Drift refers to the off-site movement of a pesticide through the air away from the intended target, in the form of spray, drift, or vapor. While pesticide drift depends on factors like weather, the application site, method of application, and the pesticide used, some drifts are surround ing air or are carried with all pesticide applications. Pesticides (pesticides in the form of gas) and pesticides applied by air are more likely to drift than other pesticides, making them a major focus of drift reduction efforts. Even the most careful, responsible pesticide sprayer cannot control what happens to pesticide drift once it is released from an airplane or tractor. These droplets may settle in someone’s yard, on another farmer’s crop, or coat the skin of agricultural workers or others exposed. Presence to pesticide application as reported in the California Pesticide Use Reporting (CPUR) database has been used as a surrogate for exposure in recent studies of reproductive outcomes and cancer (Ward et al. 2016). This project aims to investigate the potential for ramifications of pesticide drift on resident and organic crops in one of California’s agriculture-dependent counties. Yolo County is known for its production of tomatoes, as well as almonds, grapes (wine and table), rice, and organic products. This project intends to highlight both organic farmers and vulnerable residents, as measured by the presence of schools, that may be at risk for pesticide drift exposure as well as use cropland and pesticide use reporting data to explore the following research questions:

Where are the areas in Yolo County that are most at risk for potential exposure to pesticide drift? Where are residential areas that are most at risk? How can we best predict the location of potential drift? What crop type or pesticide rotation and do have the same crop in each plot during each month of the year, or one year after the other. The study could be influenced by including health-related data, such as air quality monitoring stations, school attendance data, or data about what crops are being grown where, however, this neglects the fact that many farmers practice crop rotation, or do the same crop in each plot during each month of the year, or one year after the other. The study could be influenced by including health-related data, such as air quality monitoring stations, school attendance data, or data about what crops are being grown where.

**Sources**

- Yolo County GIS Database
- Yolo County 2016 Crop Report
- California Department of Pesticide Regulation 2016 Pesticide Use Report - Data
- Ward et al. (2016)  - Proximity to Crops and Residential Exposure to Agricultural Pesticides in Yolo County, California, 2014
- California School Census Database: GIS-based Mapping and Monitoring Program
- US Census American Community Survey

**Projection**

- USA Contiguous Albers Equal Area Conic USGS 1994

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**DISCUSSION**

Pesticide drift is a common health hazard and legal issue in places like Yolo County, where residential and agricultural land use shares boundaries and sometimes overlap. This research may be of use to Yolo County officials in determining locations that are at higher-than-usual risk for pesticide drift. Residents, particularly vulnerable populations like children and agricultural workers and their families, are at risk for negative health hazards, particularly when residential areas are near cropland where large amounts of pesticides are being applied by air or fumigation. Yolo County continues to be a leader in organic agriculture in California, ranking sixth in the state for number of organic acres (twenty first in the state for conventional acres). Organic farmers are at risk when their fields share borders with cropland where large amounts of pesticides are being applied by air or fumigation. My analysis shows locations at risk, allowing for interventions such as better pesticide-use training and stricter laws regarding buffer zones. Additionally, it reveals the locations of commodities to watch for increased pesticide use in the coming years, especially as drought conditions may continue. Yolo County Data and my analysis show both large amount of pesticide use and high prevalence of air application (such as crop dusting) for tomato, rice, almonds, and grapes (wine and table). The California Department of Pesticide Regulation’s 2016 Summary Report found an increase in state pesticide usage for these same four commodities, among nine others, partly due to drought-related complications. This analysis contributes to the national conversation surrounding the ramifications of widespread pesticide use in U.S. agriculture, presenting a county-scale method for locating sites of greater-than-normal risk of pesticide drift.