

# Quantifying the Welfare Gains of Variety: A Sufficient Statistics Approach

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## Abstract

This paper develops a new revealed-preference approach for valuing changes in product variety. We show that the “variety effect” – the change in consumer surplus resulting from a change in the number of available products, holding prices constant – can be represented graphically as the area between the inverse market demand curves before and after the change in product variety. Our key contribution is to derive a sufficient statistics formula for the variety effect under the assumption of parallel inverse market demand curves. This formula depends on the price elasticity of demand when variety is fixed and the price elasticity of demand when variety is permitted to vary. We demonstrate that a wide class of continuous and discrete choice models give rise to parallel inverse demand curves, showing that our formula is robust. We illustrate the value of our approach by considering an empirical application to taxes. In particular, we show how one can implement our sufficient statistics formula using reduced-form estimates of the effect of taxes on variety and the effect of taxes on prices and quantities in two cases: where variety is held constant and where variety responds to a change in taxes through firm entry or exit. Combining retail scanner data from grocery stores in the U.S. with detailed local sales tax data and using within-store and between-store variation in rates and exemptions, we estimate a large effect of sales taxes on product variety. Finally, we discuss several additional applications in Industrial Organization and Public Economics.

**JEL codes:** H21, H71, F12, L13.

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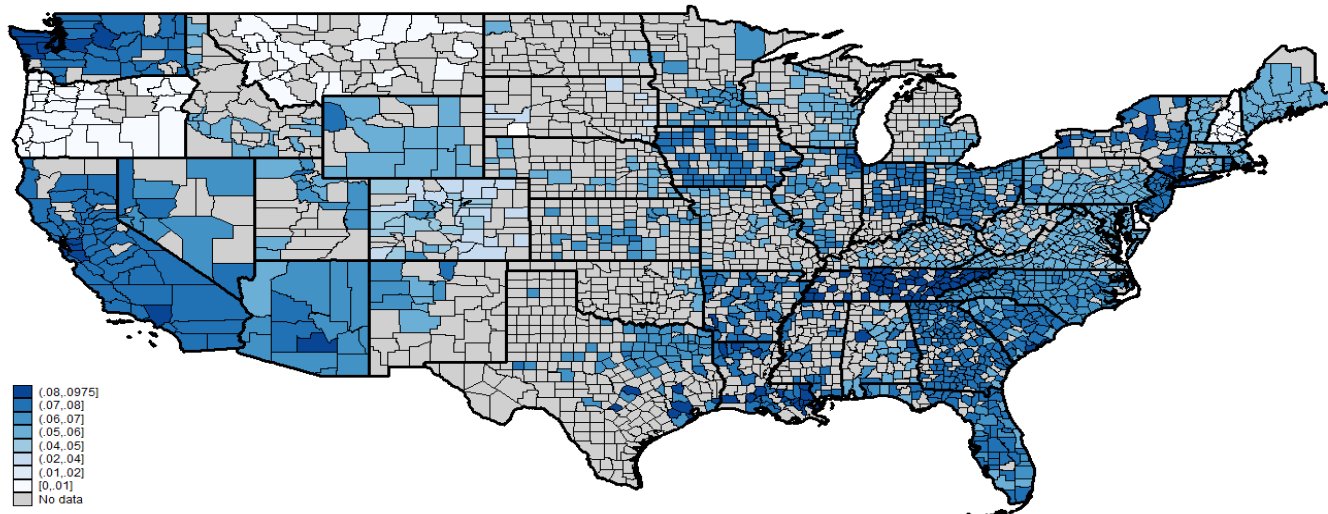






Figure 5: Map of Cross-Sectional Variation in Salex Tax Rates

State+County sales tax rates, as of September 2008



Note: No data indicates counties for which no grocery store sales were recorded in Nielsen's Retail Scanner data in 2008.