



# Mortgage Default and Local Unemployment Implications for the Hardest Hit Fund

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*Research and analysis on the  
transformative power of capital*



# Summary of Talk

- Motivation
  - Unemployment – default risks - Hardest Hit Fund
- Methodology & Data
  - Trend (structural)-Cyclical decomposition; Survival analysis; Self-Help loans
- Findings
  - Defaults in areas with higher structural unemployment are most responsive to program intervention
- Implications
  - Unemployment based initiatives designed to deal with foreclosure crisis may be more effective if they focused on trend (structural) unemployment patterns

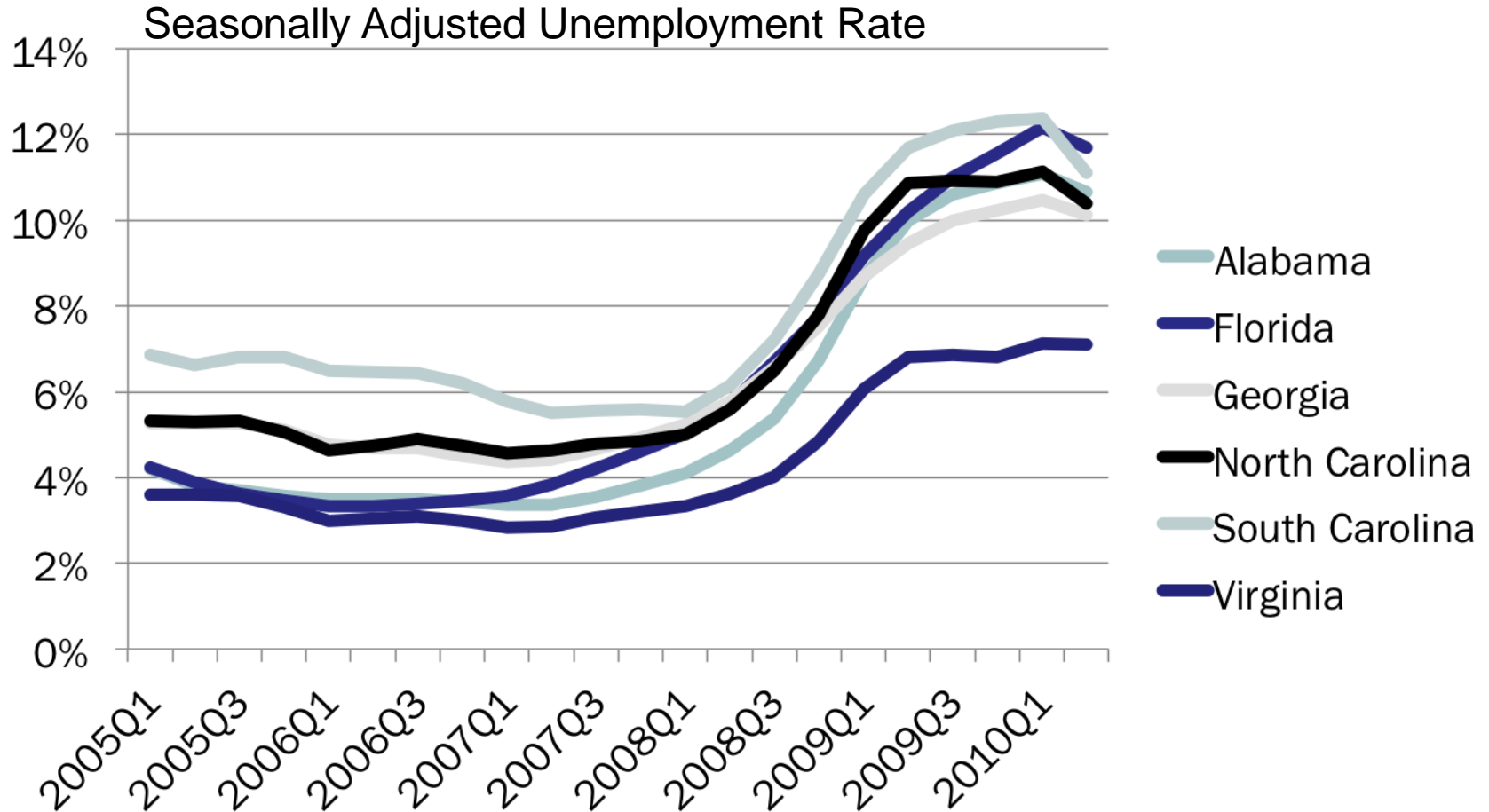


# Foreclosure/Economic crisis hit many states when the economy was in transition. NC...

- Rapid economic growth during the 1990s
  - Manufacturing and High-technology
  
- 2001-2007, economies in transition
  - Move towards service economy, lower wages and benefits
  
- Since 2008, difficult to separate impacts from ongoing structural economic transformation and the cyclical impacts resulting from the crisis



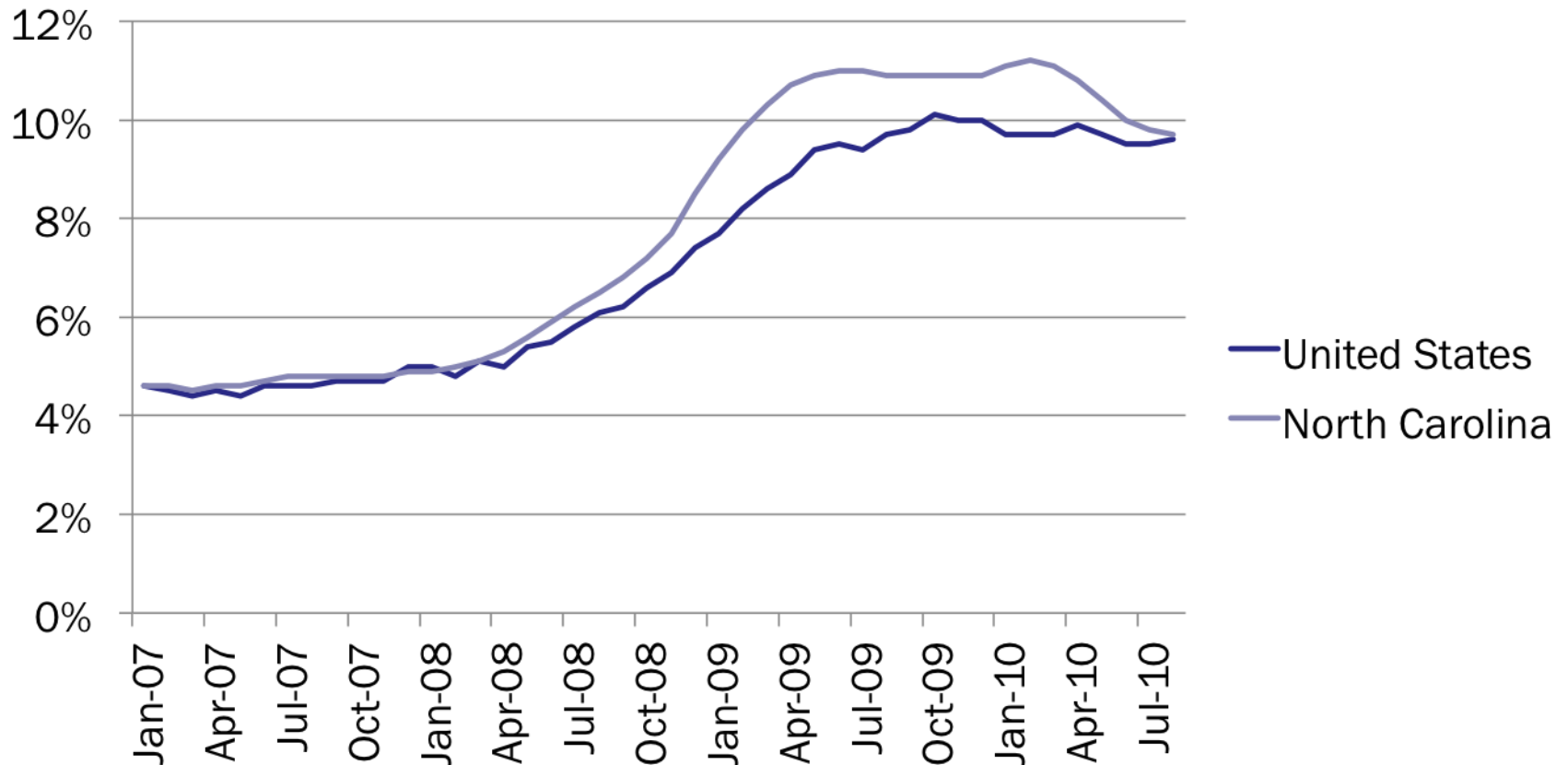
# Unemployment



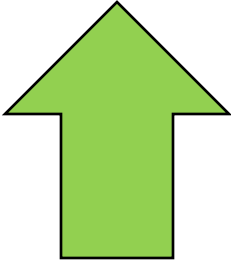

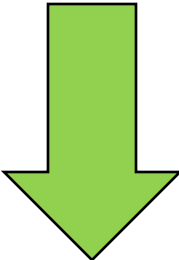
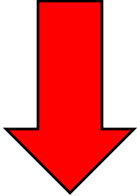
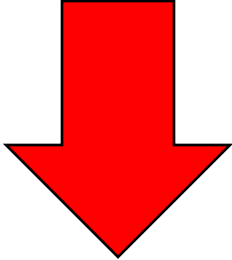
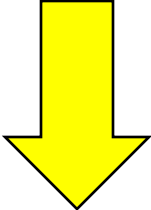
Source: Bureau of Labor Statistics

# Importance of Details: NC example

Seasonally Adjusted Unemployment Rate

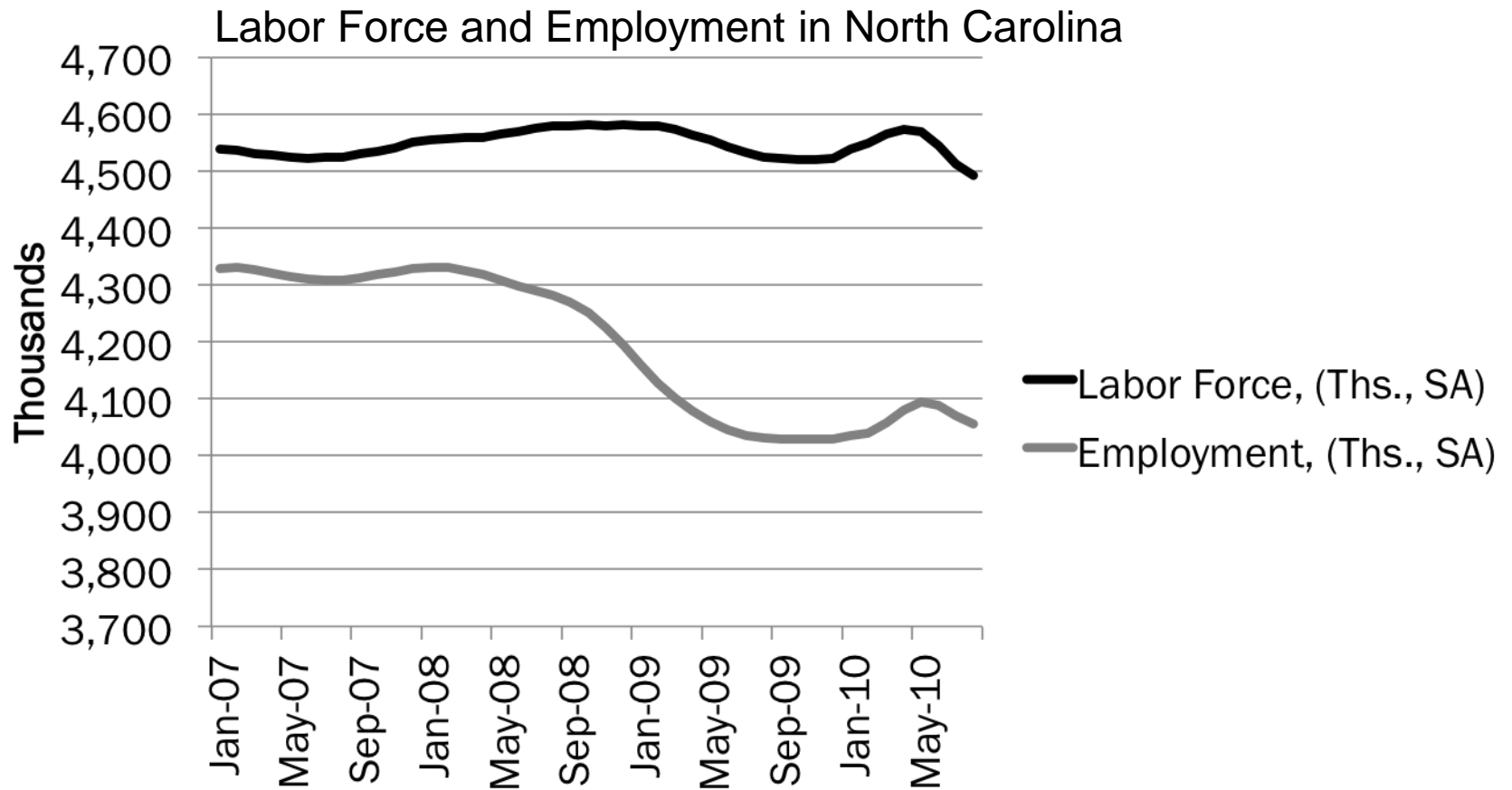


# Aggregate numbers obscure differences...

NC County Type	Number of jobs	Size of the labor force	Unemployment rate
Urban and more developed counties			
Rural and less-developed counties			

\* Based on charts from the NC Dept of Commerce

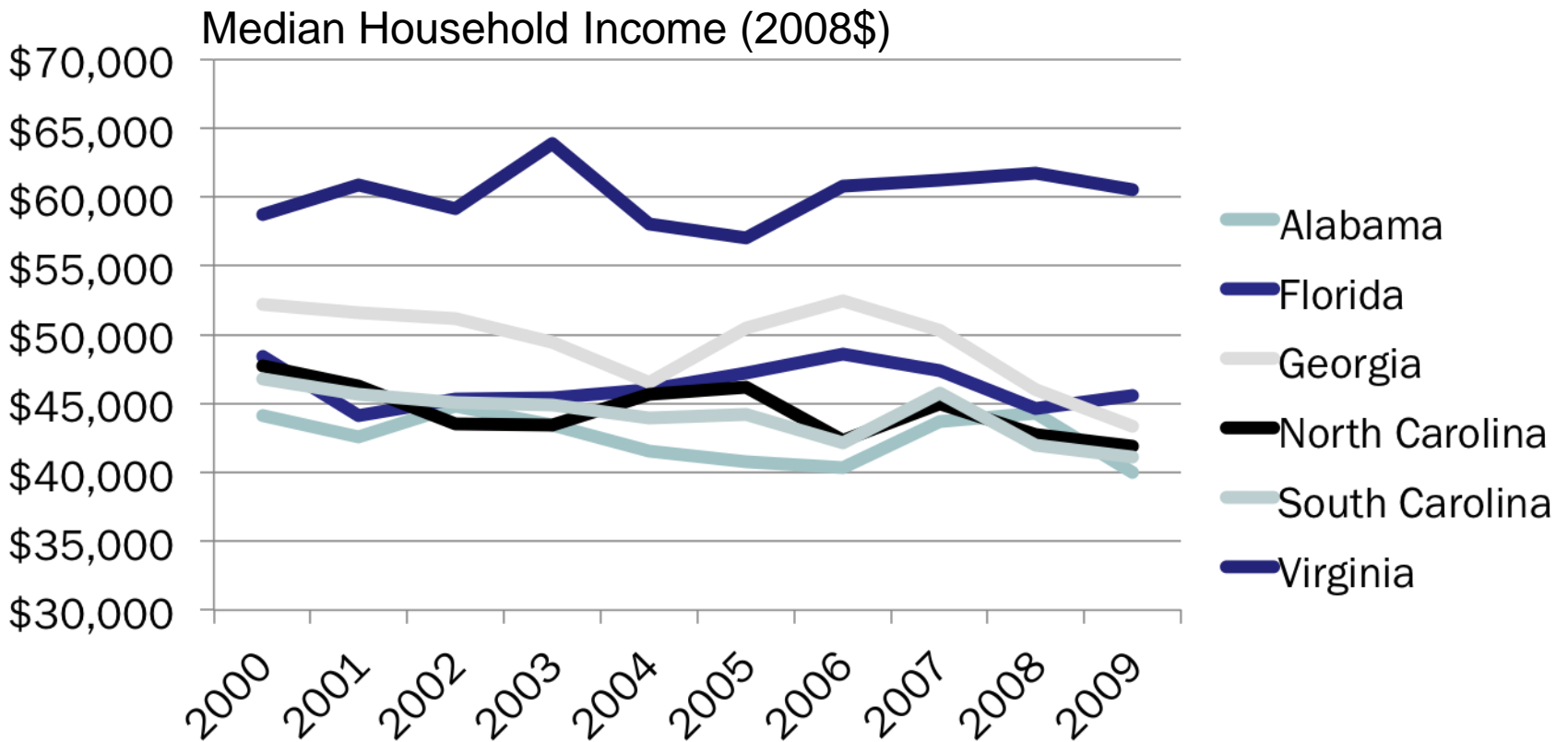
# Moving numerator and denominator



## NC employment gains also differ by industry

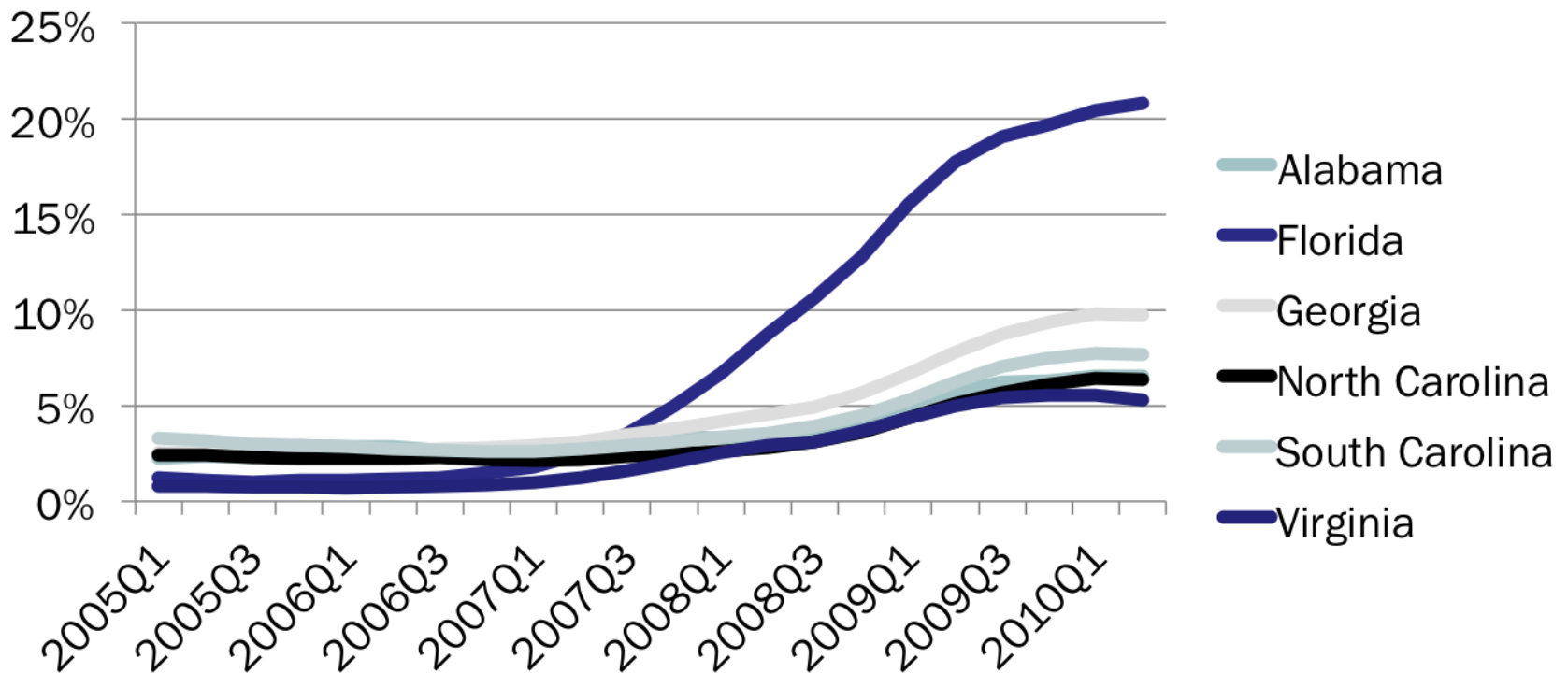
	6/10 Nonfarm	% change since 6/09	% change since 12/07
Construction	171,400	-10.6%	-31.9%
Manufacturing	432,100	-3.0%	-18.8%
Trade, transportation, utilities	712,300	-1.3%	-8.8%
Financial services	198,600	-1.4%	-6.7%
Professional services	478,500	+4.5%	-5.5%
Education & Health	553,300	+2.0%	+3.7%
Government	758,100	+5.7%	+8.3%
<b>TOTAL</b>	<b>3,933,900</b>	<b>+0.8%</b>	<b>-5.7%</b>

# Not surprisingly, after declining prior to crisis, incomes have not increased



# Serious Delinquency

Seriously Delinquent Share of Mortgages

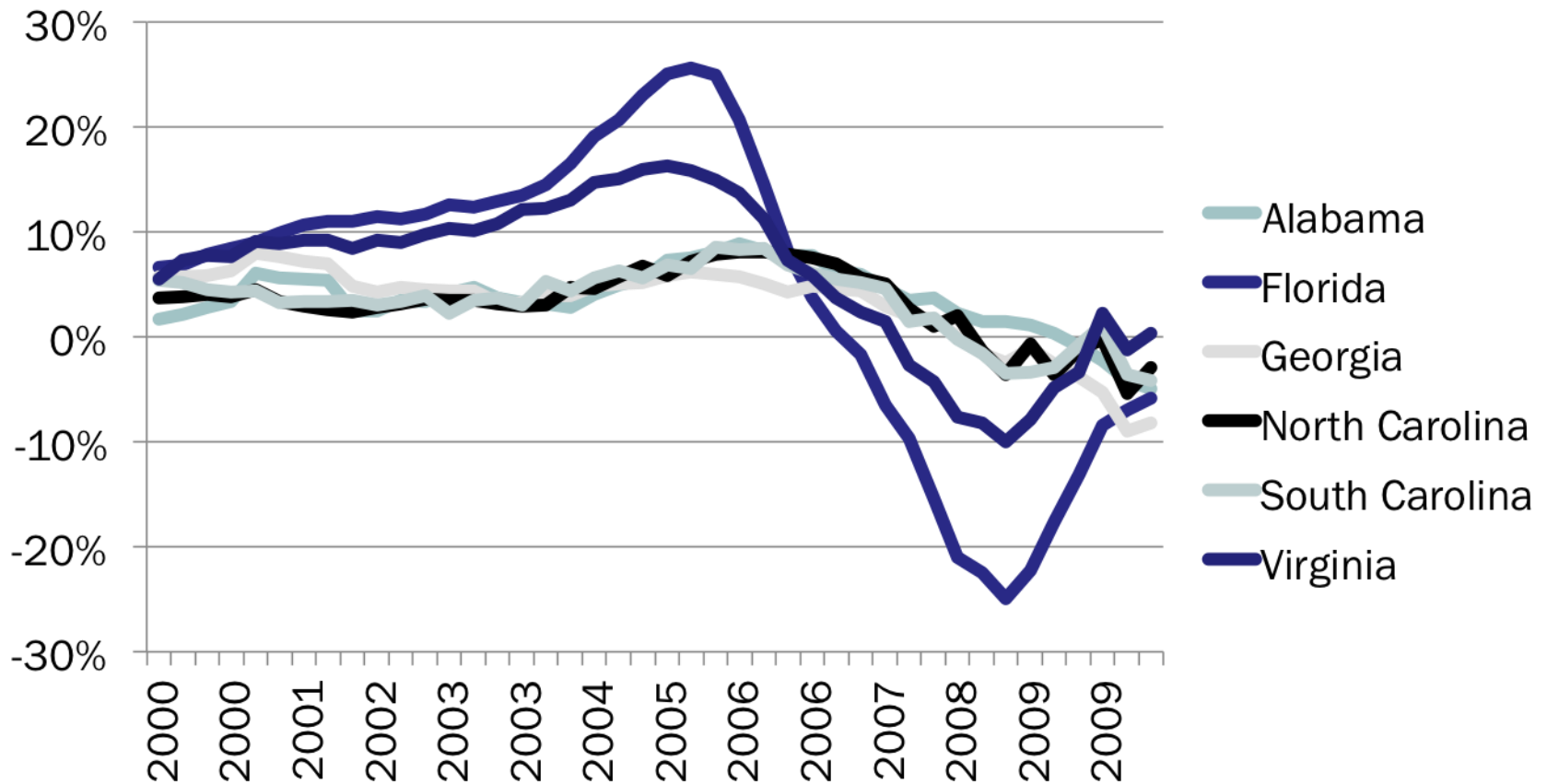


Notes: “Serious Delinquency” defined as 90+ days late or foreclosure inventory. Mortgage Bankers Association, National Delinquency Survey



# House Prices

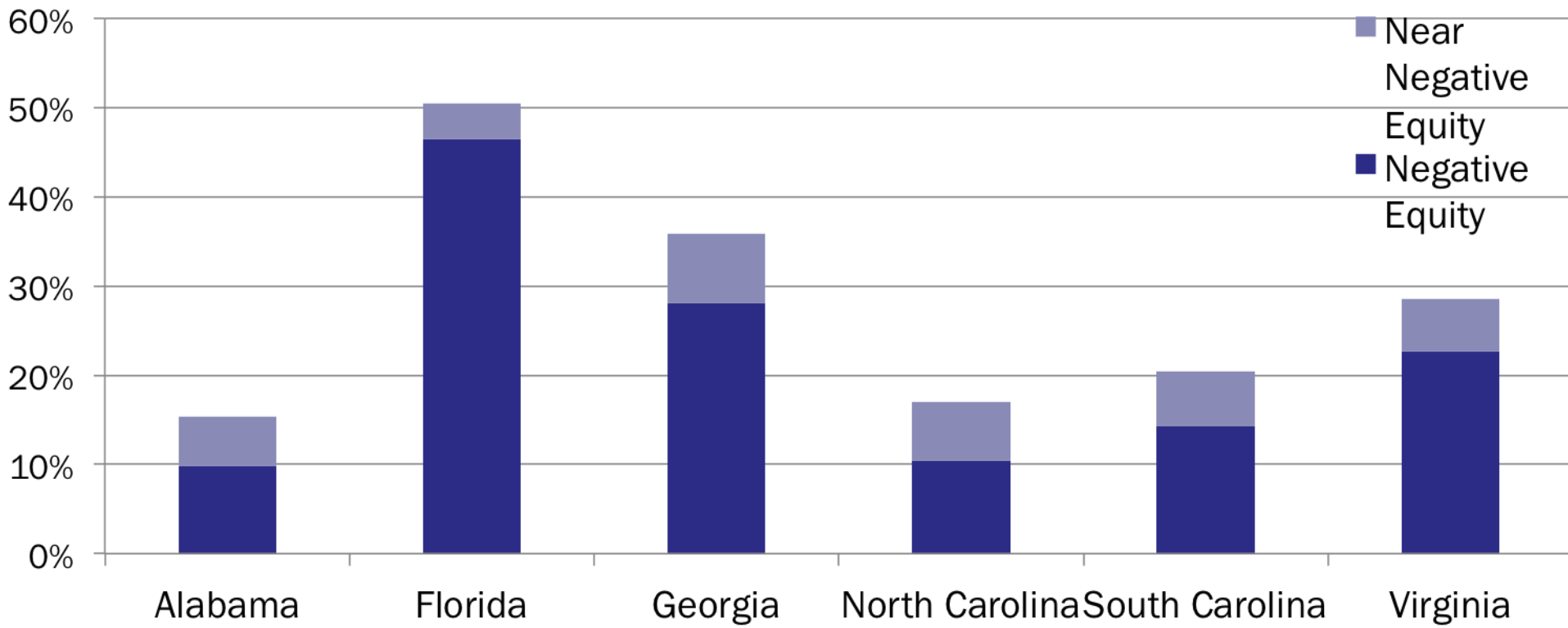
## Year-Over-Year Change in House Price Index



Source: Federal Housing Finance Agency

# Negative Equity

Share of Homeowners with Mortgages



Note: "Near Negative Equity" defined as within 5% of negative equity position

Source: First American CoreLogic, Negative Equity Report Q2 2010



# Hardest Hit Fund

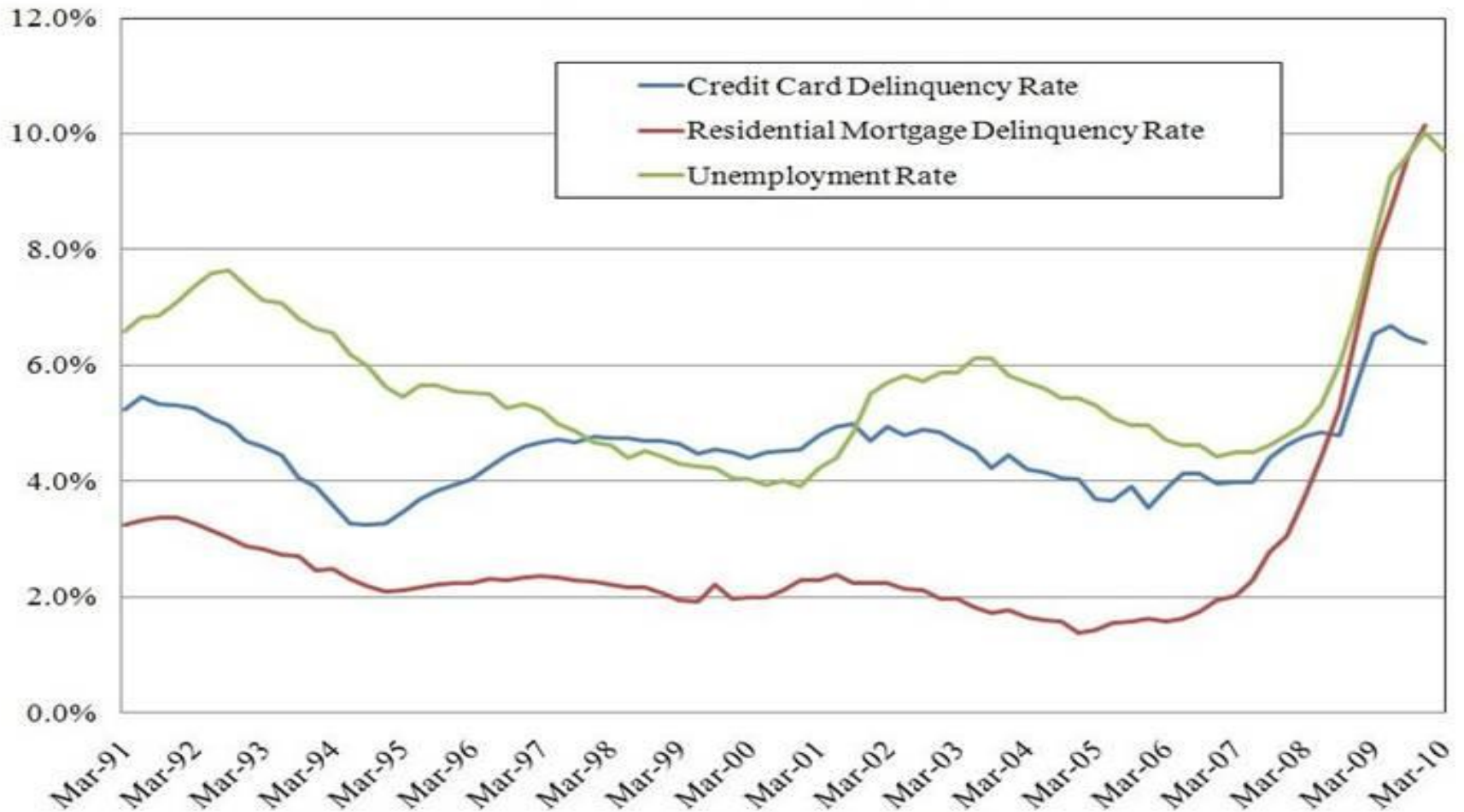
- US Treasury's "Hardest Hit Fund" was authorized under the Emergency Economic Stabilization Act of 2008.
- Provides funding to states (and DC) to help unemployed and low income borrowers stay in their home
- It is available in 18 states and the District of Columbia, which have experienced high unemployment or a steep decline in property values.
- North Carolina was selected because of the large percentage of the population living in counties with high unemployment rates in 2009.

# NC Hardest Hit Fund

- Funds make mortgage payments for unemployed workers while they seek jobs or complete job training in a new field
- Also eligible: those, who through no fault of their own, have gotten behind on their mortgage payments because of job loss, divorce, serious illness or other temporary financial hardship
- Good mortgage payment history prior to the job loss or hardship required.
- Zero-interest loan, up to \$36,000 or 36 months of mortgage-related payments in high unemployment counties, and up to \$24,000 or 24 months in the rest of the state.
- Homeowners will resume making their own mortgage payments at the end of the loan period. If 10 years in place, the loan is forgiven.
- Two smaller programs will be available in 2011 to reduce mortgage payments to an affordable level for homeowners who are working at reduced wages, only in high unemployment counties
- Is the level of county unemployment rate the best indicator to target funds?



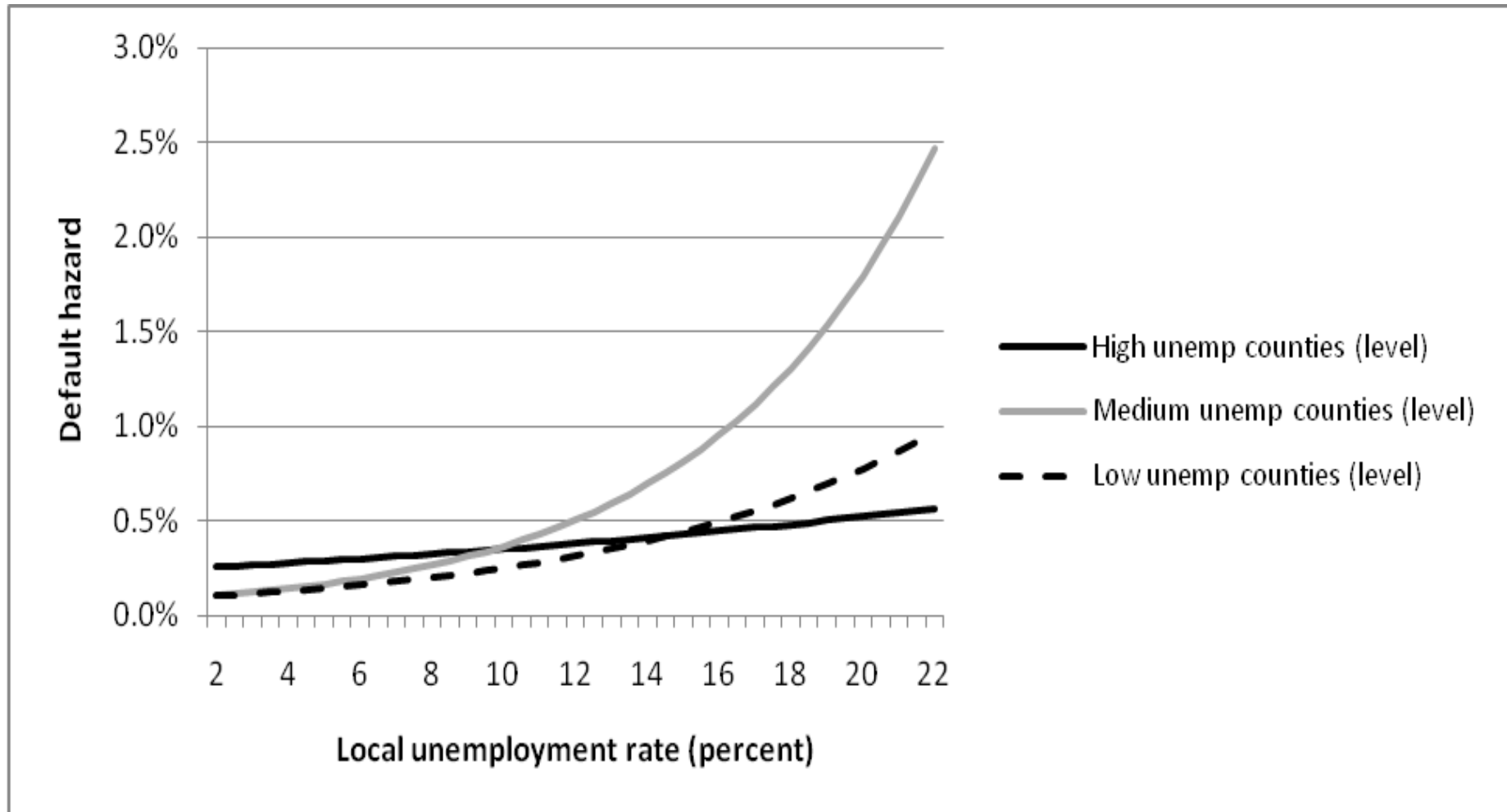
### Delinquencies versus Unemployment



Sources: Federal Reserve, Haver Analytics



# Highest Unemployment Areas Seem to Be Least Responsive to Intervention



# Is There A Better Way to Target the Program?

- As seen, targeting areas based on unemployment rate level seems inefficient
- Would incorporating longer business cycle considerations improve efficiency?

# Using Structural(Trend) Unemployment to Capture Business Cycle Considerations

- We decompose unemployment into its cyclical and trend components
- We rely on two approaches
  - Beveridge-Nelson (BN) Decomposition
  - Hodrick-Prescott (HP) filter
- We use survival analysis to estimate impacts of different components of unemployment on default

# Differences in the Decomposition Approaches

- HP
  - Solves the cyclical and structural components by imposing a smooth trend assumption
- BN
  - Derives the cyclical and permanent components of unemployment from a correct forecast
- Thus BN is more restrictive because it requires a correct forecast

## Just in case you need to know...

- HP

$$\min_{\tau} \left\{ \sum_t c_t^2 + \lambda \sum_t \left[ \tau_t - \tau_{t-1} \right]^2 \right\}$$

- BN

$$\tau_t = y + \left( \sum_1^{\infty} \lambda_i \right) \varepsilon_t + \left( \sum_2^{\infty} \lambda_i \right) \varepsilon_{t-1} + \dots$$



## Estimating Default Risk: Survival Analysis

- We estimate a competing risk, proportional hazard model accounting for heterogeneity
- Model (1) Hazards =  $f(\text{credit score, front-end ratio, equity position, unemployment, etc ..})$ 
  - Run model (1) by county unemployment: high, medium, and low unemployment areas
  - Run model (1) by difference of level and structural (trend) county unemployment (worsening, stable, & improving unemployment)
  - Simulate hazards using model estimates

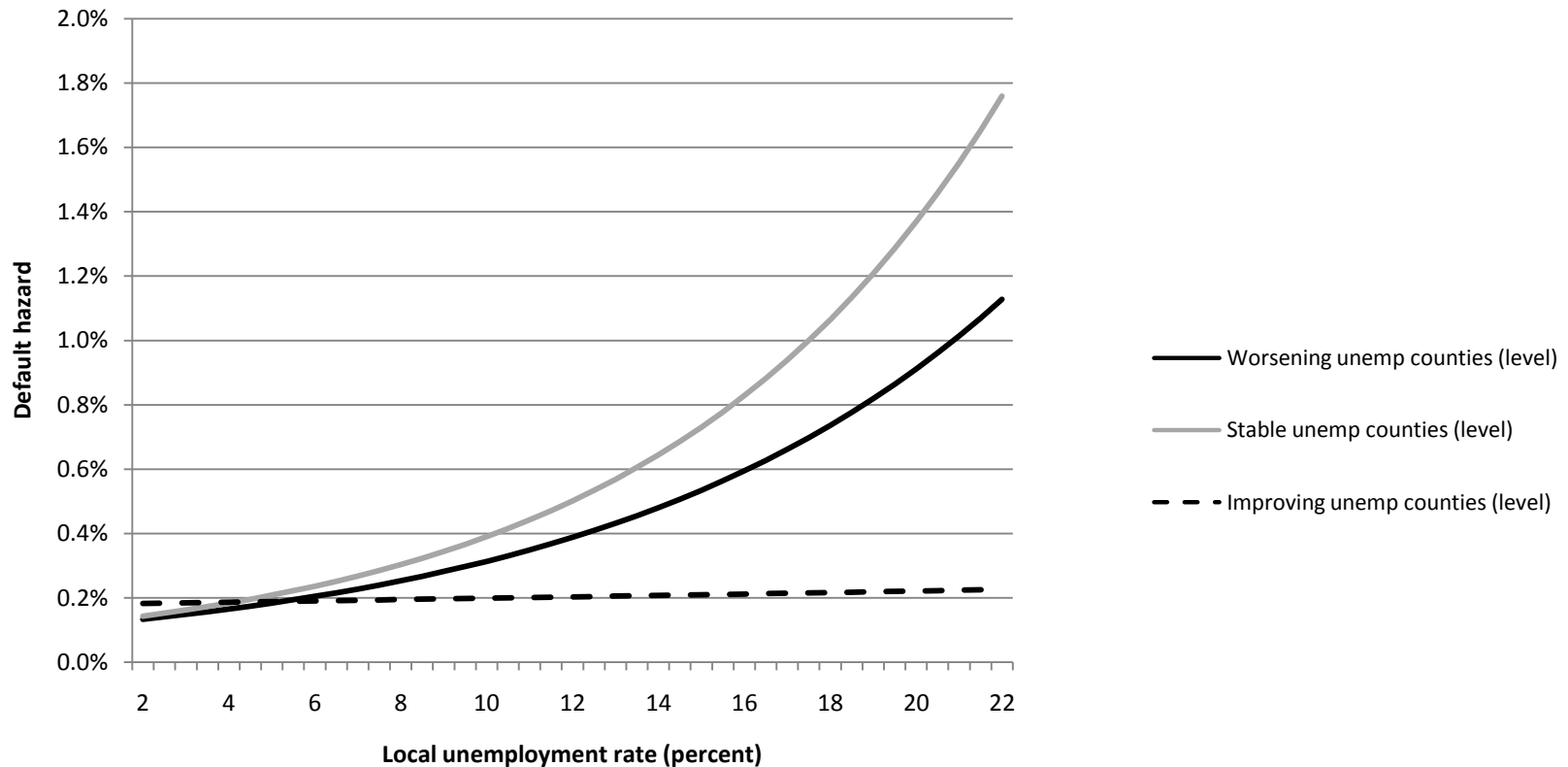
# Data

- About 30,000 CRA loans (1 million observations)
  - CAP
  - 1997-2009
  - 30 year fixed rate
  - Up to 120 months loan life
- Local unemployment rate
  - 1990-2009 data available
  - Trend and cyclical components

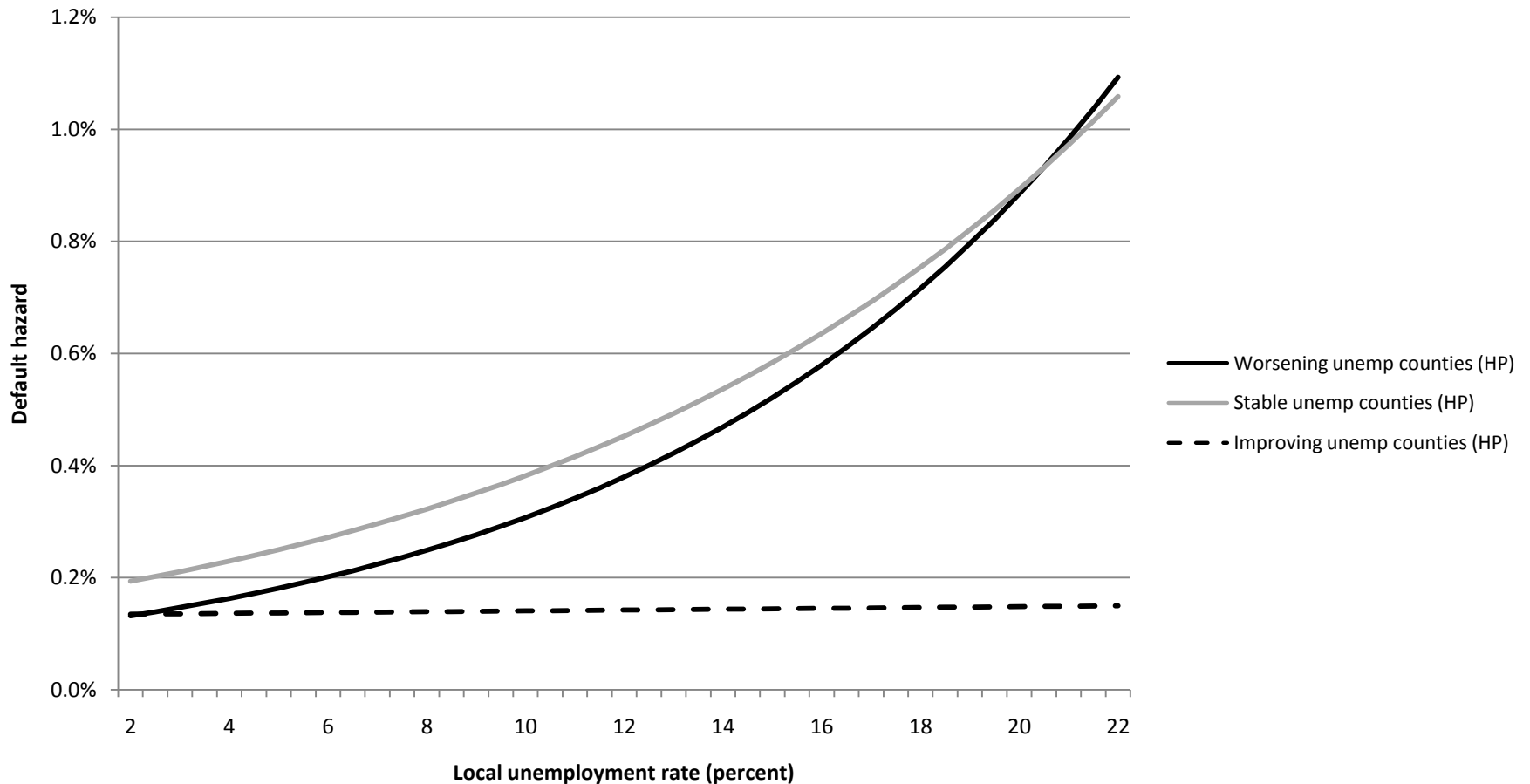
## County Overlap of Level (High), HP(Worsening), and BN (Worsening) Structural Unemployment Classifications

	HP	BN	HP,BN
Level – 180 counties	14 (8%)	11 (6%)	<b>51</b> <b>(28%)</b>

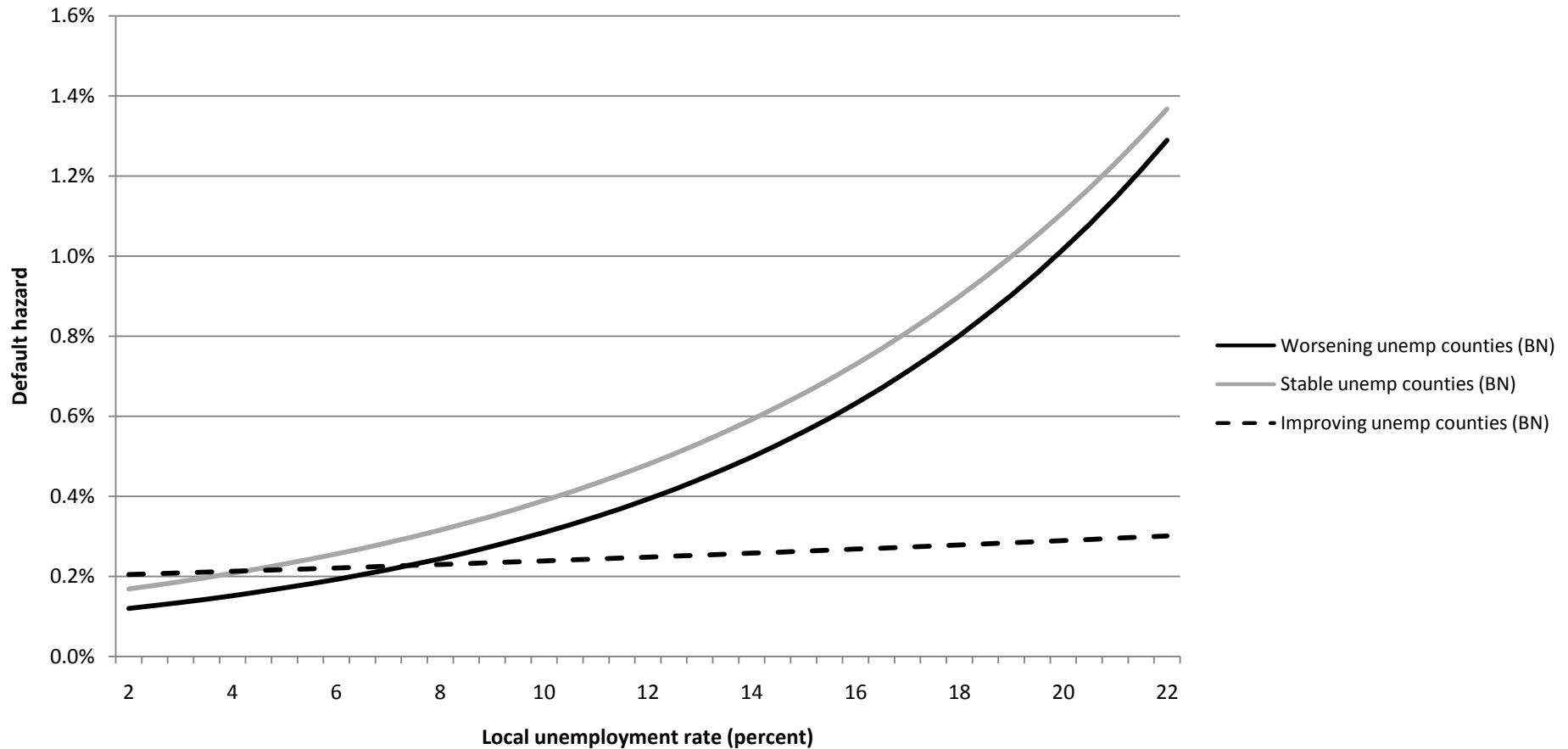
# Default for Areas Grouped by *Level* Difference of Unemployment Rate: Worsening Unemployment Areas Are Not the Most Sensitive to Intervention



# Worsening Counties, Identified by HP Structural Trend Unemployment, Are Most Sensitive



# Worsening BN Structural (Trend) Unemployment Areas Seem Most Sensitive to Intervention





# Implications

- Results are somewhat sensitive to decomposition technique
- In this case, HP seems to provide more consistent estimates
- Results suggests that policy initiatives that target areas unemployment to minimize defaults would be more effective if they were based on trend (structural) rather than level unemployment rate

# For more information...

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