Rural Advancement Foundation International (RAFI)

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A critical issue in the poultry-packing industry is that a small number of large food processors dominate regional markets. Corporations use a vertical integration structure that limits options for farmers looking to contract with corporations to raise chickens, posing a disproportionate challenge to smaller farmers. The team, in collaboration with the Rural Advancement Foundation International (RAFI), aimed to address this problem by visualizing geographic concentration in the poultry industry in a clear dashboard in order to inform the public and policymakers.

First, the group enhanced a data pipeline to help understand and visualize the concentration in the poultry industry. The pipeline merged two poultry processing datasets to create a final cleaned product. Initially, this data came from Infogroup, which did not have accurate sales data. We improved the pipeline by integrating the NETS dataset, a more reliable source that also included more historical data and had been used before in similar analyses.

Next, the project worked to enhance the accuracy of an existing computer vision model. The goal was to identify poultry barns from aerial photographs to fill in barns that are not listed in existing datasets. The group built upon a model initially created by a Microsoft Research team, adding rule-based filtering steps to improve poultry barn identification by eliminating a large number of false positives. The rule-based filtering is done by using Google Earth Engine to eliminate predictions on water and permanent snow/ice (areas that could not be poultry barns).

The combination of these two initiatives results in an interactive dashboard that shows the extent of concentration in the poultry industry in different areas of the US. RAFI will use the work done in enhancing the dashboard to advocate for meaningful policy changes that can ameliorate the concentration in the poultry industry.

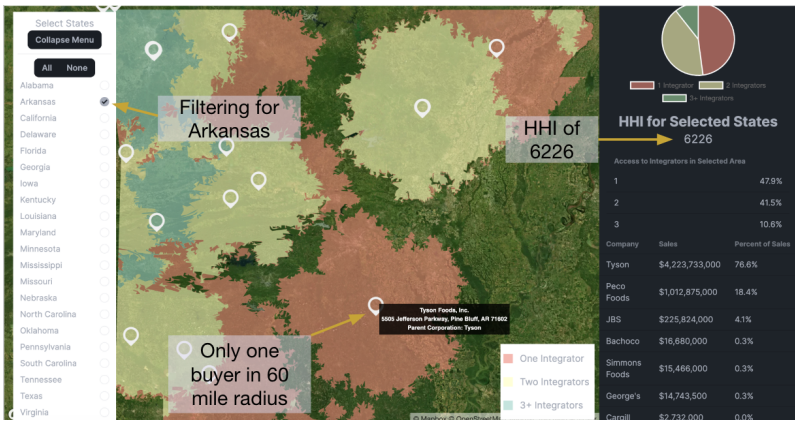
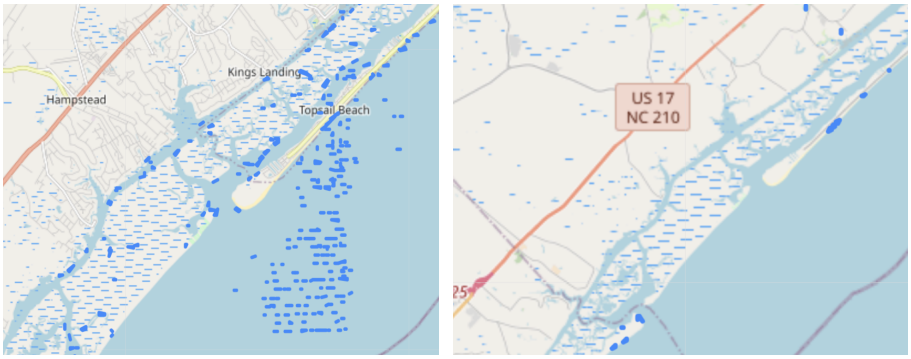


Fig 1: Snapshot of the dashboard created through the pipeline



Before Filtering After Filtering

Fig 2: Example of Rule-Based Filtering that Eliminates Predictions on Water