

An Economic Evaluation of the Effects of the North Dakota and Bismarck Smoking Bans Enacted in 2005 on the Local Bismarck Restaurant/Bar Market.

Final Report for the Bismarck Tobacco-Free Coalition and Bismarck-Burleigh Public Health

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Justification

- Understand the economic implications of government policy
 - Responsibility of Government to understand the effects of policy actions
 - Are there costs and who bears them?
 - Intended consequences
 - Reduced exposure to second hand smoke
 - Unintended or Externalities
 - Can be positive or negative
 - Assumed to be negative by the opponents of the ordinance, did the policy have a negative effect on the restaurant-bar industry in Bismarck

Introduction

- The tobacco industry has been subject to regulation at many levels for decades.
 - San Luis Obispo California 1990
 - Smoking in public buildings
- Significant debate around restaurant and bar smoking
- Health benefits of cessation and reduced exposure to second hand smoke
- Bismarck enacted a ban on smoking in restaurants in Oct 2005.

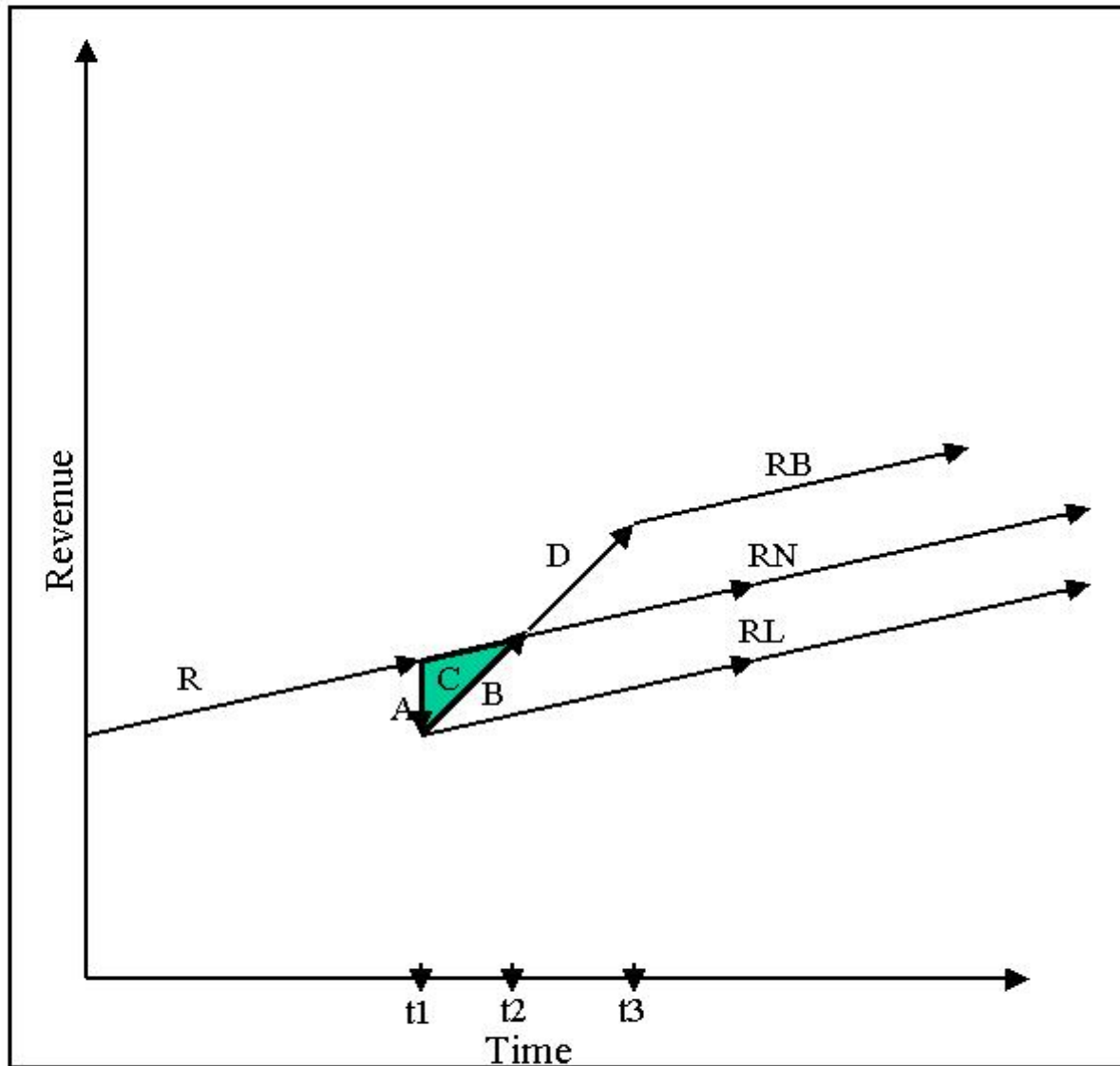
Smoking bans in bars and restaurants

- Costs and benefits
 - The impacts on local sales revenue and employment.
- Arguments have been couched in theory or based on opinion surveys rather than empirical evidence from observational studies
- Both sides have been on uncertain footing
 - Few local studies
 - Opinion surveys

Economic Theory

- Two mechanisms through which altered behavior will be detected
 - Announcement effect
 - Direct effect

How a price or revenue gradient works.



Data

- Prefer a measure of profit or entrepreneurial income
 - Use Reported Taxable Revenue
 - The North Dakota Department of the Tax Commissioner (NDOTC)
 - ND Century Code 57-39.2-23
 - Data must be delivered in blocks large enough that proprietary information about any individual entity was sufficiently obfuscated to meet privacy standards.
 - NDTOC provided taxable revenue for all full-service restaurants.

Data

- Delivered by the NDOTC on 13 August 2007
- Taxable sales reported by full-service restaurants in Bismarck.
- Liquor sales were included for those businesses that report liquor under the same permit as food sales.
- First Quarter 2002 through fourth quarter 2006
- The data were sorted at NDOTC on total taxable sales for all five years
- Separated into **groups of five** in descending order.

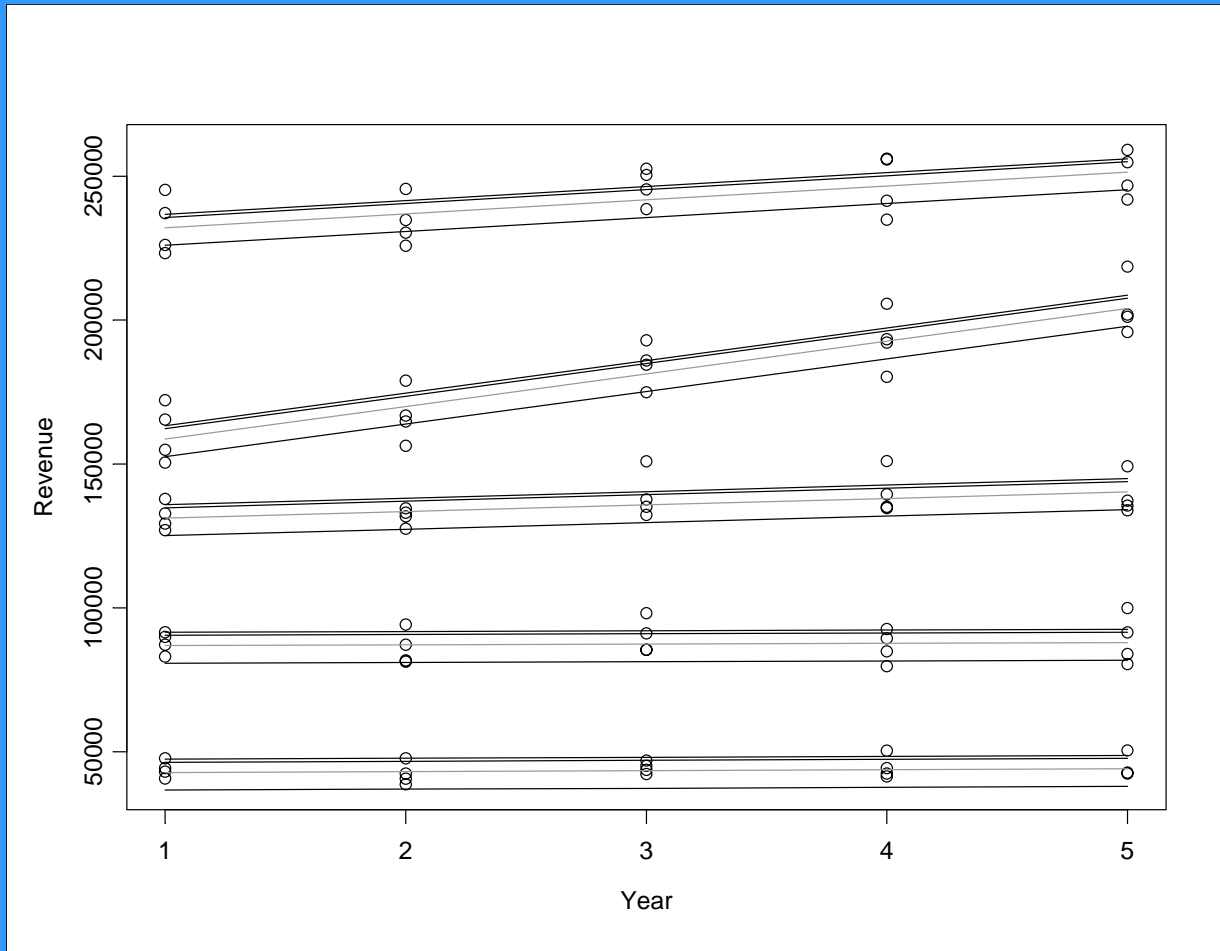
Data and Methods

- New entrants
 - Used only in evaluation of the overall market
- Analyses were performed using a before and after effects model.
- General Linear Model (GLM)
- Intercept and temporal dummy variable were used to compare distinct before and after effects (Steele and Torrey 1980).

Results

- Revenues between groups were significantly different ($F = 104.6$, $df = 98$)
- Group 2 had the highest revenue growth rate of approximately \$11,000 per year
- Group 1 second with approximately \$5,000 per year.

Group Data



Group 1

Group 2

Group 3

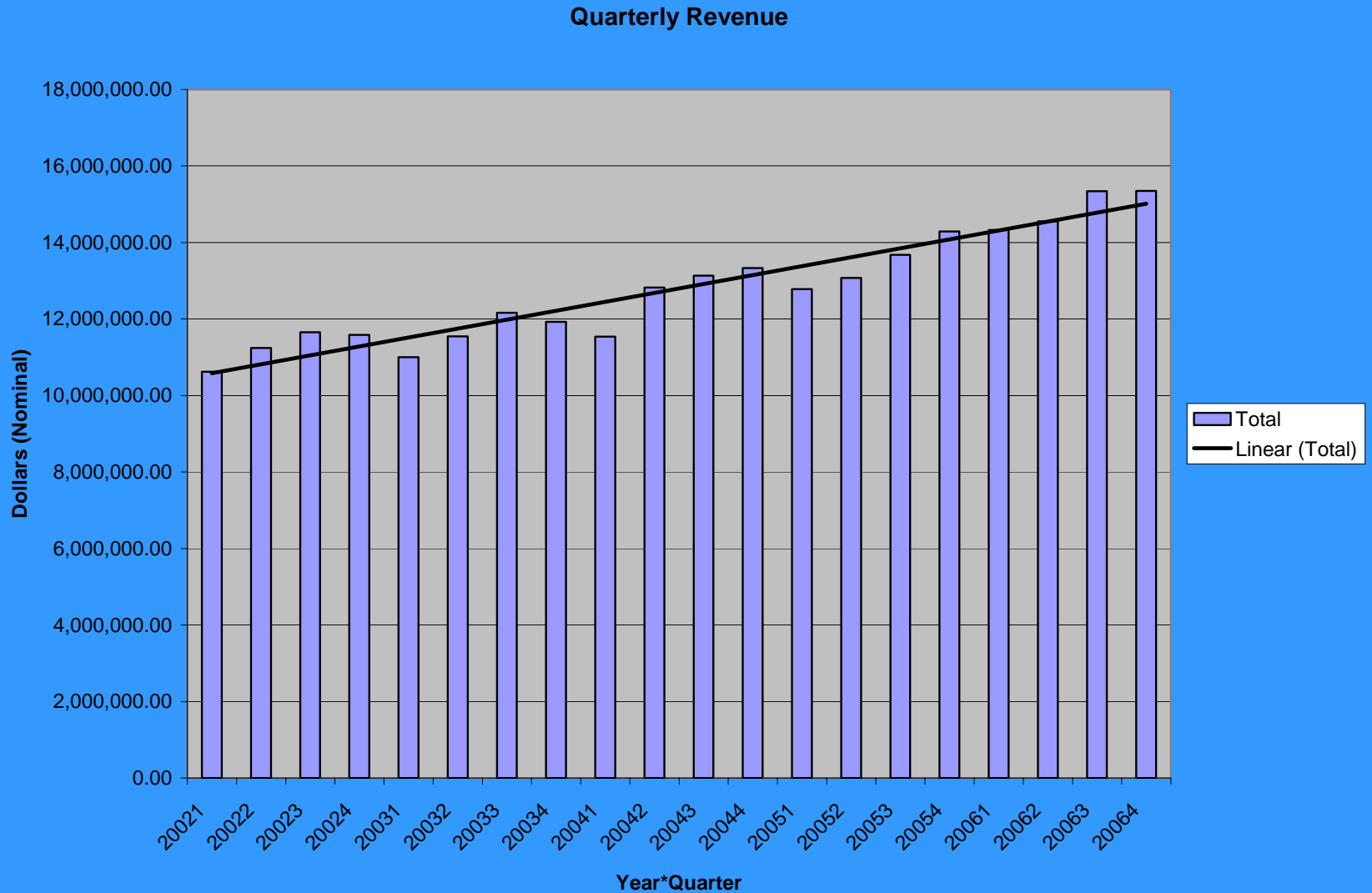
Group 4

Group 5

Results

- The overall market, adjusted for inflation
- 3.2% annual growth rate prior to 12 October 2005
- 7.2% annual growth rate after the effective date of the ban.
 - Several new entrants during this time frame

Bismarck Restaurant/Bar Sector Quarterly Taxable Revenue & Linear Trend

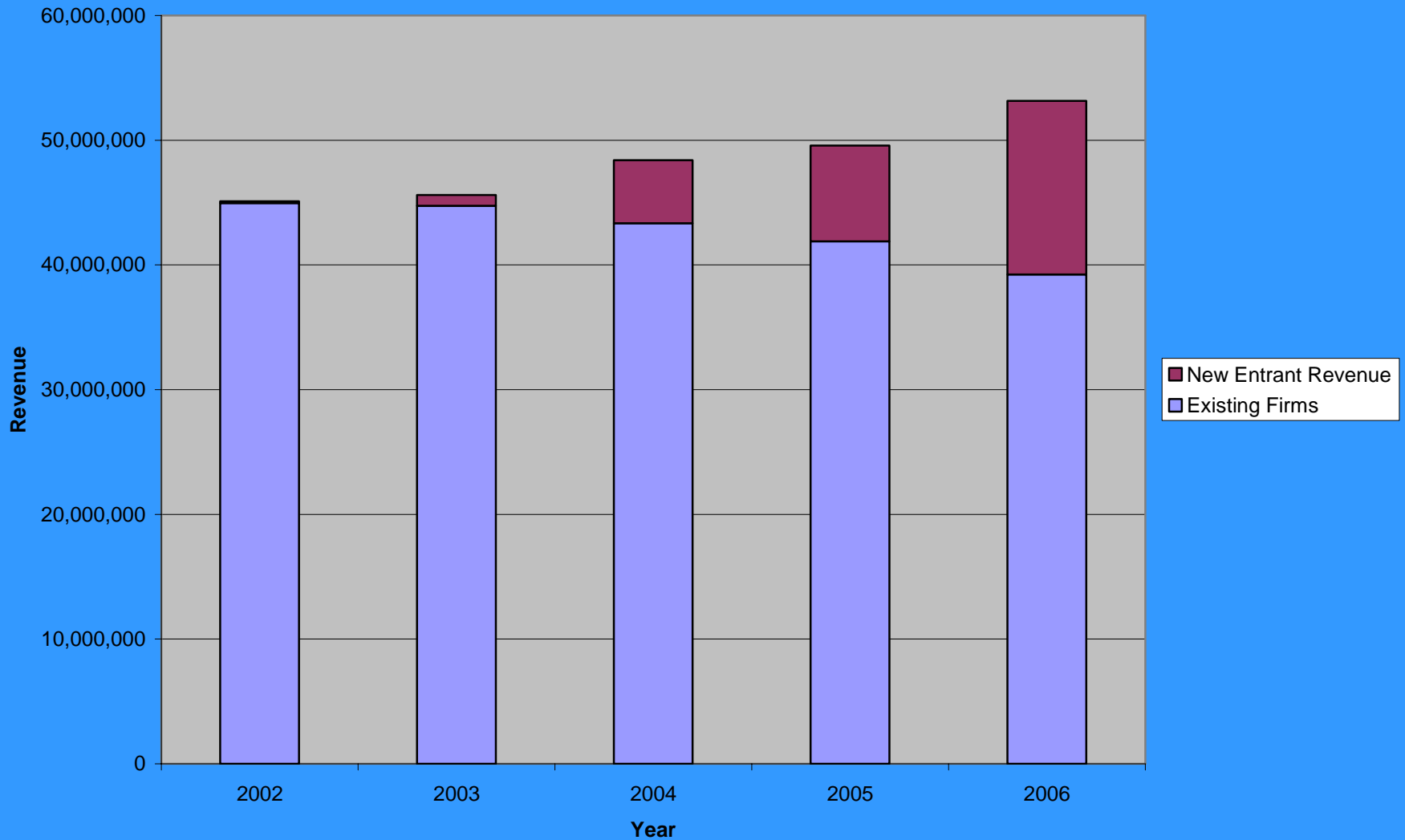


Results

- Crowding out effect
 - Least impact on Group 2 restaurants
 - 2.7 % real annual growth rate
 - New entrants grew to capture greater than 23% of the total market revenue.

Crowding Out

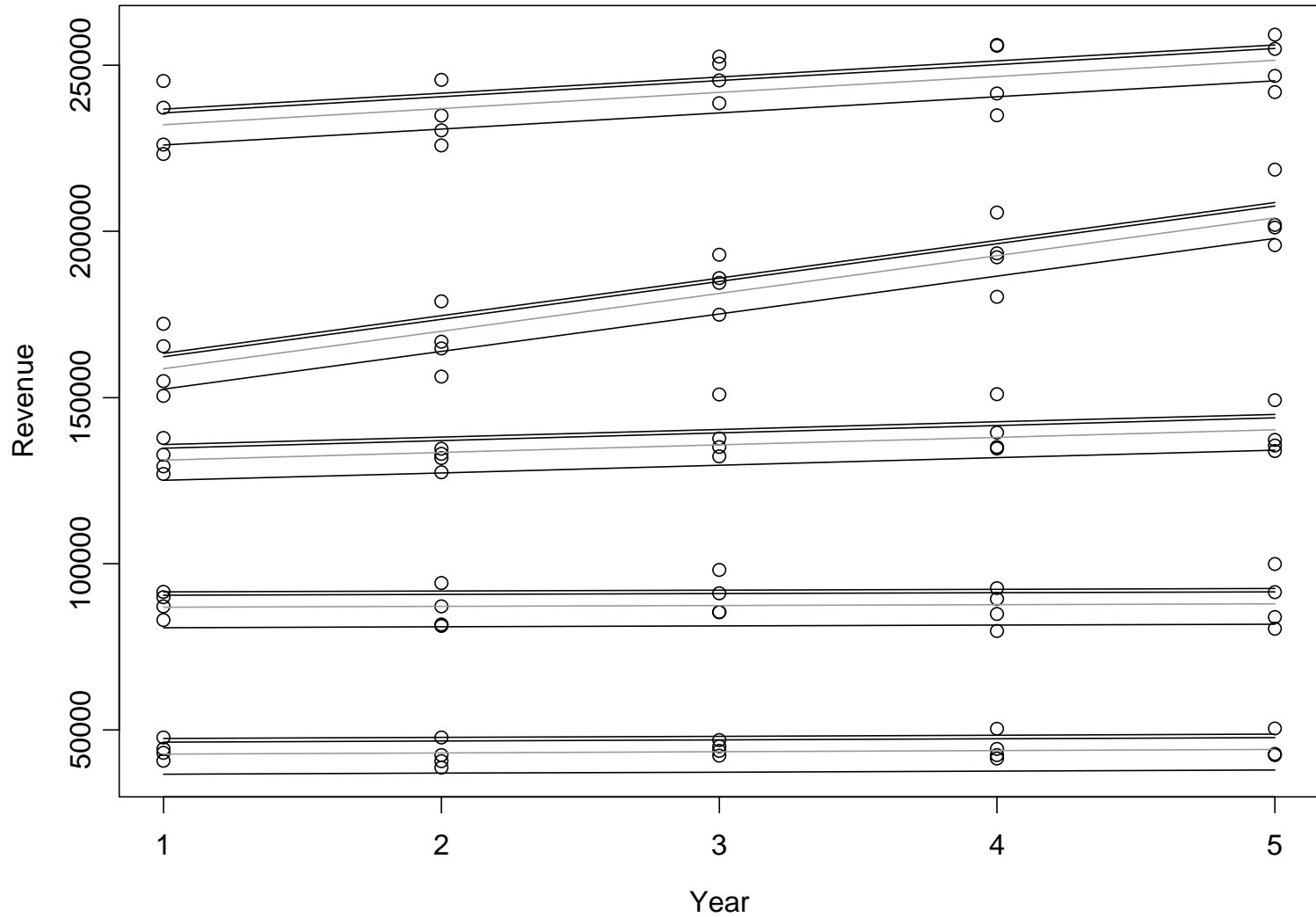
New Entrants Capture Market Share



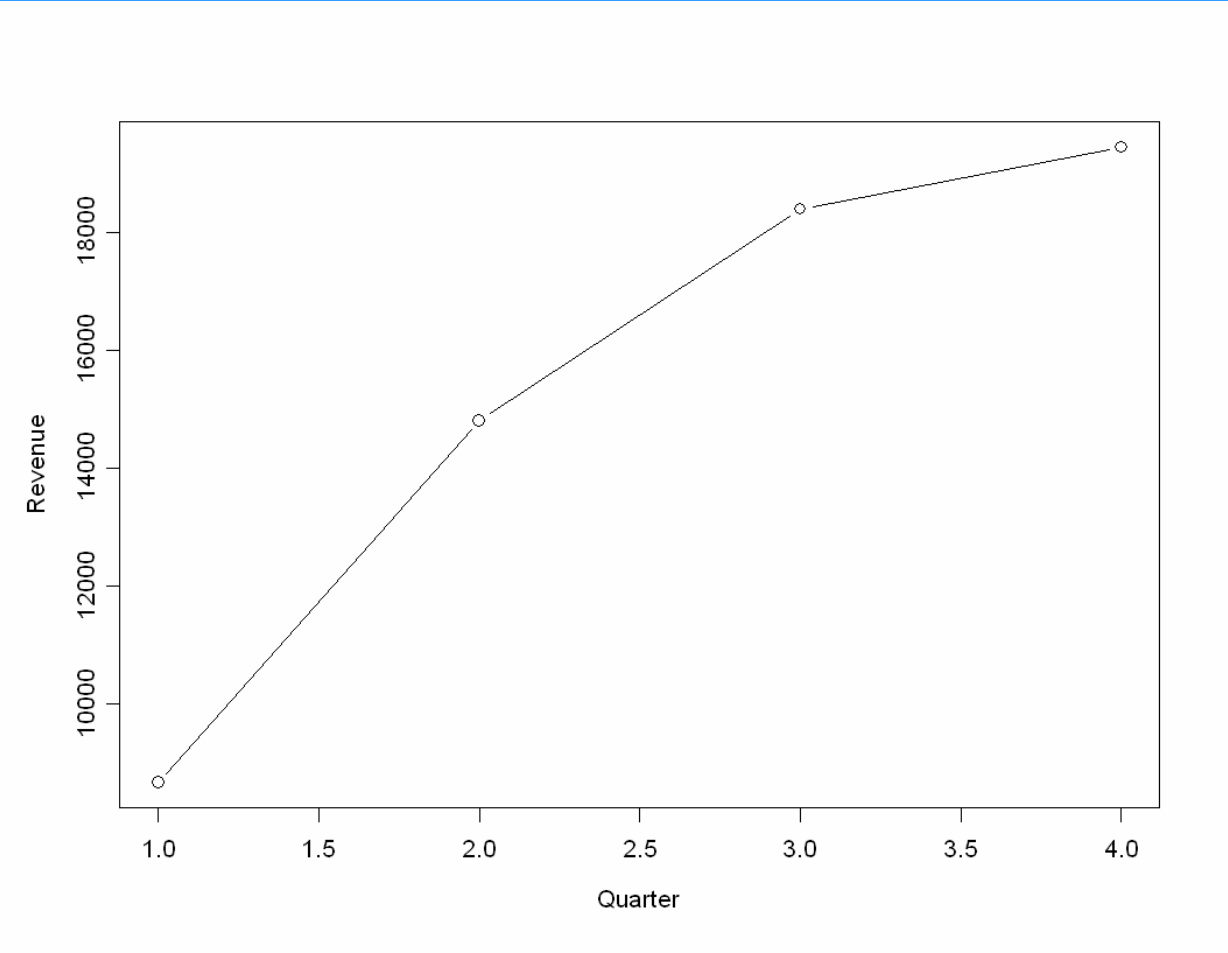
Results

- Group was the most important variable in describing the changes in revenue over the five year period, followed by year and then quarter.
- Revenues differed significantly among quarters.
- Revenues increase from the first quarter to the fourth quarter in a curvilinear fashion.
 - Consistent among years

Quarterly Growth



Curvilinear Quarterly Revenue Growth

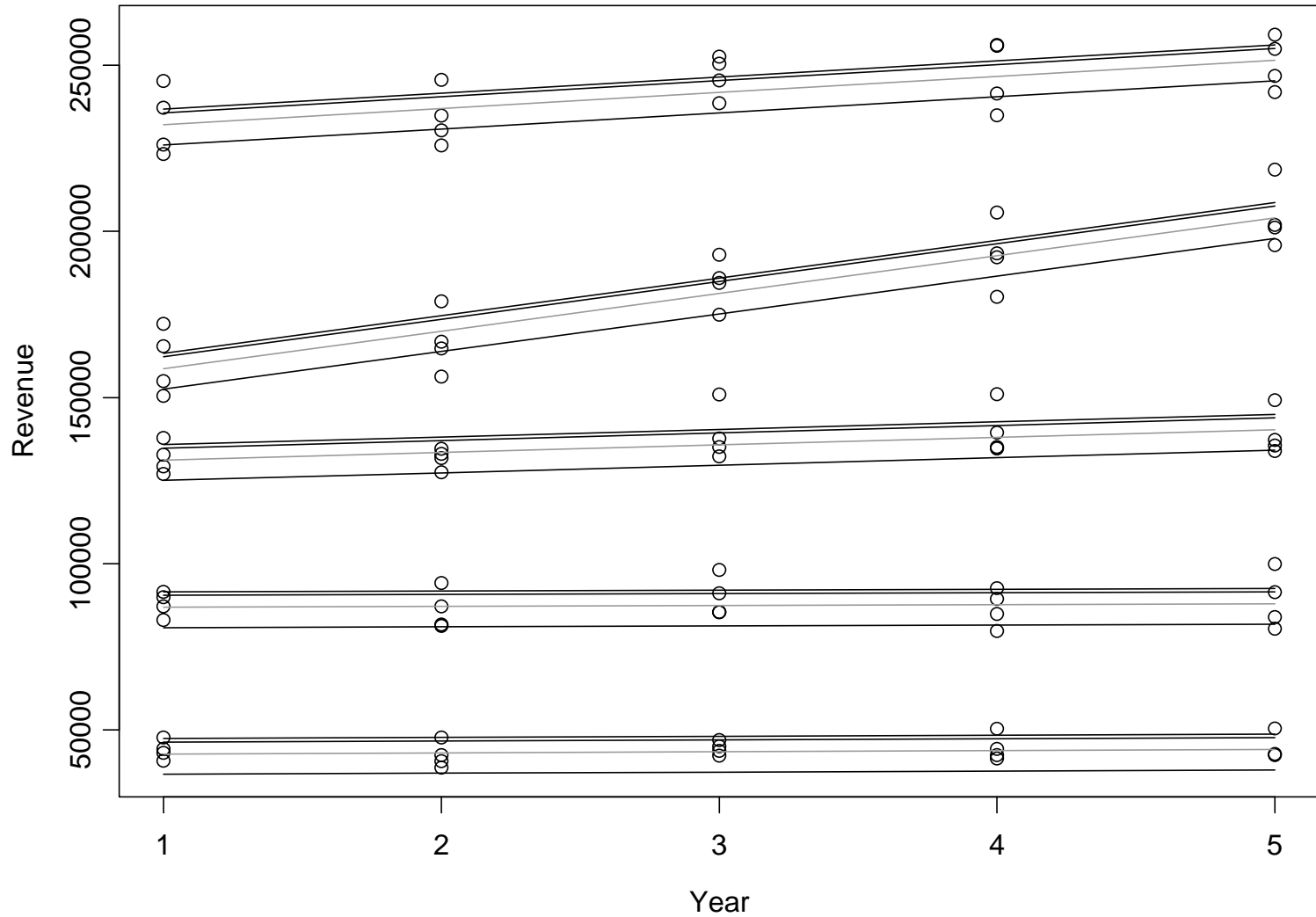


Results

- If there are seasonal business cycles they are currently overwhelmed by the overall growth of the market.
- When compared to pre-ordinance data the pattern suggest an absence of any post-ordinance seasonal effect.

Quarterly Growth

Lack of seasonal effect



Conclusion

- The smoking statute had no discernable impact on overall restaurant-bar revenue.

Summary

- Overall growth in the market
 - 3.2% per annum prior to regulation
 - 7.2% after regulation.
 - Without further analysis this change in growth rate may have been attributed to the ban but,
 - Market share for new restaurants increased from 14.2% to 23.4% over the same period.
- The increase in revenue is likely attributable to the increase in new restaurants rather than the change in statute.

Summary

- Bismarck Restaurant/Bar market
 - growing
 - more competitive
 - gained a total of thirteen new firms over 5 years
- Competition between existing and with new firms seems to be the greatest contributor to revenue distribution among firms.

Take Home Message

Changes in total taxable revenue, provided in this study, are a sufficient proxy to suggest: *Regulatory costs are not being transferred to restaurant owners and the smoking ban has not caused reductions in overall industry employment.*