Measuring the Impacts of the National Flood Insurance Program

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Flood Disaster Management

- Flood recovery
  - Insurance program/payout
  - Federally administered
  - Privately financed

- Flood mitigation
  - Dams, flood control
  - Building codes
  - Planning laws

Benefit-Cost Analysis

Analytical Method

- Estimates social costs and benefits

- Monetizes social costs and benefits

- Uses social discounting

Data

- County-level data

- Provided by FEMA

- Includes insurance financial statements

- Grant program information

Theoretical Models

Flood Insurance

- Benefits
  - Insurance payments
  - Administrative fees
  - Tax benefits
  - Willingness-to-pay

- Costs
  - Insurance premiums
  - Environmental impacts

Flood Mitigation

- Benefits transfer
  - Uses estimates of other mitigation projects
  - Scales-up estimates to national level
  - Assumes estimate is broadly applicable across time
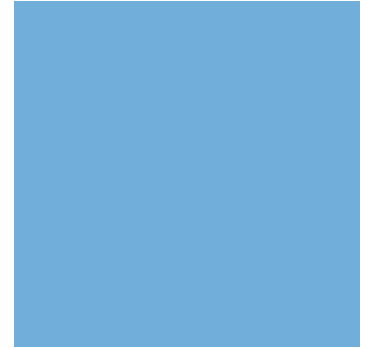
Valuing Flood Insurance
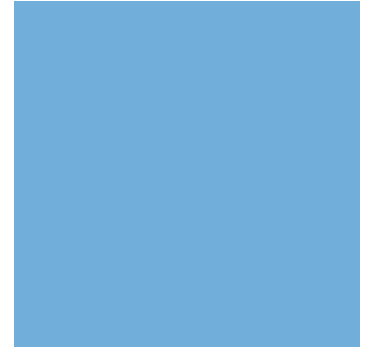
$$\Delta S = \Delta C + \Delta P + \Delta G + \Delta E$$

$$\Downarrow$$

$$\Delta S = \kappa(e + m) + \phi\varpi\pi$$

Valuing Flood Mitigation
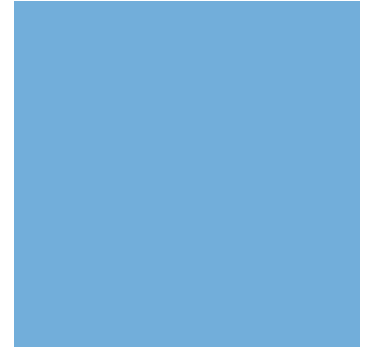
BCR = 5.0 at 2% SDR

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≅17.4% annualized

$16.7 Billion

- Covers 1996-2009

- Represents net benefits from nationwide data

- Preliminary, baseline figure

- Does not consider social impact factors

- Should not be used for policymaking

Future Directions

- Sensitivity analysis to find bounds of value

- Social weighting by impact quality

- Break-even analysis

- Incorporation of different estimators
  - Willingness-to-pay for flood insurance
  - Benefit-cost ratios for flood mitigation projects
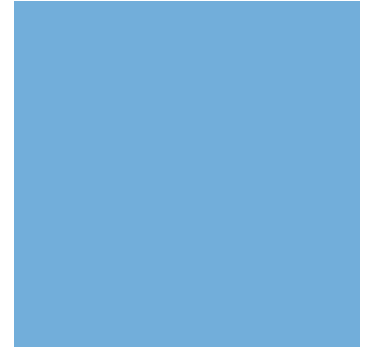
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