Plenary Session: INNOVATION

A Singular Indicator for HMDA Data Analysis

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Information Alone Does Not Drive Change

Intelligence Through Analytics

Optimization

What’s the best that can happen?

What will happen next?

What if these trends continue?

Why is this happening?

What actions are needed?

Where exactly is the problem?

How many, how often, where?

What happened?
Shortest Path to Understanding in the HMDA Forest
Focus  The purposes behind HMDA analysis include fair lending monitoring and investigations, competitor analysis within geographic markets, compliance benchmarking for CRA examination performance context, merger and acquisition analysis, marketing intelligence for mortgage lending in underserved, or homeownership-deficient, communities, etc.

Data  HMDA analysis provides a public view into mortgage lending performance across lenders, markets, loan purposes, dwelling types, lien status, and many other factors, by action result for different groups of applicants based on race, ethnicity, gender, etc.

Use  Fair lending analyses target above-trigger pricing incidence, average pricing differences, denial imbalances, market penetration, fallout disparities, origination differences, etc.

Problem  Analyses are fragmented and incomplete, processing is inefficient (unnecessary, redundant, time consuming), and results don’t capture factor interactions.

Solution  Place HMDA information in the hands of ready users and in an accessible form that they can use to make effective decisions on urban markets to foster systematic change.
Uniform Performance Indicator

Define Disparities
- Results-based
  - Denial
  - Fallout
  - Pricing
  - Market Penetration
  - Product
  - Processing
- Decision-based
  - Credit Risk
  - (Many available)

Quantify Disparities
- Data Analysis
- Data Preparation
- Data Interpretation

Measure Risk
- Clustering
- Determine References
- Calculate risk score
- Generate Indicators

Monitor Risk
- Summary Reports (Contextual Views)
- Detail Reports (Root Causes)
Visualizing Risk / Spotting Outliers

Visualizing Fair Lending Risk with Simulated Reference Area
Aggregated at MSA Level

Pyramid: High Risk MSAs
Cube: All Other MSAs
Surface: Low Risk Area
Cross: Risk-Free Point
### Decompose Into Results-Based & Decision-Based Components

<table>
<thead>
<tr>
<th>MSA</th>
<th>Results-based Indicator</th>
<th>Decision-based Indicator</th>
<th>Global Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>27860 - JONESBORO, AR</td>
<td>4.69511</td>
<td>5.68250</td>
<td>7.37122</td>
</tr>
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<td>22520 - FLORENCE-MUSCLE SHOALS, AL</td>
<td>4.33302</td>
<td>5.70880</td>
<td>7.16697</td>
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<td>26300 - HOT SPRINGS, AR</td>
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<td>39140 - PRESCOTT, AZ</td>
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<td>6.78421</td>
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<tr>
<td>26620 - HUNTSVILLE, AL</td>
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<td>32820 - MEMPHIS, TN-M3-AR</td>
<td>4.06819</td>
<td>5.22090</td>
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</tbody>
</table>
Quadrant Plot of Decision Vs. Results Indicators

Each symbol represents an MSA
Pricing Dimensions Beyond Borrower Risk

Channel X

Terms & Conditions
Borrower 1 Risk
Property Considerations
Market Impact

Channel Y

Terms & Conditions
Borrower 2 Risk
Property Considerations
Market Impact

Geography Constant
# UPI Aimed at Opportunity-Side

## Neighborhood Opportunity
1. Market size/growth
2. Housing profile
3. Commercial profile
4. Public-sector profile
5. Stability/risk profile
6. Consumer behavior profile

## Mainstreaming Consumers
1. Demographics
2. Financial Services Usage
3. Credit Profile
4. Work Status
5. Savings Habits
6. Non-Credit Payment Profile

*Quickly/Thoroughly Rank Based Upon Estimated Value Over Specified Horizon*