

National Flood Insurance Program - the need for change

National Association of REALTORS® Insurance Committee –
San Francisco, CA

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Overview

- Milliman introduction
- Limitations of current NFIP rates
- Questions

Milliman introduction

Prior work for National Association of REALTORS®

- Actuarial insurance pricing and NFIP pricing
- Expected losses and relative adequacy of NFIP premiums
- Catastrophe risk subsidization
- Private flood insurance regulations

Other flood work

- Private flood rating plans for insurers and reinsurers
- Catastrophe model evaluation
- Market feasibility studies
- Research on state flood regulation
- White papers on private flood



Limitations of current NFIP rates

Risk Rating 1.0 is 1st generation technology



NFIP pricing basics

Types of Flooding

- Storm Surge
- Fluvial
- Pluvial*
- Tsunami*

*Not included in FIRMs

Flood Zones

- V / VE: Zone with potential for storm surge
- A / AE: Zone within the 100 year flood plain
- X: Zone outside the 100 year flood plain

NFIP Rates Depend on...

- Flood zone
- Base flood elevation (BFE)
- Elevation of first floor

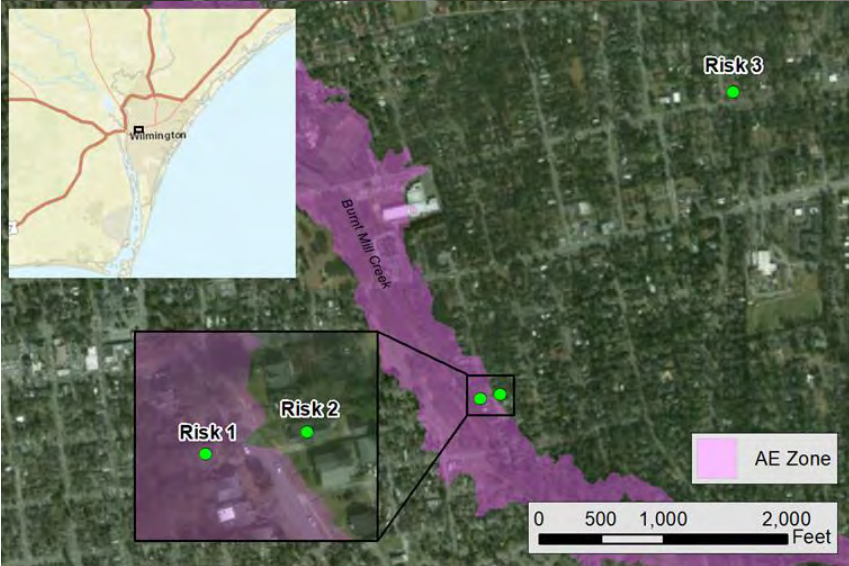
- Base flood elevation (BFE) is the elevation where there is a 1% chance of flooding each year.
- A and V zones make up the Special Flood Hazard Area (SFHA)
- Mandatory purchase requirement in SFHA for federally-backed mortgages

Limitations of current NFIP rates

- Problem 1: There is an inconsistent match of risk to rate
- Problem 2: Current rates are based on outdated methods
- Problem 3: Current rates are confusing and opaque

Problem 1: Inconsistent match of risk to rate

Neighbors with very different premiums



- Hypothetical, identical houses*
 - Risk 1 near a creek
 - Risk 2 across the street from Risk 1
 - Risk 3 far away from the creek
- Current NFIP premiums:
 - Risk 1: \$6,042
 - Risk 2: \$400
 - Risk 3: \$400

*One-story, frame house worth \$200k, 1 foot above ground, no basement, built 1990

Problem 1: Inconsistent match of risk to rate

Mispriced and underwater



Beaumont, TX, after Harvey



Leland, NC, after Florence



Nichols, SC, after Matthew

- All homes are in X zone
- Estimated percentage uninsured:
 - Harvey 70%
 - Florence 77%
 - Matthew 60%

Problem 1: Inconsistent match of risk to rate

Repetitive loss properties



200 Herbert Street Goldsboro, North Carolina

PROPERTY FLOOD PROFILE	Hurricane Matthew	Hurricane Florence
Flood Elevation (NAVD88 ft)	69.5 ft	71.6 ft
1% Base Flood Elevation	25	90
Building Type	Single-Family	Single-Family
Flood Elevation in Structure	4.3 ft	6.6 ft
Estimated Cost to Repair Structure **	\$44,309	\$55,252
Estimated Cost for Content **	\$22,155	\$27,626
Estimated Total Recovery Cost	\$66,464	\$82,878
Estimated Annual NFIP Insurance Rate*	\$1,530 - \$2,290	
Gauge Location	Neuse River at Goldsboro	

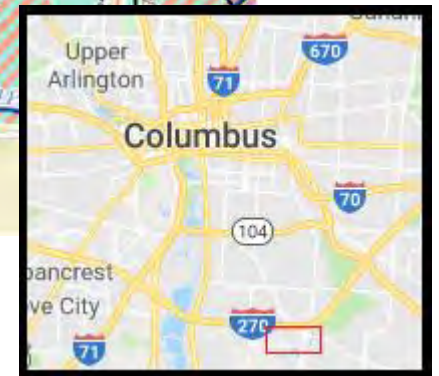
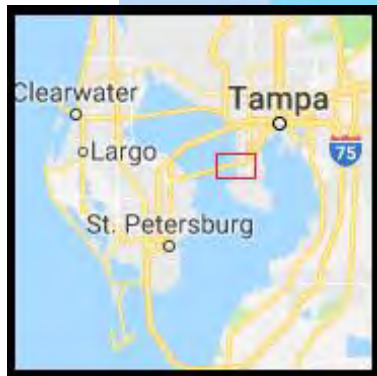
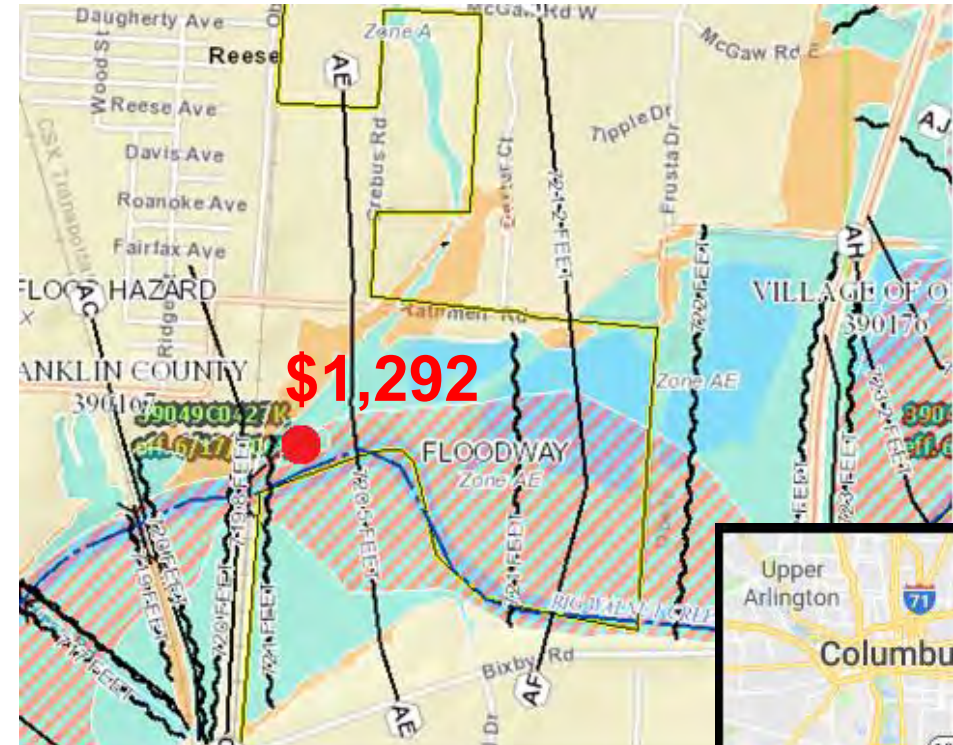
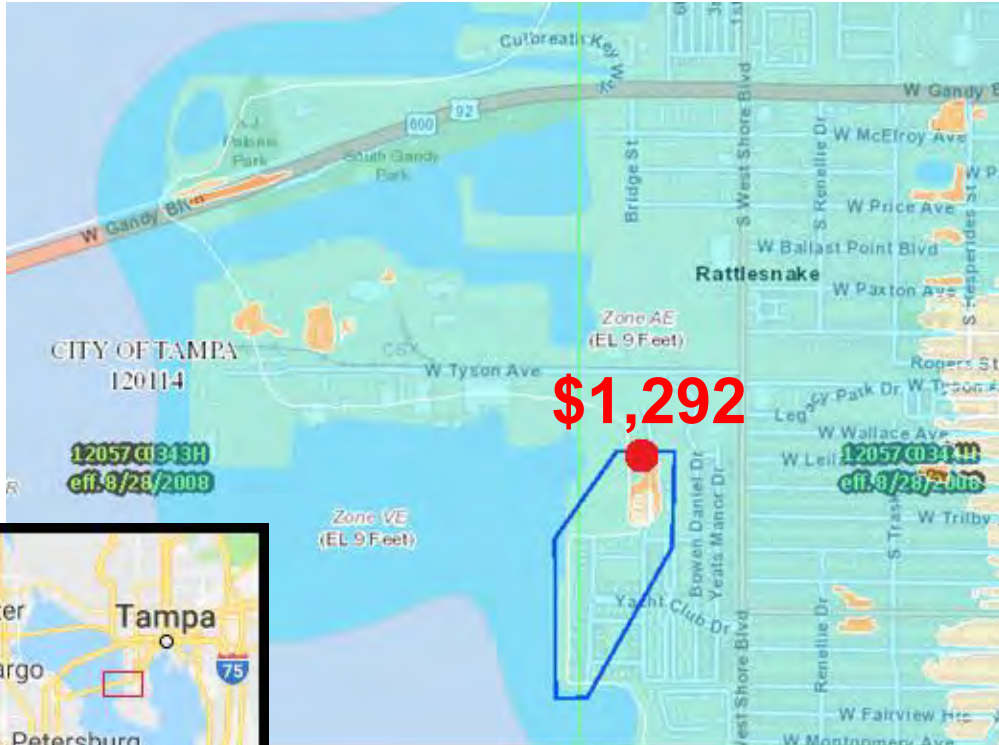
* The estimated NFIP Insurance premium utilized the legacy NFIP methodology and North Carolina provided structure-specific information to generate the rate.

** Rates were calculated by North Carolina Risk Management utilizing ACOE Wilmington District damage curves and RS Means.

Source: John Dorman, Assistant State Emergency Management Director for Risk Management, North Carolina

Problem 1: Inconsistent Match of Risk to Rate

Interstate subsidization

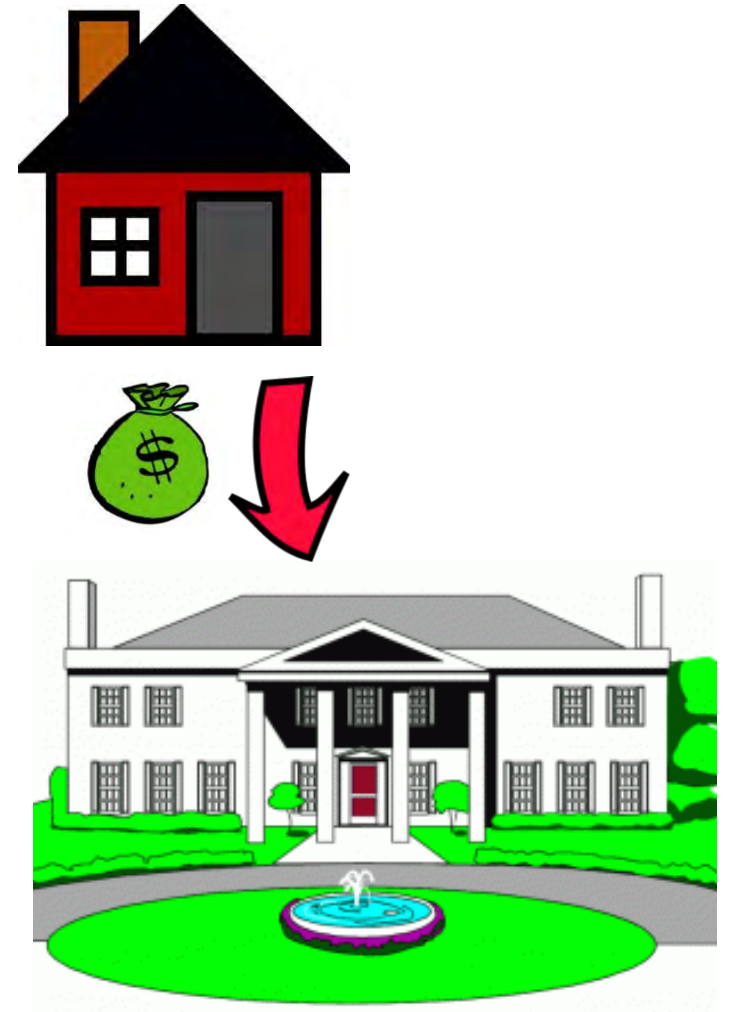


- Homes in same zones are subject to same rates across states
- AE zones in coastal Tampa and Columbus, OH
- Identical, hypothetical houses at these locations
 - One-story, frame house worth \$250k
 - First floor 1 foot above base flood elevation
 - No basement, built 1990

Problem 1: Inconsistent match of risk to rate

Insurance to value effects

- Dwelling replacement cost is not considered in premium calculation
- Two houses with the same amount of coverage can pay the same premium, even with very different home values
- High value homes are subsidized by low value homes



Problem 1: Inconsistent match of risk to rate

Insurance to value effects



Example of Insurance to Value Effects

	House 1	House 2
Replacement Cost	\$250,000	\$1 Million
NFIP Building Limit	\$250,000	\$250,000
NFIP Premium	\$474	\$474
20% Flood Damage	\$50,000	\$200,000
Damage / Premium	105	422

Example homes both in X zone, no basement

Problem 1: Inconsistent match of risk to rate

Large premiums



- \$300k house, \$250k policy
- VE Zone
- -8 feet below BFE
- 2013 NFIP quote: \$87,574
- Total loss every 3-4 years?



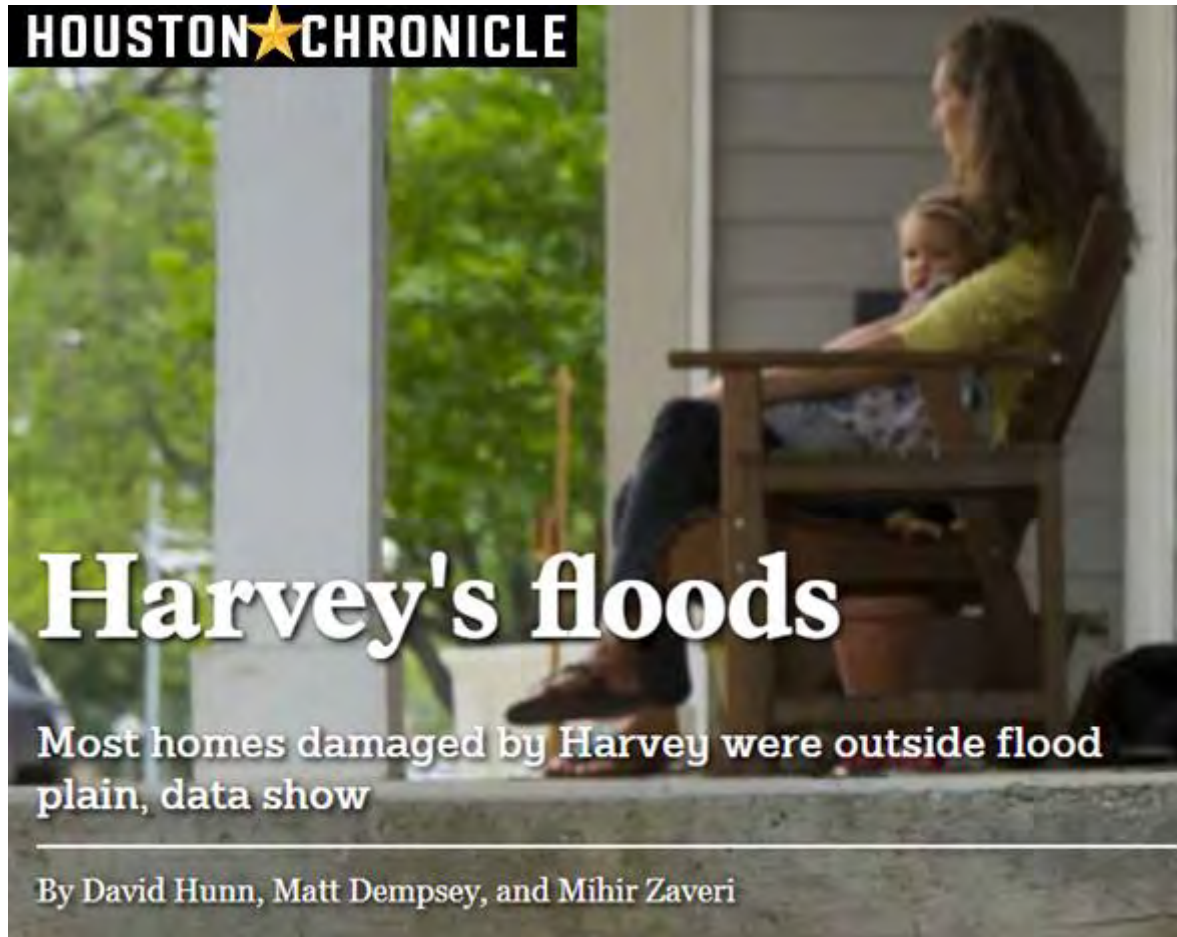
Problem 1: Inconsistent match of risk to rate

Number of stories

- Multi-story houses are significantly less risky
 - Upper floors less exposed to structural damage
 - Personal property kept upstairs less exposed
- Number of stories is not considered in premium
- All other things equal, one- and two-story houses pay same premium

Problem 2: Current rates are based on outdated methods

Flood zones ignore pluvial (flash) flood risk



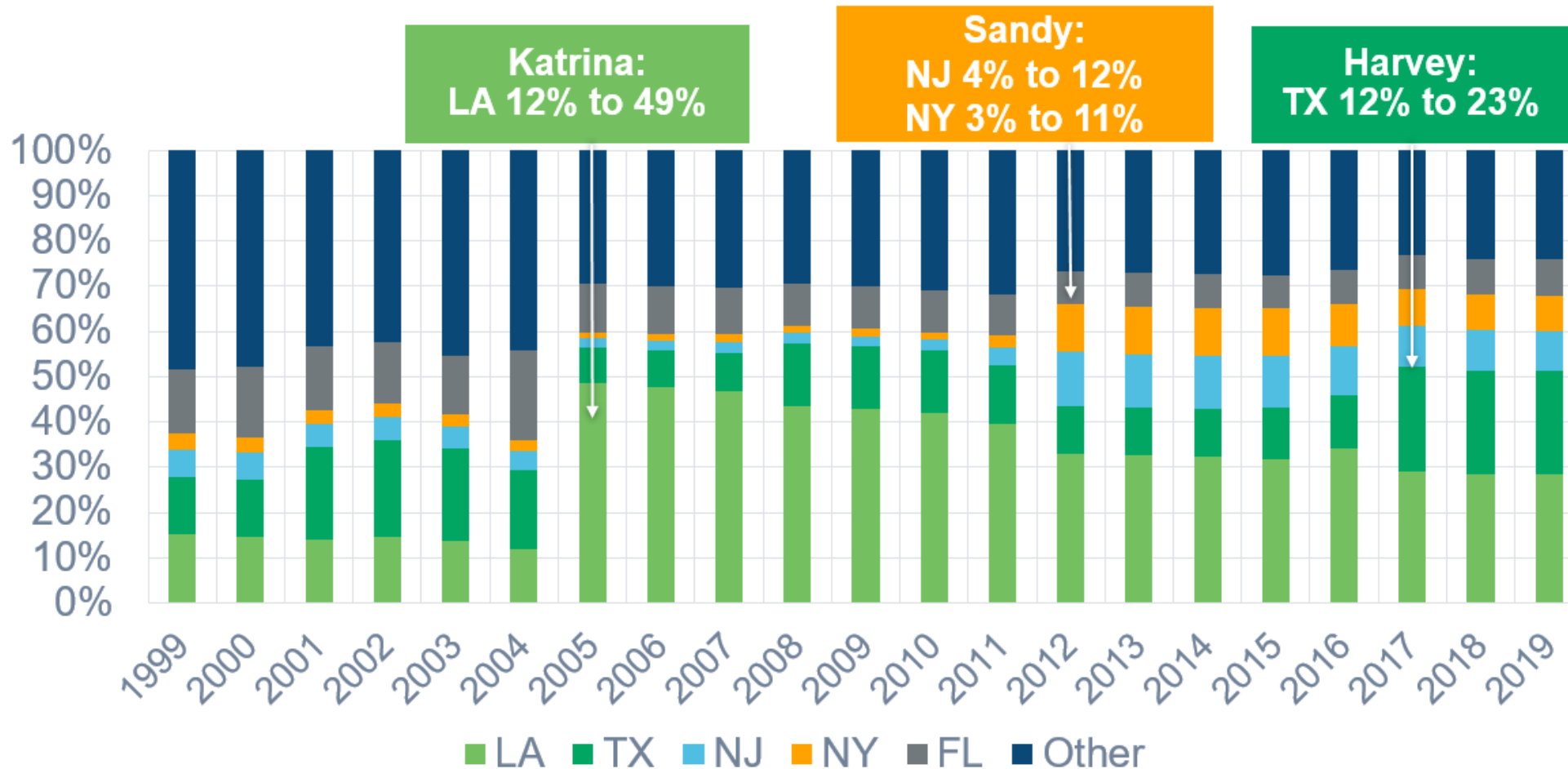
“Hurricane Harvey damaged more than 204,000 homes and apartment buildings in Harris County, almost three-quarters of them outside the federally regulated 100-year flood plain, leaving tens of thousands of homeowners uninsured and unprepared.”

Most urban flooding is pluvial and not considered in Risk Rating 1.0

Problem 2: Current rates are based on outdated methods

Historical experience is volatile and reflects only what has happened -- not what could happen

Percentage by state of cumulative NFIP paid loss since 1980



Source: OpenFEMA data June 2019

Problem 2: Current rates are based on outdated methods

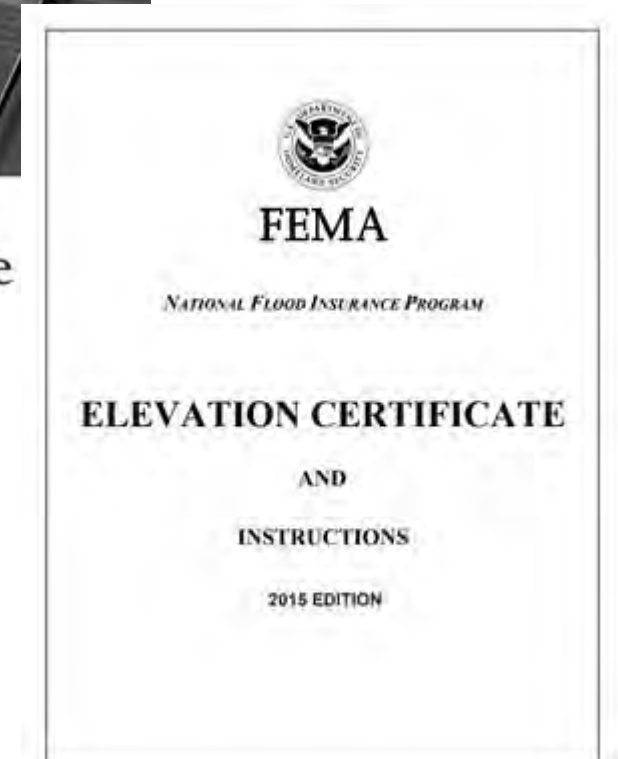
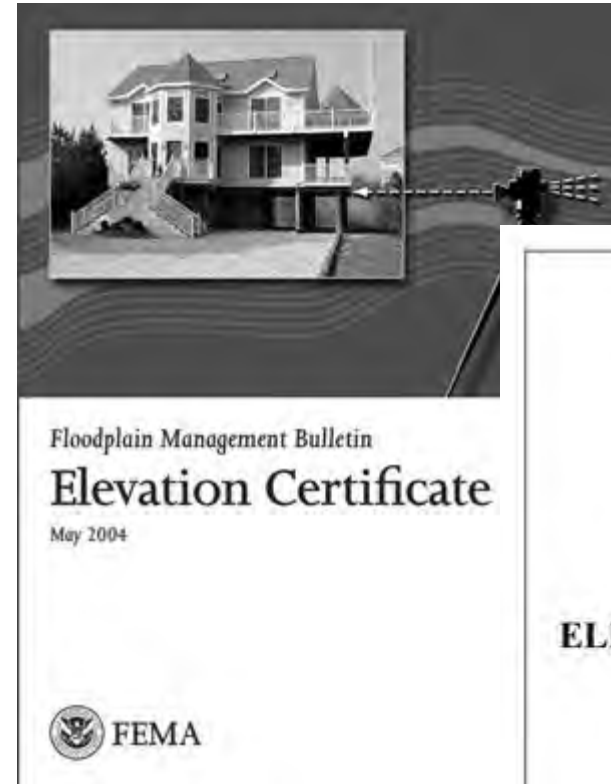
Other flood zone limitations

- Flood zones based on greater depth of a 100 year flood from either storm surge or riverine flooding at a given point
- Combined effects of storm surge and riverine flooding not considered
- Current mapping only produces 100 year flood elevations, but floods come in all sizes
- Flood depths at other return periods not considered
- Correlation between flooding at nearby locations not considered
- Concentration risk that contributes to volatility and reinsurance cost not considered

Problem 3: Confusing to customers

Elevation certificate requirements

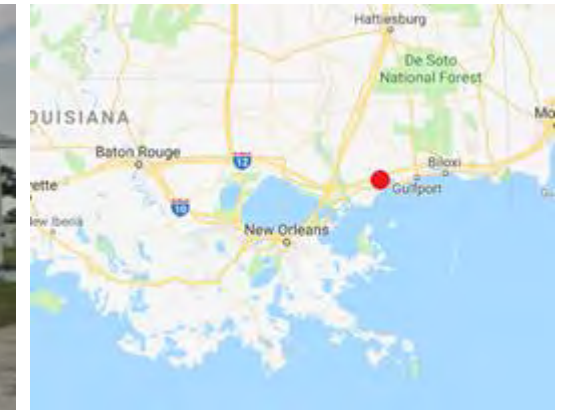
- Required for some homes, but not all
- Depends on several factors: flood zone, year of construction, year of initial map
- May result in lower premium even when not mandatory
- Process / decision / cost that most homeowners don't fully understand



Problem 3: Confusing to customers

Grandfathering, remapping effects

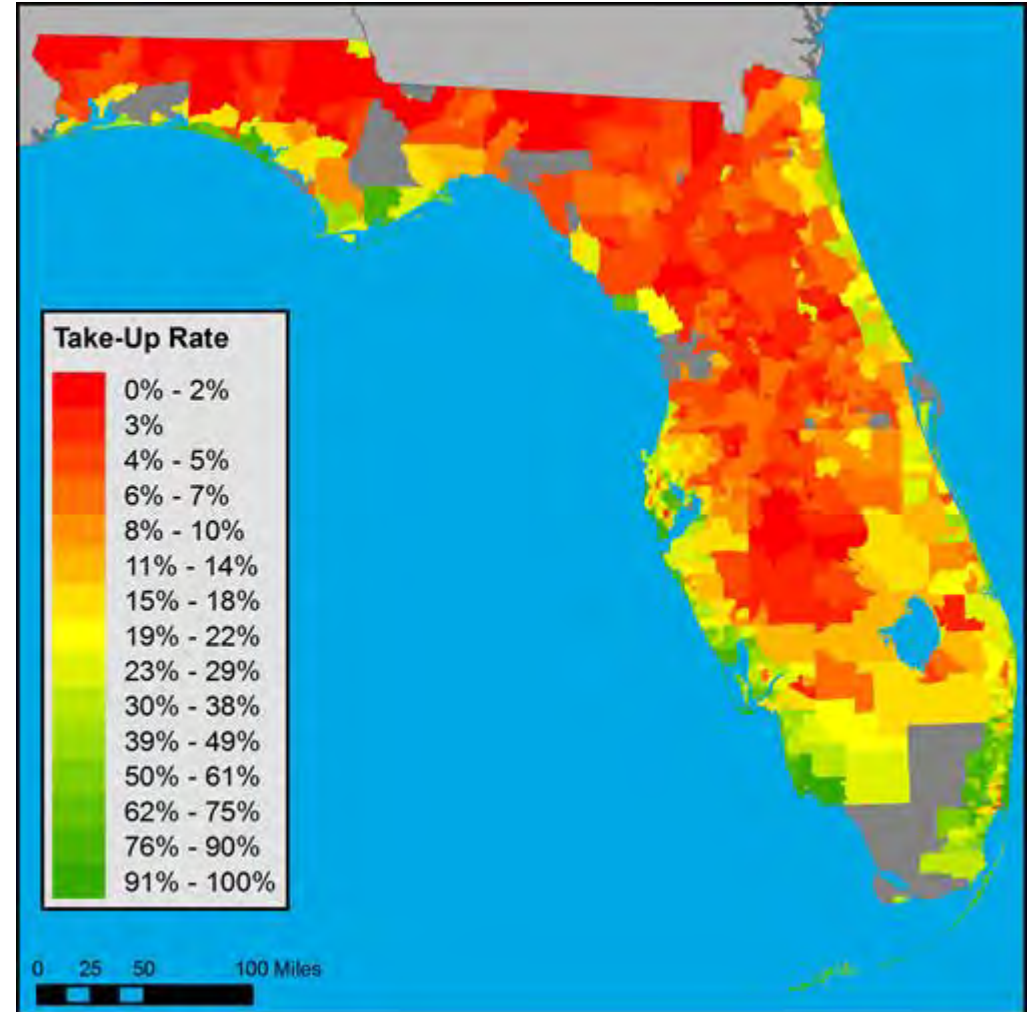
- Home built in 2006 in AE zone, at the time elevated 4 feet above BFE
- Area was remapped in 2009 to VE zone
- Home is now 8 feet below BFE
- Grandfathered rates \$655
- Potential buyer did not make offer due to premium uncertainty



Problem 3: Confusing to customers

Take-up rate effects

- Mandatory purchase does not apply in X zones (typically inland, not near rivers)
- Lack of rate differentiation in X zones means higher risk insureds tend to purchase coverage
- Lower risk insureds tend not to purchase coverage, lowering take-up rate



Source: NFIP and US Census

Summary of issues for Risk Rating 1.0

Risk Rating 1.0

Rates for only 1/3 of the country reflect geographical differences

Low price homes subsidize high value homes

Rates based on experience of what has happened

Total risk premium & expected loss for program unknown; premiums reflect subsidization & grandfathering

Max rate is not explicitly capped and comes from rating method

Total risk premium missing pluvial & tsunami risk

Hard cliffs at flood zone boundaries

Rates are made by zone for all states

Annual premium changes capped for existing policies

Questions?



Thank you

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