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# Crop Choice and Proximity to Ethanol Plants


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## INTRODUCTION

- Taking into account local crop processors and livestock, we show transport costs have a substantial influence on land use decisions by farmers.
- We utilize detailed GIS data sources which are commonly available rather than a special survey of agricultural producers.

## OBJECTIVES

- Estimate how the proximity to local agricultural processors impacts crop choice.

## METHODS

- Tobit regression is an appropriate estimation technique when the value of the dependent variable is bounded.

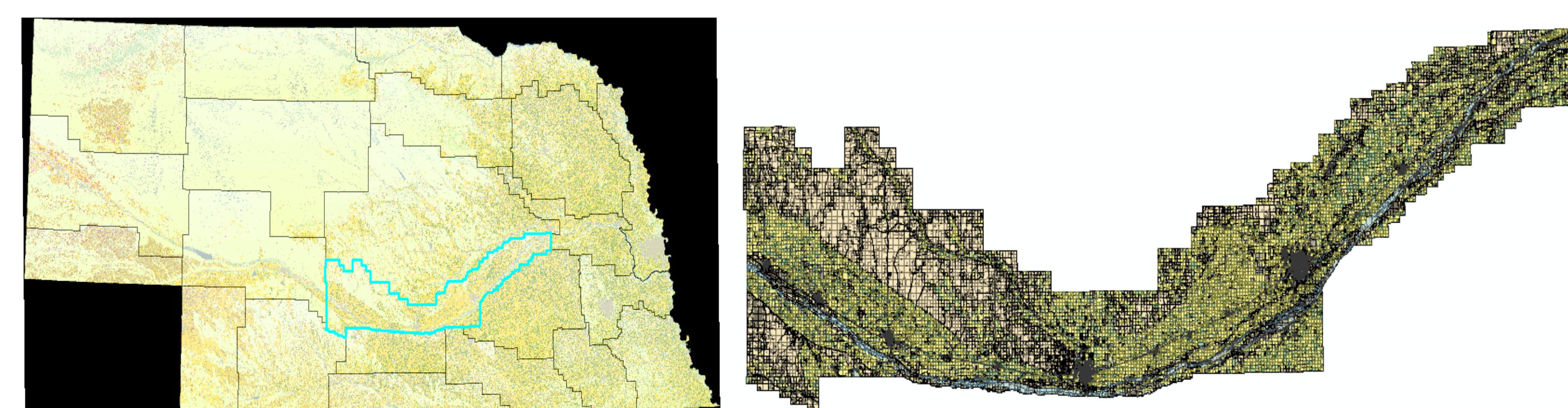
$$Y_i = X_i\beta + \gamma + \varepsilon_i$$

- The dependent variable is percent of crops of interest within a parcel and the independent variables are distance, crop prices, electricity price, crop productivity, groundwater irrigation capacity, and fixed effect.
- Multinomial logit crop choice model is also adopted to perform a consistency check.

$$\text{Prob}(Y_i = j) = \frac{\beta_j X_i}{1 + \sum_{j=1}^J e^{\beta_j X_i}} \text{ for } j = 1, \dots, J.$$

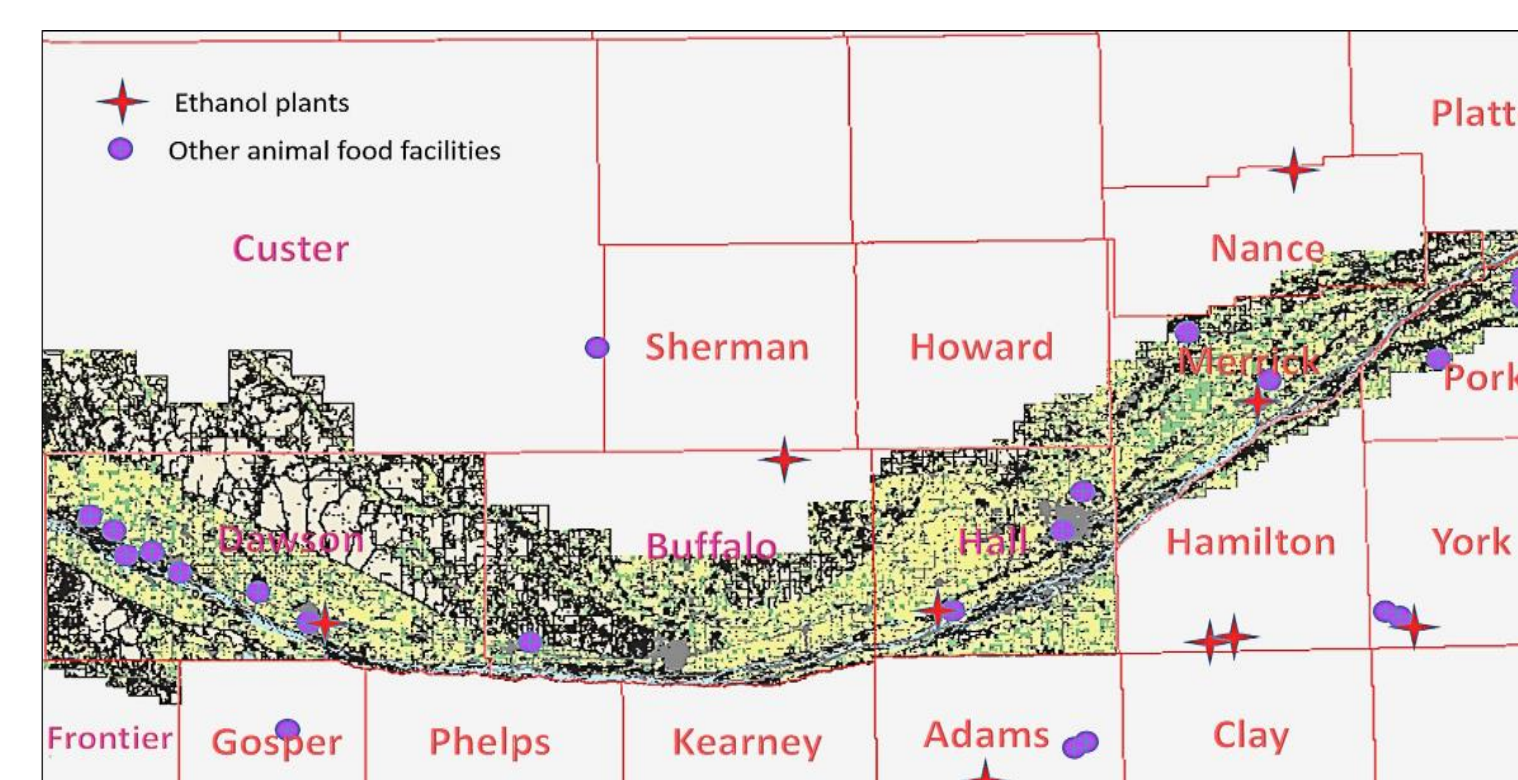
## DATA

- Higher Resolution Cropland Classification from Natural Resources Conservation Service (NRCS)
- About 32,000 Micro-level Parcels analyzed in ArcGIS from 2011 and 2014



Study Area in NE

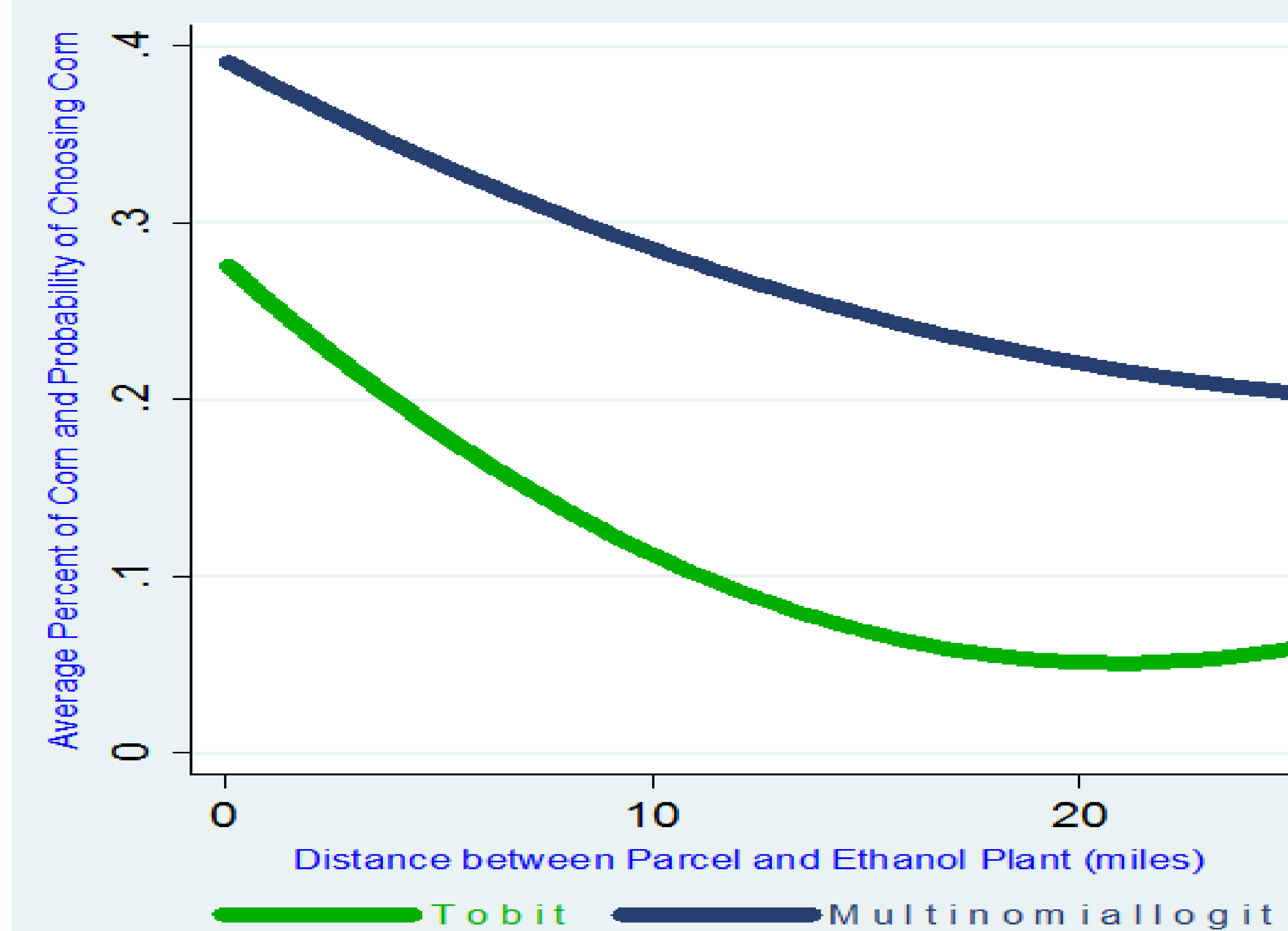
Cropland Classification and Parcel



Locations of Ethanol Plants and Animal Food Facilities

- Crop Productivity from Gridded Soil Survey Geographic (gSSURGO)
- Groundwater Irrigation Capacity from Nebraska Department of Natural Resources (DNR)
- Futures Crop Price from UNL EXTENSION
- Electricity Price from Energy Information Administration (EIA)
- Capacities and Locations of Ethanol Plants from Nebraska Ethanol Board
- Locations of Animal Food Facilities from Nebraska Department of Economic Development
- Livestock in Feedlot from USDA

## RESULTS



## REFERENCES

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