



Comptroller of the Currency
Administrator of National Banks

US Department of the Treasury

OCC Fair Lending Conference 2008

Statistical Analysis and Modeling for Risk Assessment

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ENSURING A SAFE AND SOUND
NATIONAL BANKING SYSTEM
FOR ALL AMERICANS

Statistical Analysis and Modeling For Fair Lending Risk Assessment

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Overview

- Risk Management
- Fair Lending Issues in the Credit Cycle
- Identifying Targets (Nodes / “Foci”)
- Quantitative Analysis as a Tool
- Statistical Modeling and Hypothesis Testing



- Fair Lending Issues involve Legal, Regulatory, and Reputational risks
- Discrimination can occur at any stage / decision point in the consumer credit life cycle:
 - ❖ Account Acquisition (Marketing / Redlining / Steering)
 - ❖ Product Choice / Steering
 - ❖ Underwriting
 - ❖ Pricing
 - ❖ Servicing and Account Management
 - ❖ Collections / Loss Mitigation
- Statistical Analysis and Modeling are only one of the tools for illuminating Fair Lending Risk.



Why and How do we Recognize and Measure Fair Lending Risk?

- Quantitative Analysis is a reactive detection control
 - Our goal is to prevent any single instance of discrimination, however, as Risk Managers, we are especially concerned with the potential for a “pattern or practice” of discrimination.
- Fair Lending Metrics
 - Quantitative disparities in “outcomes” between protected and majority groups, *e.g.* differences in approval rates, pricing, *etc.*
 - Quantitative differences in apparent treatment of protected and majority groups, *e.g.* differences in quality of service,



1. Define the process or outcome
2. Identify segments (“foci” / nodes).
3. Measure the apparent “raw” disparity at each node between each protected group and the reference (“majority”) group. Nodes with largest apparent impact get first attention.
4. Data collection and analysis
 - A. Collect, clean, and transform relevant (and irrelevant) data including “dummy” variables.
 - B. Apply standard statistical methods and appropriate hypothesis testing
 - C. If there is a material “unexplained” disparity identify “outliers” and perform in-depth file review.
5. Evaluate the file review and begin again at #4.



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Steps in Measuring and Analyzing Fair Lending Risk

Our goal is to determine whether there may be a pattern or practice of discrimination and take appropriate action.



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