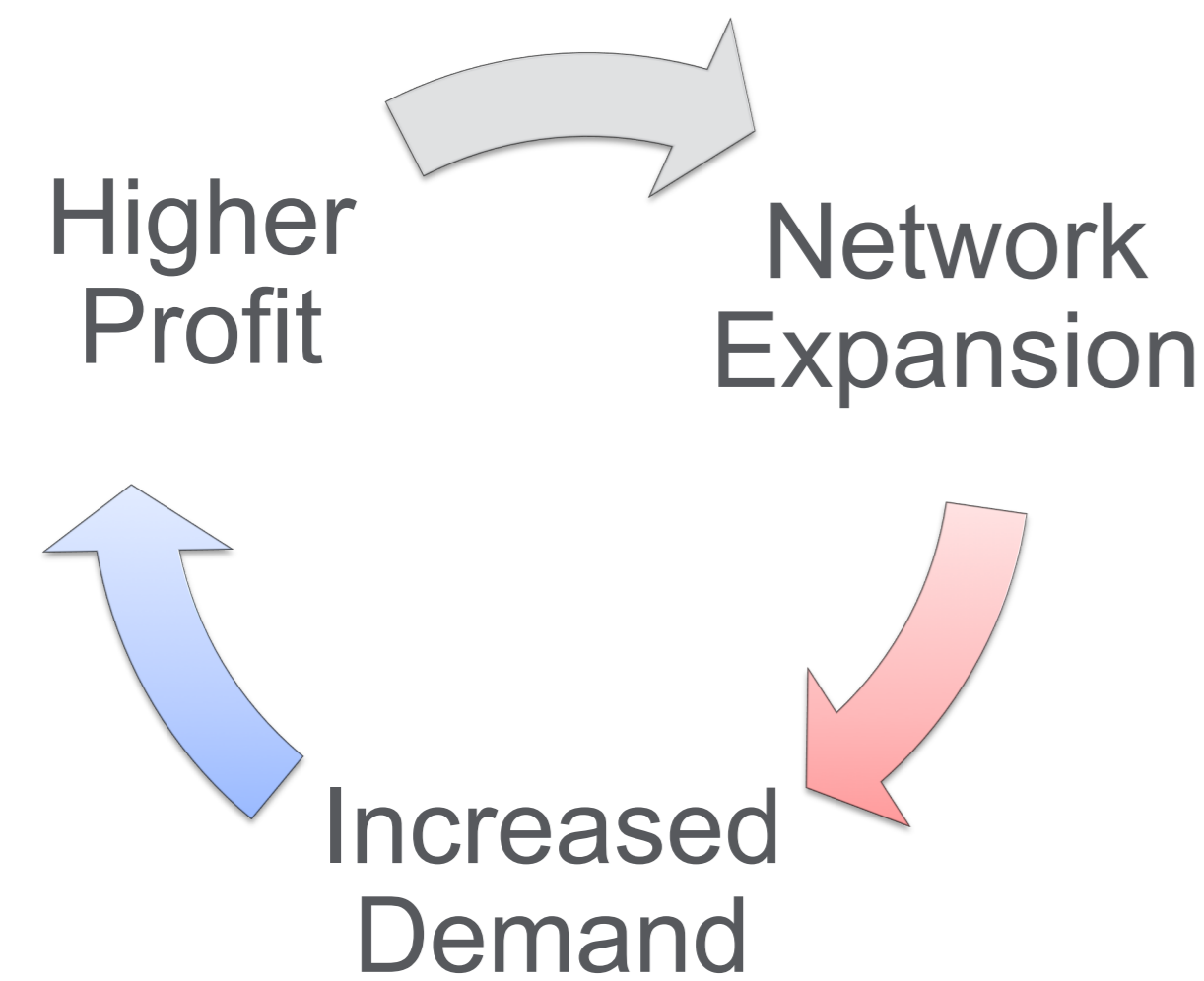


# Next Generation Network Design

## Motivation / Background

Traditional supply chain networks aim to minimize cost, without considering the influence of the supply chain on demand.

By including the revenue potential in the supply chain design, companies can become more profitable and expand more quickly in a positive feedback loop.



## Key Question / Hypothesis

The structure of a supply chain network can have a large influence on a customer's decision to buy, but this is not traditionally taken into account. Can network designs be optimized to include this factor?

## Relevant Literature

- The Impact of Endogenous demand on push-pull production systems 2005, Paulo Gonçalves et al.
- Note: The Newsvendor Model with Endogenous Demand 2001, James D. Dana, Jr. et al.
- Optimal supply chain network design and redesign at minimal total cost and with demand satisfaction 2010, Anna Nagurney



## The Problem

The next generation network design needs to include the demand that is influenced by the network itself. This model drives revenue generation and maximizes profits instead of simply minimizing supply chain costs.

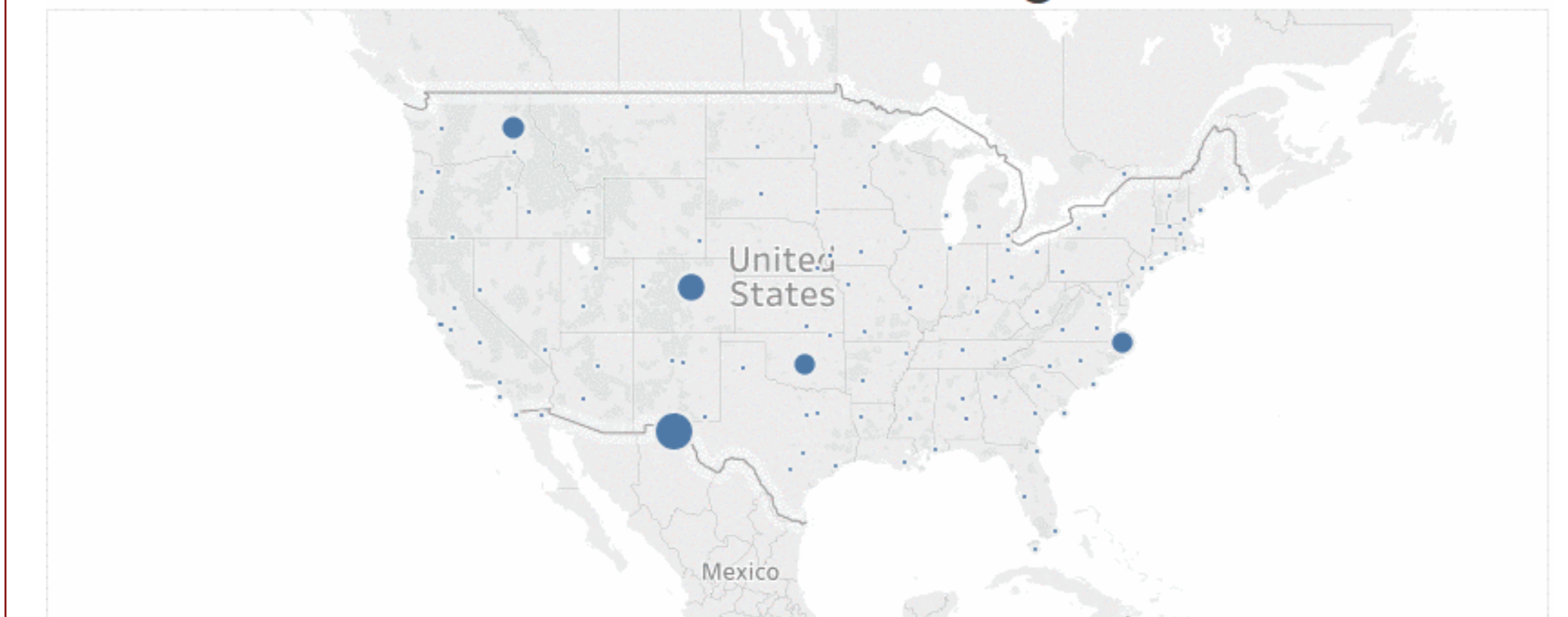
## Methodology

Mixed integer linear program that includes the endogenous demand factor to maximize profits instead of minimizing costs.

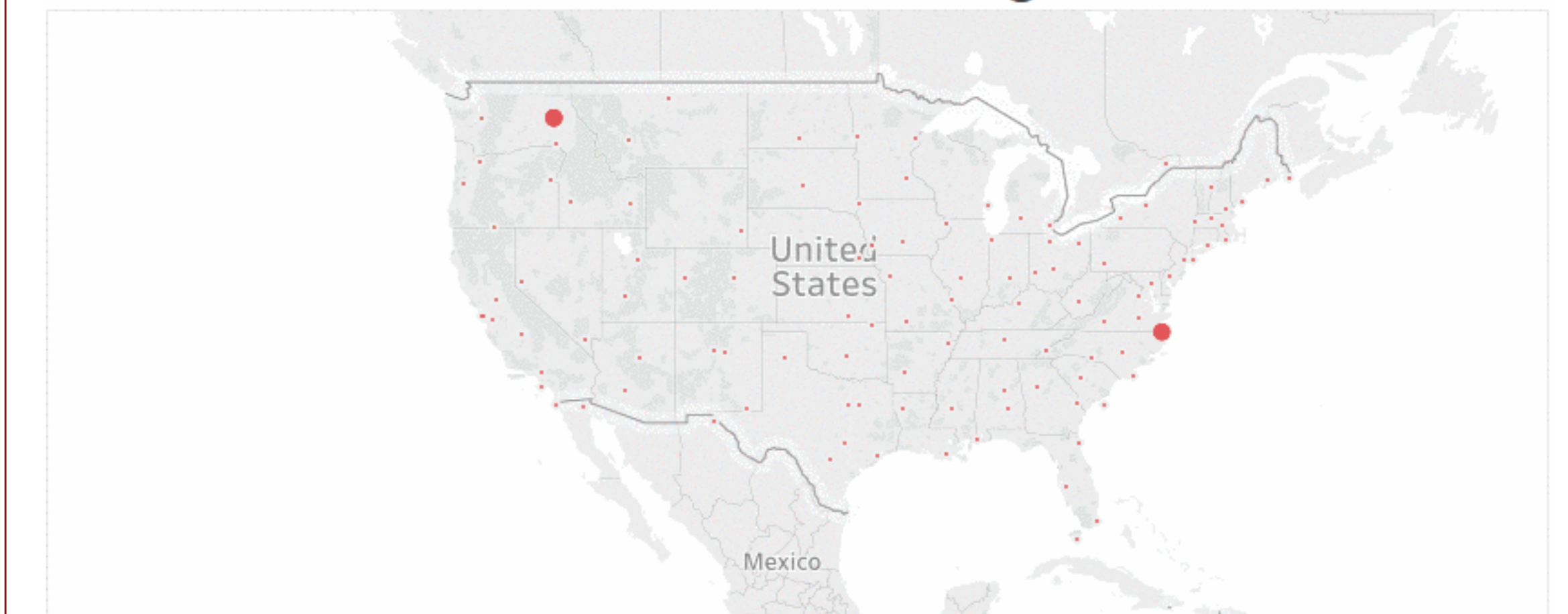


## Initial Results

### Profit Maximizing



### Cost Minimizing



## Expected Contribution

Companies that have identified potential endogenous demand in their network can apply our model to their business. Our model will achieve better outcomes than those provided by traditional network designs.

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