Who Lives in Floodplains?
Research & Strategies to Keep Everyone Safe

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Photo courtesy of OWH
SOCIAL VULNERABILITY & FLOOD RISK
Social Vulnerability

- Goal for all of us is to reduce loss of life and property as well as reduce disaster relief costs
- Further goal is to make sure that, in a disaster, no one falls farther or more often than anyone else
- We need to understand the characteristics of those who live in harm’s way
What is a “flood resilience?”

![Diagram showing the concept of flood resilience over time with value and time axes.]
Indicators of Social Vulnerability

- Demographic characteristics
  - Age, race/ethnicity, family structure, gender, language proficiency

- Socioeconomic status
  - Income, wealth, education, occupation

- Land tenure
  - Owners, renters

- Health
  - Access, stress, disease, mortality, sanitation

- Neighborhood characteristics
  - Transportation, population density, housing, resource dependency

- Risk perception
  - Awareness, prior experience, knowledge of flood protection, risk denial/acceptance, trust in officials
Flood Hazards

- Cause long-term damage to home/property
- Pose health risks
- Lasts for many days
- Difficult bureaucracy of flood insurance
- Bias to ignore risk
- Complicated hazard to understand
- Misconceptions of insurance coverage vs disaster relief
NEBRASKA FLOODPLAINS
Nebraska DNR Project

- We wanted to try to answer the question “Who lives in floodplains?”
- For example, if there is a larger than expected Hispanic/Latino population, then we can help communities do better outreach
- Knowing who lives there can help us plan better after flood disasters
- Help us identify gaps in flood risk reduction or flood risk perception
Process

- Used Census 2010 data for communities across the state
- Selected 60 communities to analyze individually
- Used the following Census data indicators:
  - Housing:
    - Occupancy status
    - Tenure
  - Household structure:
    - Household size
    - Household type
  - Demographics:
    - Race/ethnicity
    - Gender
    - Age
Data Constraints

- Census organized into geographical units:
  - State
  - County
  - Tract
  - Block group
  - Block

- Data is different in each unit – block is smallest unit, but only decadal data available

- Much more data at block group level, but difficult to correspond with floodplain boundaries
Communities Analyzed

- 51 chosen based on flood attributes
  - Communities with levees (on flood maps) analyzed separately
- Wanted communities that had some area in the floodplain and some not in the floodplain to compare
- Communities either entirely in or out of the floodplain were captured in state-wide totals
  - For example, DeWitt was not analyzed individually
- Each indicator was compared between “floodplain populations” and “non-floodplain populations”
- Wanted to examine cities/villages as they have the most concentrated flood risk
Results for the 51 communities

- **Housing:**
  - Occupancy status
  - Tenure

- **Household structure:**
  - Household size
  - Household type

- **Demographics:**
  - Race/ethnicity
  - Gender
  - Age
Housing – Occupancy Status

Floodplain

- %Occupied: 91.27%
- %Vacant: 8.73%

Not Floodplain

- %Occupied: 93.44%
- %Vacant: 6.56%
Housing - Tenure

<table>
<thead>
<tr>
<th>Category</th>
<th>Floodplain</th>
<th>Not Floodplain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Owned w/ mortgage</td>
<td>29.80%</td>
<td>37.71%</td>
</tr>
<tr>
<td>Percent Owned free and clear</td>
<td>18.76%</td>
<td>18.88%</td>
</tr>
<tr>
<td>Percent Rented</td>
<td>50.53%</td>
<td>43.41%</td>
</tr>
</tbody>
</table>

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Household Structure - Size

Floodplain

- % 1-person household: 14.12%
- % 2-person household: 34.74%
- % 3-person household: 31.47%
- % 4-person household: 5.27%
- % 5-person household: 2.17%
- % 6-person household: 1.69%
- % 7-or-more-person household: 10.60%

Not Floodplain

- % 1-person household: 14.51%
- % 2-person household: 33.82%
- % 3-person household: 14.51%
- % 4-person household: 11.93%
- % 5-person household: 5.72%
- % 6-person household: 2.14%
- % 7-or-more-person household: 1.22%
Household Structure - Type

Floodplain

- 45.05% Family Households
- 54.97% Nonfamily households

- 34.72% hh’er living alone
- 11.11% female hh’er, no husband present

Not Floodplain

- 38.70% Family Households
- 61.30% Nonfamily households

- 30.65% hh’er living alone
- 10.28% female hh’er, no husband present
Demographics – Race/Ethnicity

Floodplain
- % White: 82.40%
- % Black/African American: 1.46%
- % American Indian and Alaska Native: 2.97%
- % Asian: 0.10%
- % Native Hawaiian and Other Pacific Islander: 1.13%
- % Some other Race: 1.46%
- % Two or More Races: 0.10%

Not Floodplain
- % White: 87.63%
- % Black/African American: 2.38%
- % American Indian and Alaska Native: 2.42%
- % Asian: 0.08%
- % Native Hawaiian and Other Pacific Islander: 4.13%
- % Some other Race: 2.38%
- % Two or More Races: 0.08%
Demographics – Hispanic/Latino

Floodplain:
- 82.30% Not Hispanic/Latino
- 17.70% Hispanic/Latino

Not Floodplain:
- 90.56% Not Hispanic/Latino
- 9.44% Hispanic/Latino
Demographics - Sex

Floodplain

- % Male: 49.01%
- % Female: 50.97%

Not Floodplain

- % Male: 50.79%
- % Female: 49.29%
Higher vacancy rate in floodplain

Higher
Not higher
Higher percentage of properties rented

- Higher
- Not higher

Nebraska Department of Natural Resources
Higher percentage of Hispanic/Latino population
Key Results from Cities Analyzed

- Higher vacancy rate in floodplain
- Much higher percentage of properties rented in floodplain
- Higher percentage of non-family households and of those living alone in floodplain
- Slightly higher percentage of family households consisting of female householder with no husband present in floodplain
- More diverse population in floodplain
- Much higher percentage Hispanic/Latino in floodplain
Lincoln Results

Significant factors:

- 16,000 people live in floodplains
- 68% rent in floodplains, 40% in community
- Double the percentage of African American and American Indian/Alaska Native in floodplain
- 12% Hispanic/Latino in floodplain, 6% in community
- 55% nonfamily households in floodplain, 40% in community
Renters in Floodplains

- Renters insurance does not cover flood damage
- Renters very unlikely to know about flood risk
- More likely to be lower income, minority, more vulnerable to impacts from flooding

- Nearly 20,000 renters live in floodplains in the communities analyzed
- Data from FEMA suggests fewer than 40 contents-only coverage purchased in Nebraska
Conclusions

- In targeted areas/communities, we have a population at risk from flooding that is likely to be more vulnerable to flooding impacts than the overall population.
- Communities need to play a larger role in helping their citizens understand the risk from flooding.
- Our state and communities need to encourage renters to protect their property/contents.
- We can play a bigger role in helping Hispanic/Latino communities better understand flood risk, floodplain regulations, and flood insurance.
Conclusions - Housing

- Vacancy rate in floodplains is significantly higher than not-floodplain areas
  - Not surprising given the mandatory flood insurance requirement and the rising cost of flood insurance
  - Shows need for property-specific risk reduction measures – elevation, acquisition, floodproofing, etc. to reduce risk and reduce costs of flood insurance
  - Flood events will only spur higher vacancy rates

- Higher percentage of renters in floodplains
  - Renters less likely to purchase flood insurance for contents or know about flood risk
  - May be lower socio-economic status and with less access to resources in a post-flood context
  - Often lack information about financial aid in recovery
  - After flood, temporary shelter may be unaffordable or unavailable
Conclusions - Housing

- Slightly higher percentage of properties owned free & clear in floodplains statewide
  - Homeowners are less likely to know about flood risk and are less likely to be covered by flood insurance
  - Sandpit lakes may have higher percentages of properties owned free & clear with properties elevated barely above the 1% annual chance flood levels – still at risk from flooding
Conclusions – Household Structure

- Higher percentage of 1-person households in floodplain
  - These households may have less access to financial resources after a flood
  - With only one householder, flood recovery may conflict with job responsibilities

- In targeted communities, slightly higher percentage of households with 7 or more people in floodplain
  - Large number of dependents may lead to financial vulnerability after a flood
  - Often have limited finances to outsource care of dependents/family members
Conclusions – Household Structure

- Higher percentage of nonfamily households in floodplains
  - Consistent with indication of higher percentage of 1-person households, with householder living alone
  - Similar potential vulnerabilities

- In targeted communities, higher percentage of family households where female householder is present with no husband present
  - Likely more limited financial resources for post-flood situation
  - Job responsibilities likely conflict with individual flood recovery
  - Resilience to flooding affected
Conclusions - Demographics

- In targeted communities, higher percentage of minorities, higher percentage of Hispanic/Latino population in floodplain areas
  - Language/cultural barrier may pose challenges after flood event
  - May correspond with lower socio-economic levels
- No significant difference in gender between floodplain areas versus not-floodplain areas
What can we do to keep everyone safe?

- Better outreach:
  - Flood risk is real
  - Anyone can get covered from flood damage – renters, homeowners without mortgage, everyone
  - Flood insurance is the only way to be covered from flooding
  - Targeted populations outreach – Spanish-speaking populations in key communities

- More flood risk reduction efforts
  - High vacancy rate indicates need for risk reduction efforts – home elevation, acquisition, planning, etc.
What can we do to keep everyone safe?

- Establish relationship between planners + emergency managers + floodplain administrators
- Key to integrating public safety into planning mechanisms
- Including social vulnerability in comprehensive plans and hazard mitigation plans
- Focus on neighborhoods and specific development issues