Vehicle Markets in Maine:
## A Preliminary Spatial Analysis

Presenter: Caroline L. Noblet
November 30, 2004
Course: REP 475

Overview

- Background and Motivation of Thesis
- Point Pattern/Cluster Analysis
- Literature Review
- Objective and Hypothesis
- Methods
- Modeling
- Results
- Policy Implications and Conclusions
- Future Research

Background and Thesis Motivation

- Eco-Information program as a means of addressing Air Quality problems in Maine
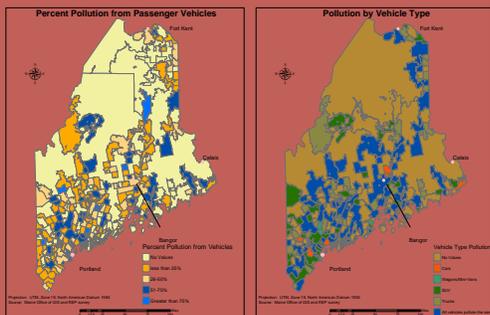- What Problems?: eight counties are non-attainment areas

Non-Attainment Counties in Maine

Data

Survey Respondents
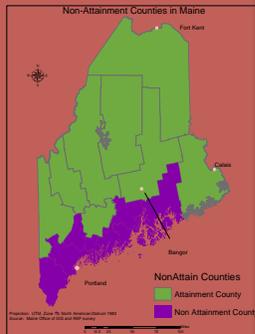
- Survey Implemented in summer 2004
- 1,148 registered Maine vehicle owners
- 60% response rate

Point Pattern/ Cluster Analysis
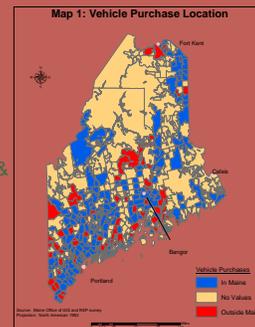

Percent Pollution from Passenger Vehicles

Pollution by Vehicle Type
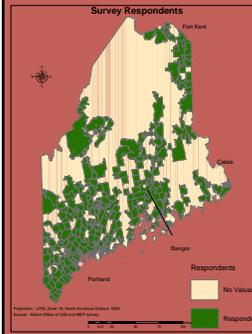
# Vehicle Purchase Location and Literature Review

- Explanation for Clusters:
  - Distance (proxy) leads to different prices depending on location to market (Goodwin & Piggott 2001)
  - Consumers have preferences for producer location (Blair 1995)

Map 1: Vehicle Purchase Location

Objectives and Hypothesis

- **Objective**: To determine if spatial proximity to competing vehicle markets is a significant factor in the vehicle choice decision of Maine consumers.

- **Hypothesis**: The distance between respondent's location and closest out of state market, as well as individual characteristics, will significantly impact their decision to purchase a vehicle in state.

Methods

Map 2: Cross Towns and Centroids
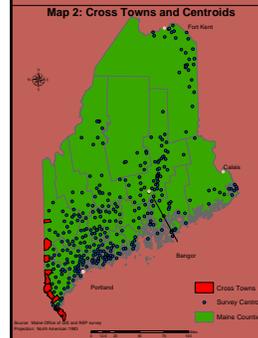
- Created Centroids of Zip Codes (VB)
- Created layer of Crossing Towns
- Spatial Join: Calculation of distance between centroid and closest cross town

Modeling

- Theoretical Modeling:
  - $T_{ij}=k[(N_i/N_j)/D_{ij}{}^b]$
  - Transactions between cities = fnc(population ratio, distance)

- Empirical Modeling:
  - Purchase Location = fnc(new/used vehicle, gender, age, distance, percent migrants from out of state in the town)

Results

- Inc. Likelihood
  - Buying new vehicle
  - Distance

- Decr. Likelihood
  - Being male
  - Larger percent of out of state immigrants in town

Variable	Coeffic.
Intercept	.7763*
New/Used	1.0956*
Gender	-.04825*
Age	.0103
Distance	2.519 E-6*
% out of state	-.0486*

* indicates variable is significant at the 10% level

Policy Implications and Conclusions

- Possibility of joint program with New Hampshire to capture more purchases
- Recognize towns with larger percent of immigrants – not typical purchase behavior, target for future marketing efforts

- Future Research: Identify relative strength via marginal effects.

Thank You!

Questions or Comments?

Photos courtesy of State of Maine Fall 2004 Photo contest
http://www.maine.gov/portal/photos/winners.php

Acknowledgments:
Bradley Neumann for invaluable assistance and patience.
Dr. Teisl for reviewing my work with good humor.
My officemates-for everything.