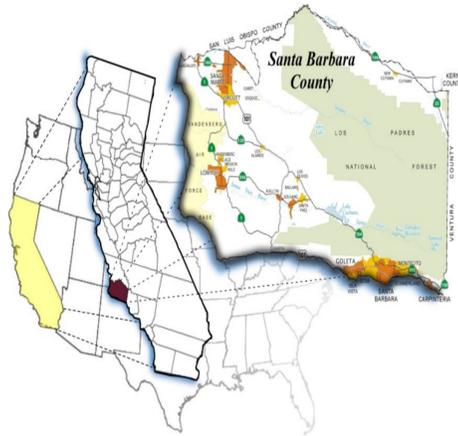


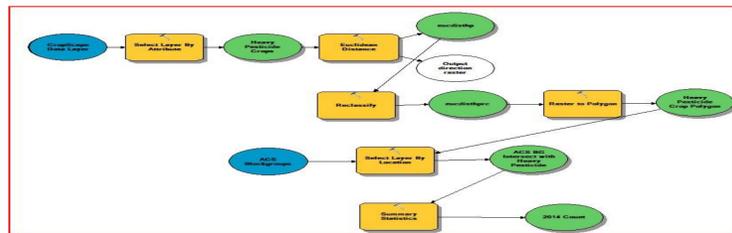
# THE DIRT Assessing Pesticide Use in Santa Barbara County

## Background

The agricultural sector of Santa Barbara County generated a production value of \$1,436,651,418 in 2013 and ranks as the number one contributor to the County's economy. From 2007 to 2013, the top five agricultural crops according to market value - strawberries, wine grapes, head lettuce, broccoli, and cut flowers - repeatedly make the list of crops most reliant on pesticides for production. While the economic benefit of these crops is clear, pesticides possess toxic properties and their use prompts concern about human health. Using land use data that show shifts in agricultural crops from 2007 to 2013 and U.S. Census Bureau Data, this project examines a social justice question. **Who has been affected in terms of pesticide exposure by agricultural production changes in Santa Barbara County?**

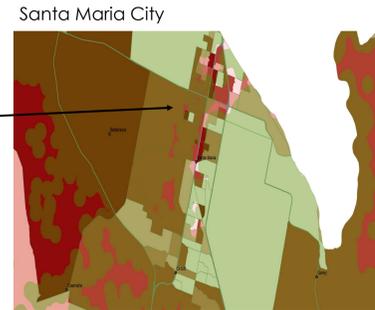
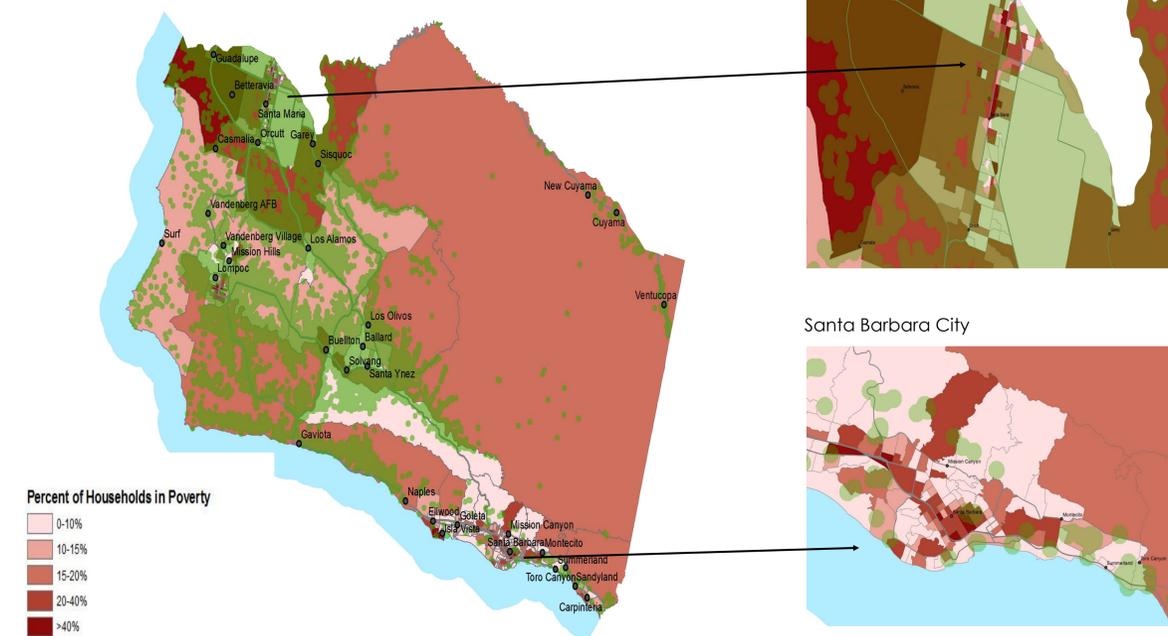


## Method

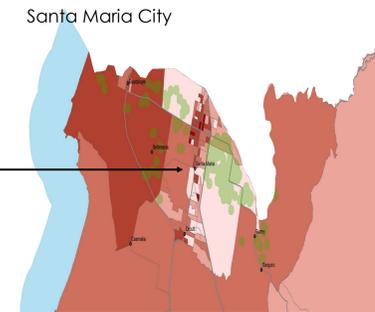
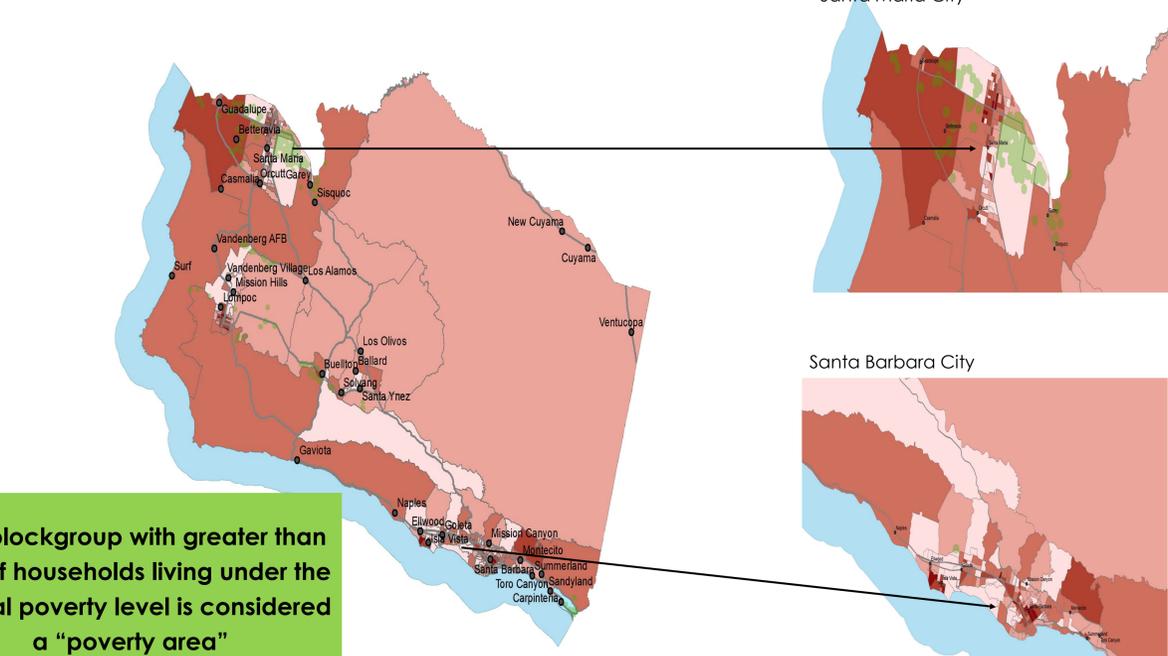


- Prepare American Community Survey blockgroup data —> using available income data, assess proportion of households within each blockgroup falling under the federal
- poverty level of \$24,250/year for a family of four
- Any block group with greater than 20% of households living at or below the poverty level is considered a “poverty area” by the
- Federal Government
- Portray these income discrepancies geographically
- Excise top five crops most heavily sprayed with pesticides from CropLand Data Layer—> convert to polygon with 800m buffer around crops
- Use select layer by location to discover which blockgroups have a center within the “heavy pesticide” polygon—>
- analyze using ESRI statistical capabilities

## Santa Barbara County: 2014



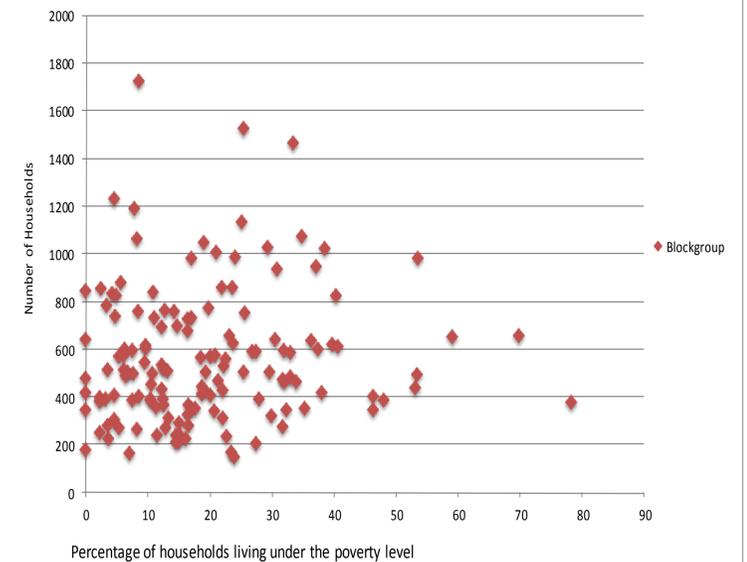
## Santa Barbara County: 2007



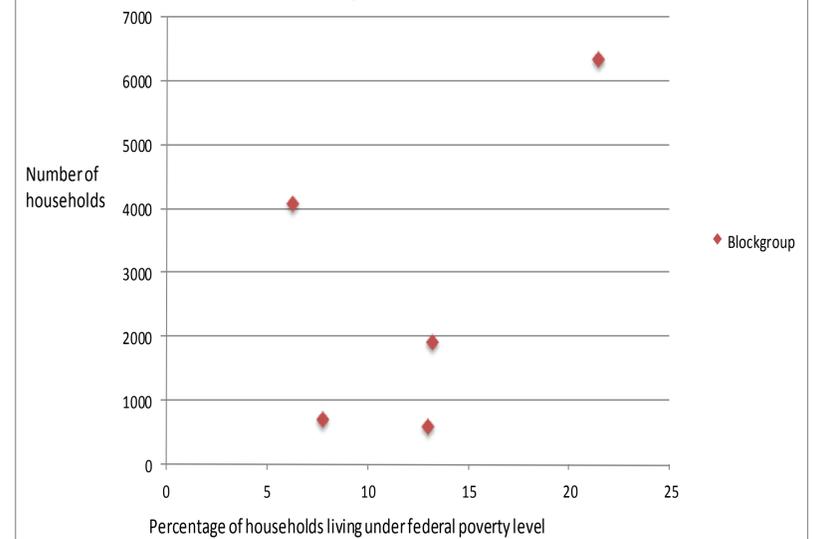
Any blockgroup with greater than 20% of households living under the federal poverty level is considered a “poverty area”

## Results

Blockgroups by Number of Households and Percentage of Households in Poverty: 2014



Blockgroup by Number of Households and Percentage of Households in Poverty: 2007



## Discussion and Further Research Needs

Contrary to common thought and prior research, the data did not show any difference in income groups affected by pesticide application and agricultural expansion between the years of 2007 and 2014 in Santa Barbara County. While the data seem to portray a much higher number of households in total affected by noted agricultural expansion in Santa Barbara County, it did not seem to uncover patterns related to income and poverty throughout the County. In 2007, the model only showed five American Community Survey blockgroups intersecting with the selected crop production, and only one blockgroup falls under the “poverty area” definition. In 2014, the model returned 143 blockgroups with approximately 16,000 of the households in those blockgroups in a poverty area. However, this is still only around 20% of total households in all the blockgroups— a number similar to that in 2007. This question was originally prompted for work for the Santa Barbara County Food Action Plan Committee on regional pesticide use. To answer the question fully, the County really needs much more detailed data gathering and surveying. The CropScape Data Layer offered through the United States Department of Agriculture does not have appropriate accuracy or granularity for assessing pesticide drift. Additionally, the American Community Survey blockgroup granularity does not sufficiently portray actual households affected by pesticide exposure. The data and model are not appropriate for answering the research question.

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NUTR 231, Fundamentals of GIS



Sources: Population and Housing Counts, January 1 2010 2007, United States Census Bureau; published by Census Tiger On-Line Link, accessed November 02 2015.  
CropScape-Cropland Data Layer, September 01 2015, United States Department of Agriculture; published by National Agricultural Statistics Service CropScape, accessed November 2 2015.