

# **Socioeconomic Implication from Farmlands**

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# Background & Literature

- The Effect of Farmlands on Surrounding areas
  - Ranch specialization leads to difference in job selections, industry types, and infrastructures<sup>1</sup>
  - Established methods of categorizing farmlands based on rural and urban area types<sup>2</sup>
- Could be useful for: Demographic Research, Policy Implications, Vertical Farming, ....

1. Droller, Federico, and Martin Fiszbein. "Staple Products, Linkages, and Development: Evidence from Argentina." The Journal of Economic History(2021)

2. Wang, S., Bai, X., Zhang, X. et al. Urbanization can benefit agricultural production with large-scale farming in China. Nat Food 2, 183–191 (2021)



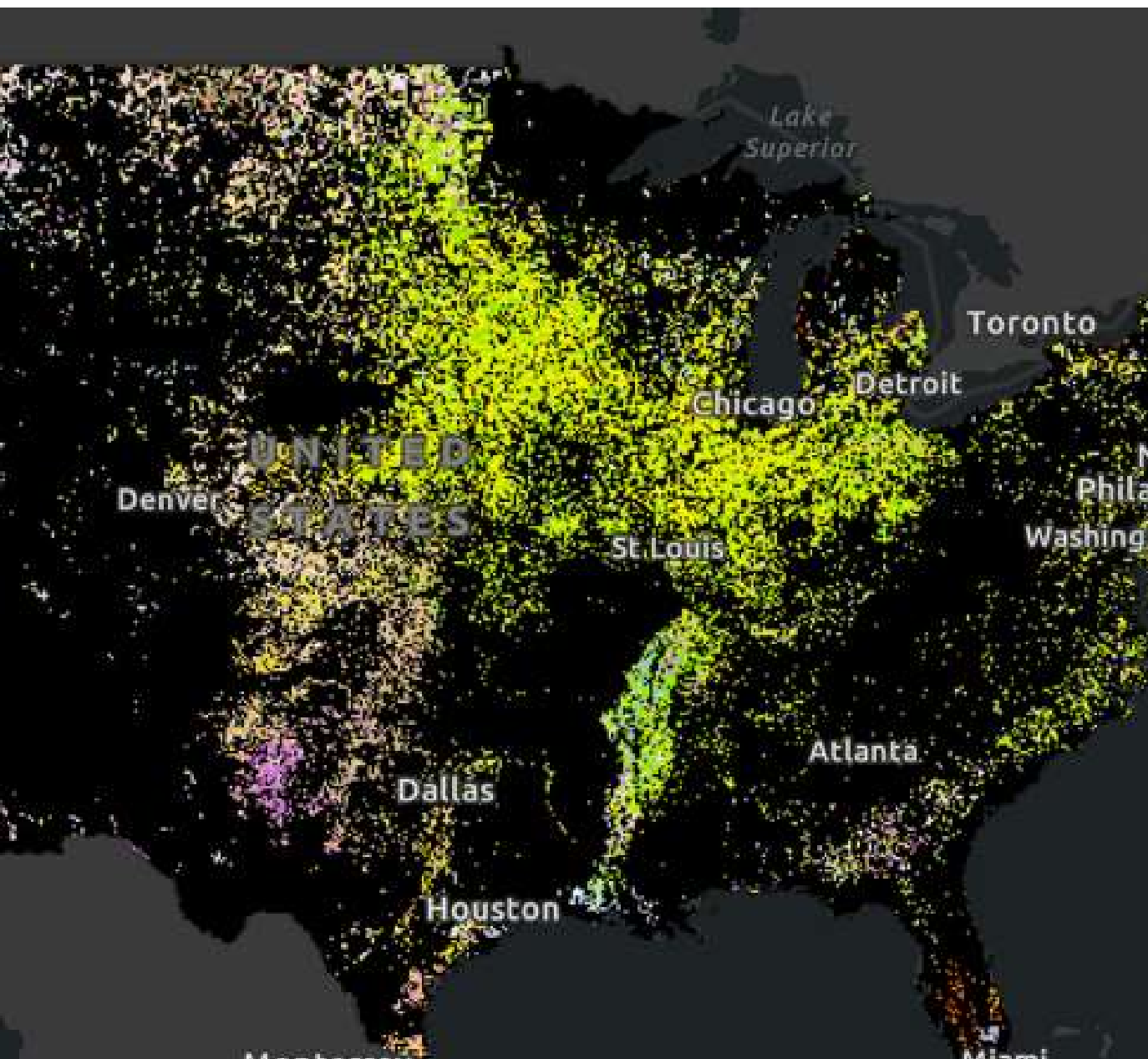
# Socio-Economic Metric

- NSES indicator: a summative index describing the socioeconomic status by Tracts
  - main Components: Household Income, Poverty Rate, Unemployment and Education Status\*.
  - scaled from 0 to 100 where 50 is the national average.

*$$NSES = \log(\text{median household income}) + (-1.129 * (\log(\text{percent of female-headed households}))) + (-1.104 * (\log(\text{unemployment rate}))) + (-1.974 * (\log(\text{percent below poverty}))) + .451 * ((\text{high school grads}) + (2 * (\text{bachelor's degree holders})))$$*

\* Data From US Census Bureau's 2011-2015 American Community Survey.





## Cropland Layer

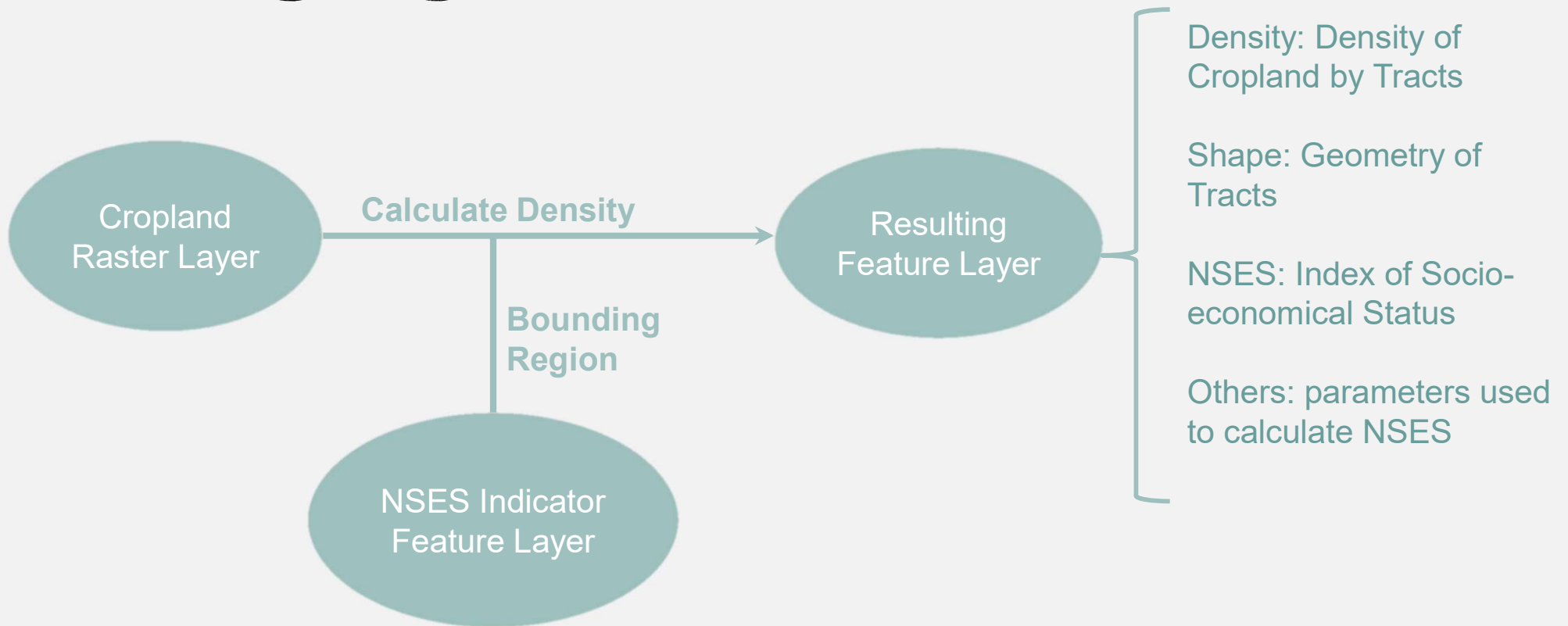
- Timely-enabled Raster Layer from National Agricultural Statistics Service
- Each Point Defining a Crops Type(Currently Undistinguished)

Data Source:

<https://www.arcgis.com/home/item.html?id=6d9c03213d874def89663afc26189acf>

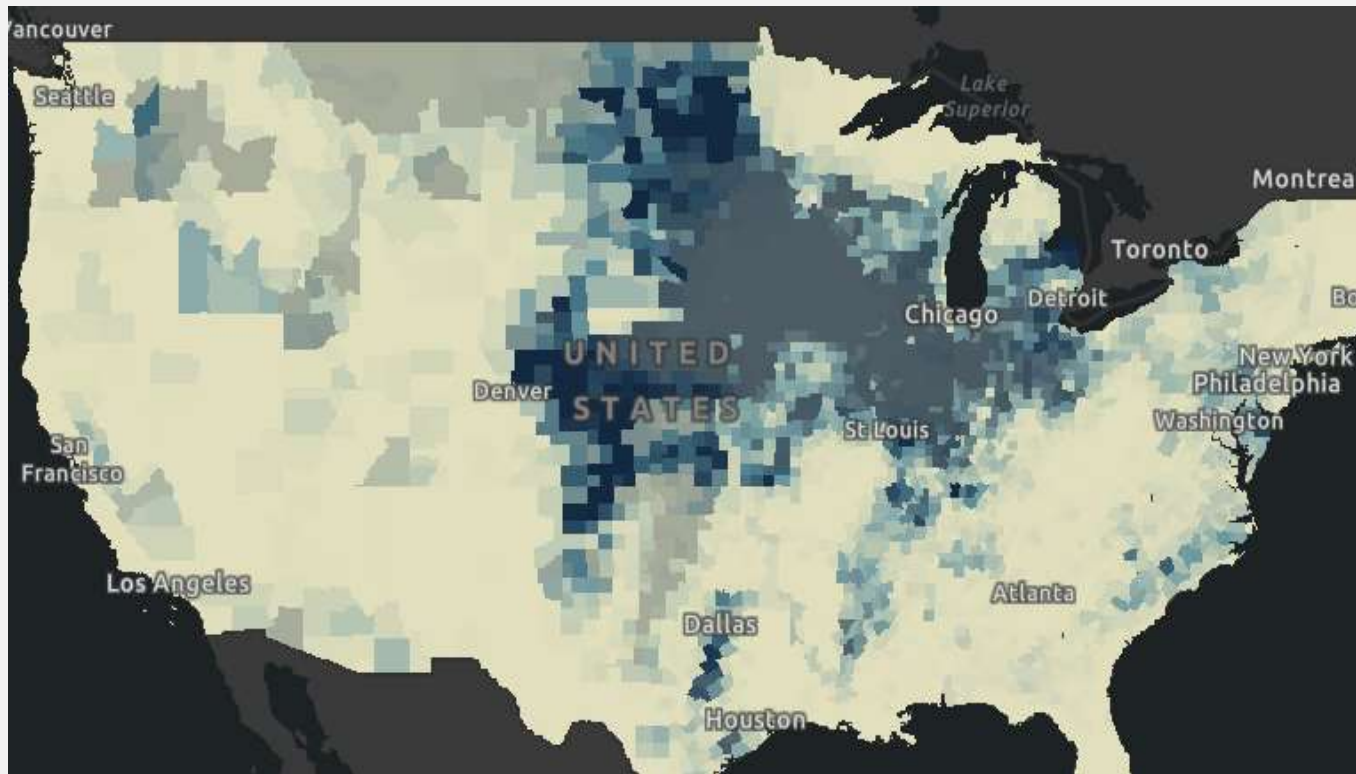


# Merging Spatial





# Resulting Density



## Map of Cropland by density

- Areas with density = 0, plus lowest 5% from the remaining are classified as Non-Cropland



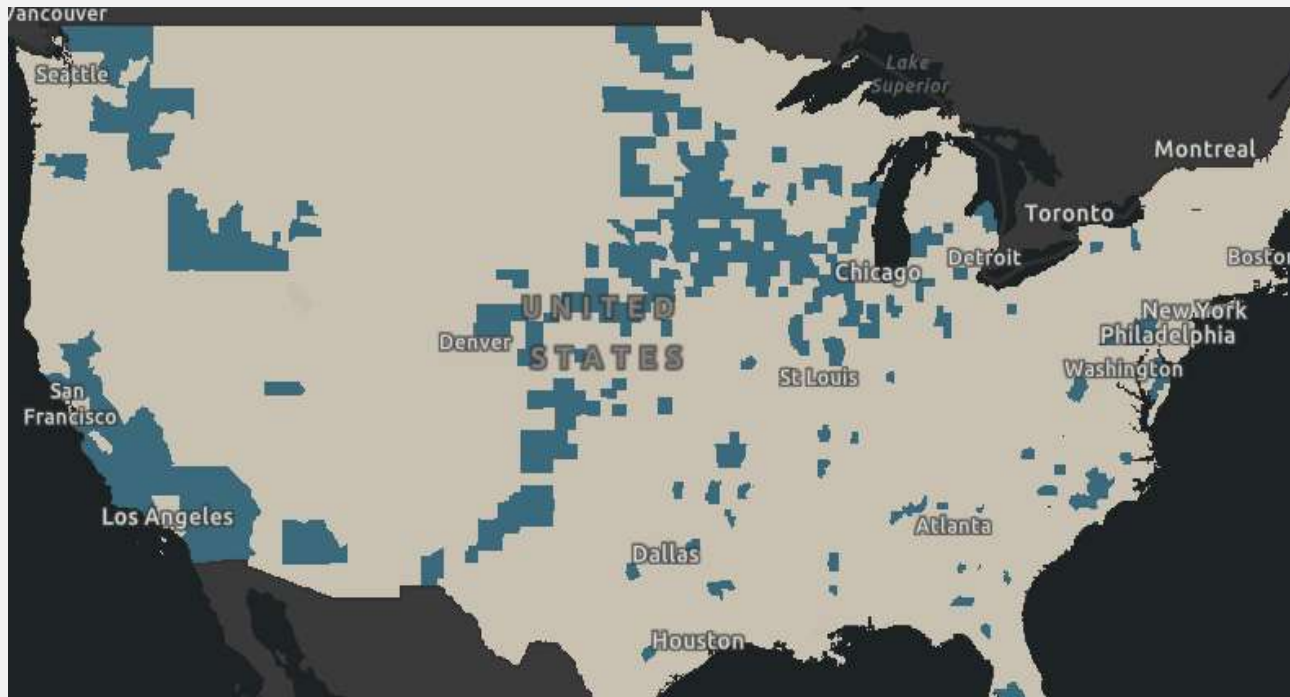
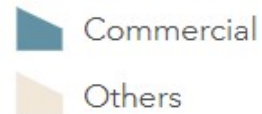
# Further Classification

- Commercial vs Non-Commercial Farmlands
  - Defined by U.S. DEPARTMENT OF AGRICULTURE(USDA): Farmland with sales more than \$350,000 are classified as commercial farms.
- No direct data on individual farmland income, but the Typology Report from USDA in 2013 claims that about 8~9% farms are classified as Commercial Farms
- Import Sales Data from USDA Census of Agriculture - Sales and Equipment By Tract
  - Choose top 10% Sales as regions dominated by Commercial Farmlands

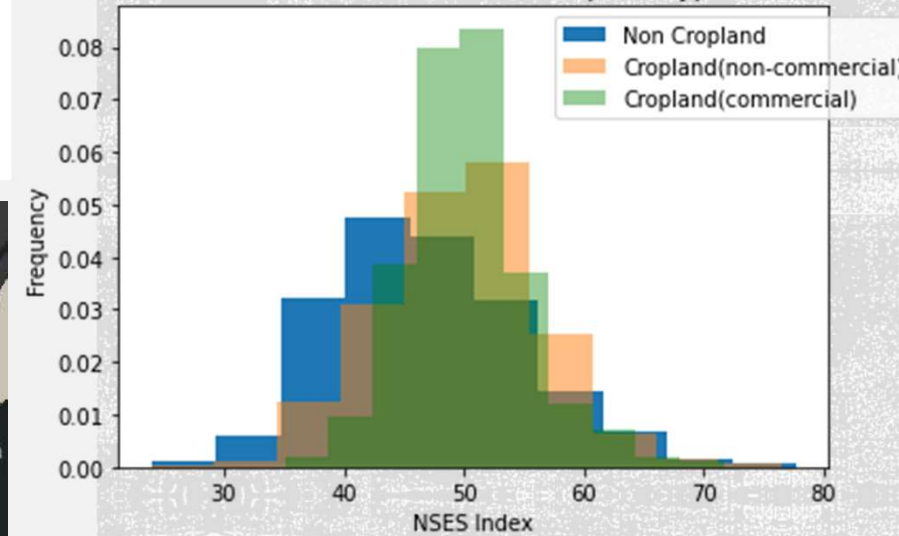


# Current Result

Total Sales in US Dollars



Distributions of Different Cropland Type



- P-value:
- 0.008 for Non-Cropland versus Non-Commercial Cropland
- and  $1.23e-6$  versus Commercial Cropland







# Thank You!

- Questions...