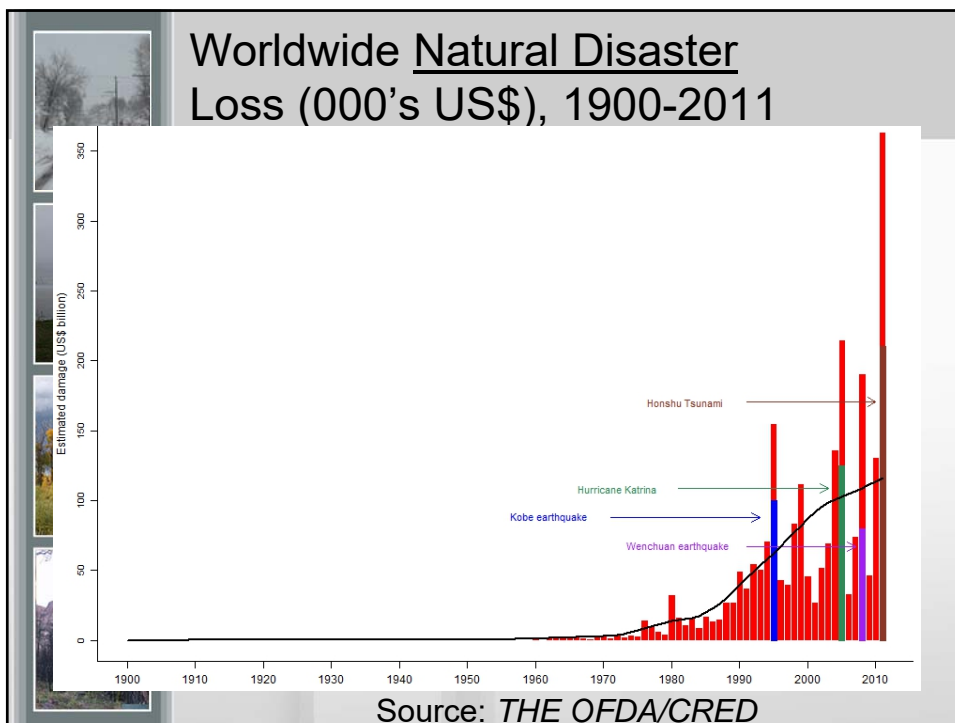
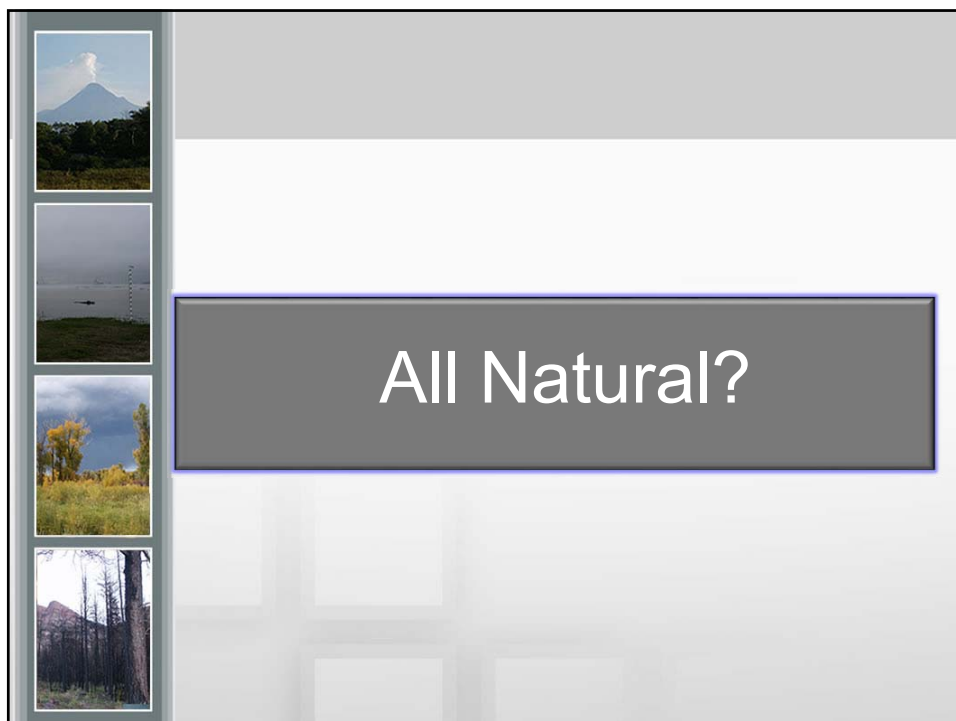
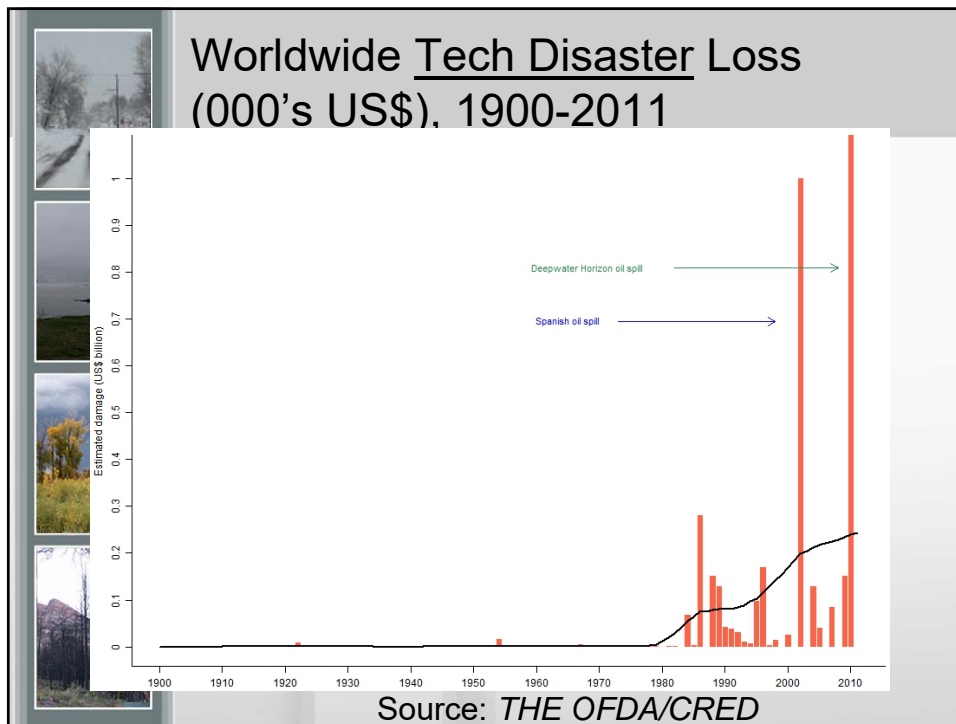



## Outline

1. Setting the Context
  - a) Importance
  - b) Relevance
  - c) Equity and Social Justice
2. Fundamental Concepts
  - a) Social Vulnerability
  - b) Resilience
3. Two Case Studies
  - a) Hospital Preparedness for Vulnerable Populations
  - b) 2013 floods








## Differential Impacts

- 2004 Indian Ocean Tsunami, December 26
  - Killing more than 220,000
  - 1.6 million homeless
  - As many as 4 times more women killed than men (Oxfam, 2005)
- Pakistan Earthquake, Oct 8, 2005
  - 8:50am local time
  - Estimated 86,000 died & 69,000 injured
  - School in session & 90% of schools affected in region
  - Estimated 17,000 children killed (according to UNICEF chief)



## Differential Impacts

- January 12, 2010 Haiti Earthquake
  - Magnitude Richter Scale 7.0
  - Killing more than 222,570
  - 3,700,000 affected people
  - Damage: \$8-13 Billion or 120% of the nation's gross domestic product
- February 27, 2012 Chile Earthquake
  - Magnitude Richter Scale 8.8
  - 562 deaths
  - 2,671,556 affected people
  - \$30 Billion or 18% of the nation's gross domestic product.

# Monitoring and Prediction

YouTube hurricane sandy impacts

Hurricane Sandy Eyes the East Coast 25 26 oct 2012

NASA4USA + Subscribe 37 videos

GLOBAL FORECAST CENTER TROPICAL UPDATE GLOBAL FORECAST CENTER

0:03 / 1:49

<https://www.youtube.com/watch?v=tghfsNKJhVw>

# Challenges of & opportunities for social media derived news

... "PRAY the NEWS and ACT RESPONSIBLY within Your God-given Sphere of Life and Influence."

Friday, October 26, 2012

## Hurricane Sandy Needs PRAYER - get people of prayer for an Evaporation of the Storm

WHO IS CCNEWS PORTAL?

Simple BIO of the ministry and the man.

PICTURE WHAT YOU WANT TO SAY.

WowWe

Video email and Conferencing

FirstTravelAlliance.biz - the leader in online state-of-the-art TRAVEL and COMMERCE searching

Thu Oct 25 2012 11:15 AM EDT

Science, Religion, Satire??



## Lest we forget outside US

- ▶ Social vulnerability
- ▶ Acute on chronic, and cascading effect

**YouTube** Hurricane Sandy Floods Haiti's Homeless Earthquake Victims S

**Hurricane Sandy Floods Haiti's Homeless Earthquake Victims Still Under**

bri kouat nouvel gnye Subscribe 15 videos




10,176 likes

Published on Oct 26, 2012 by bri kouat nouvel gnye

Nearly three years after Haiti's earthquake left 1.5 million people without

<http://www.youtube.com/watch?v=wY5b7aXcuBB>

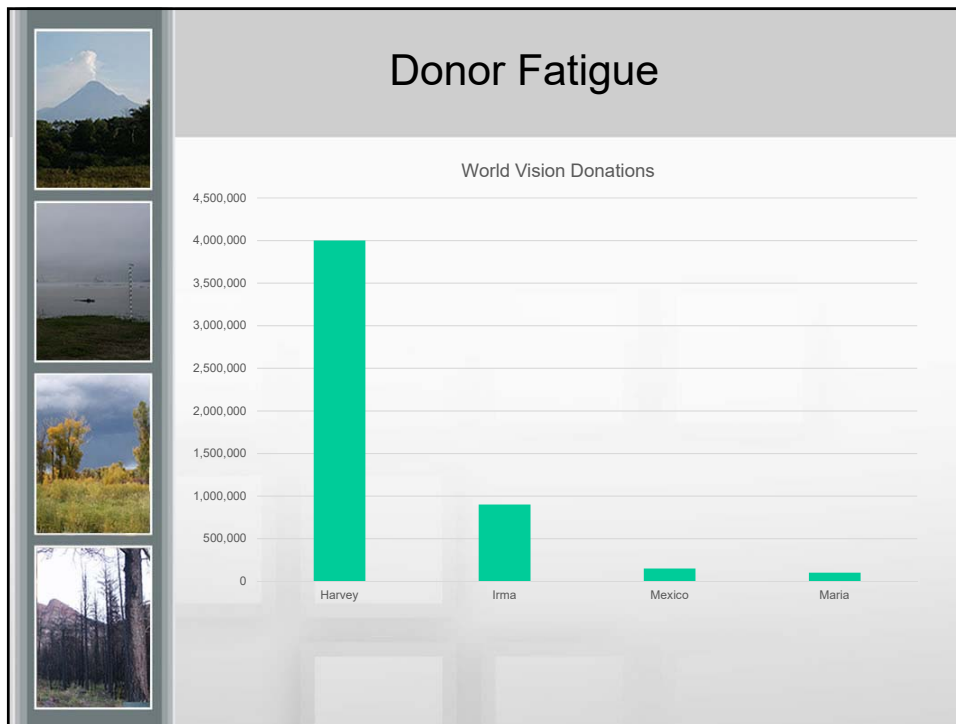


## 2017 Crazy?

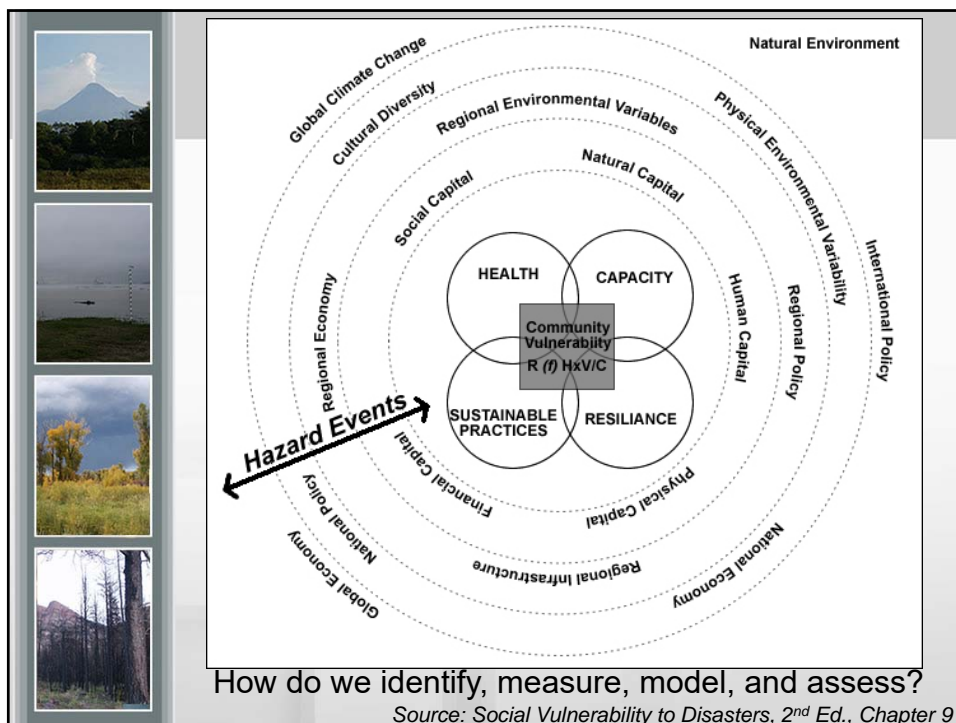
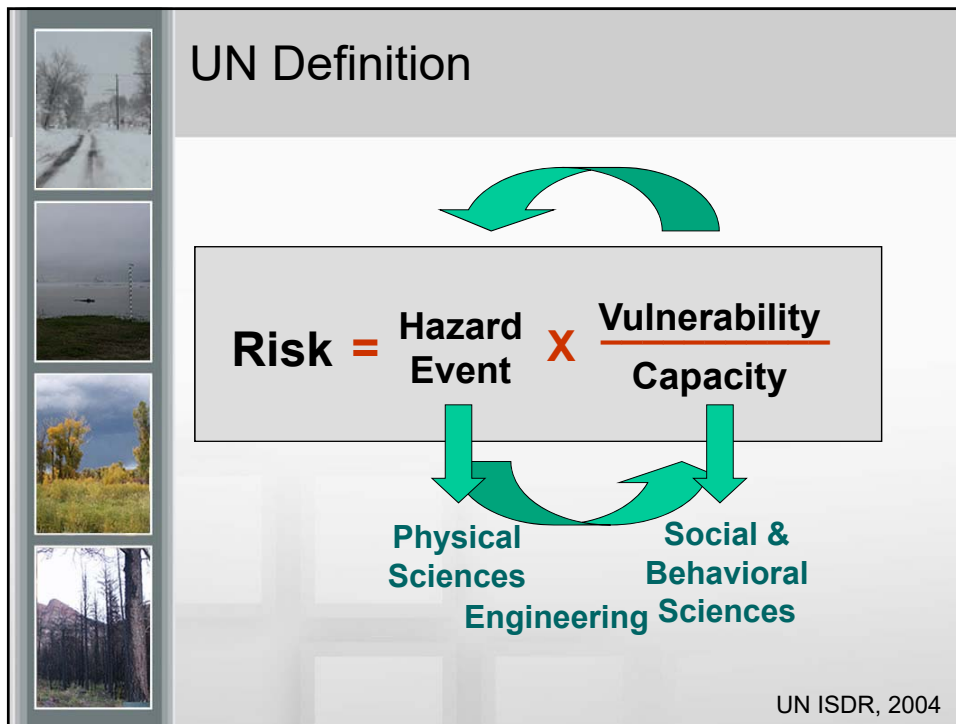
- Harvey (Texas)
- Irma (Florida)
- Maria (Puerto Rico)
- Ophelia (not common, but not completely strange):

<http://www.cnn.com/2017/10/15/europe/hurricane-opheia/index.html>


- India Flooding
- Mexico Earthquakes
- California Wildfires




- ### Perhaps, but....
- News diversions
  - “Nearly Half of Americans Don’t Know Puerto Ricans are Fellow Citizens”
  - Two times more likely to support Puerto Rico aid if knew they are U.S. Citizens
  - Perhaps better not to comment on political banter...
- The figure is a slide titled "Perhaps, but...." with a bulleted list of four points. The y-axis represents the number of donations, ranging from 0 to 4,500,000 in increments of 500,000. The x-axis lists the events: Harvey, Irma, Mexico, and Maria. Harvey has the highest number of donations, at approximately 4,000,000. Irma follows with approximately 900,000. Mexico has approximately 200,000, and Maria has the lowest number of donations, at approximately 100,000. To the left of the chart, there is a vertical strip of four small images: a mountain peak, a body of water, a field of yellow flowers, and a forest with a large tree.








## So, social vulnerability



**Social Vulnerability to Disasters**  
Second Edition

Edited by  
Deborah S.K. Thomas  
Brenda D. Phillips  
William E. Lovekamp  
Alice Fothergill







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We dedicate this book to our late colleague, friend, and mentor Mary Fran Myers, to all people who have suffered from natural, technological, and human-induced events, and to those who work tirelessly to reduce disaster risk. All royalties from the sale of this volume go to the Mary Fran Myers Scholarship, which recognizes individuals who have a "commitment to disaster research and practice and have the potential to make a lasting contribution to reducing disaster vulnerability."

## Measuring Vulnerability

- Many metrics exist, but no single, agreed upon approach
- Qualitative and quantitative methods inform complexity
- Examples include:
  - ✓ financial circumstances
  - ✓ health
  - ✓ functional or developmental status
  - ✓ ability to communicate effectively
  - ✓ presence of chronic or terminal illness or disability
  - ✓ personal characteristics (age, gender, etc.)







## Case Study 1: Inclusion of Vulnerable Populations in Hospital and Health Care Emergency Preparedness Planning

- Hospitals are critical infrastructure
  - Essential resources for communities
  - BUT, around the nation they struggle to meet the daily needs of their communities in non-disaster times
- Quandary of baseline health inequities and barriers to access intersecting with the hospital as a critical response resource
  - Creates an incredible challenge to meet the needs of all effectively in the face of disaster
  - Must directly address vulnerable populations & baseline experiences within healthcare systems in hospital disaster plans

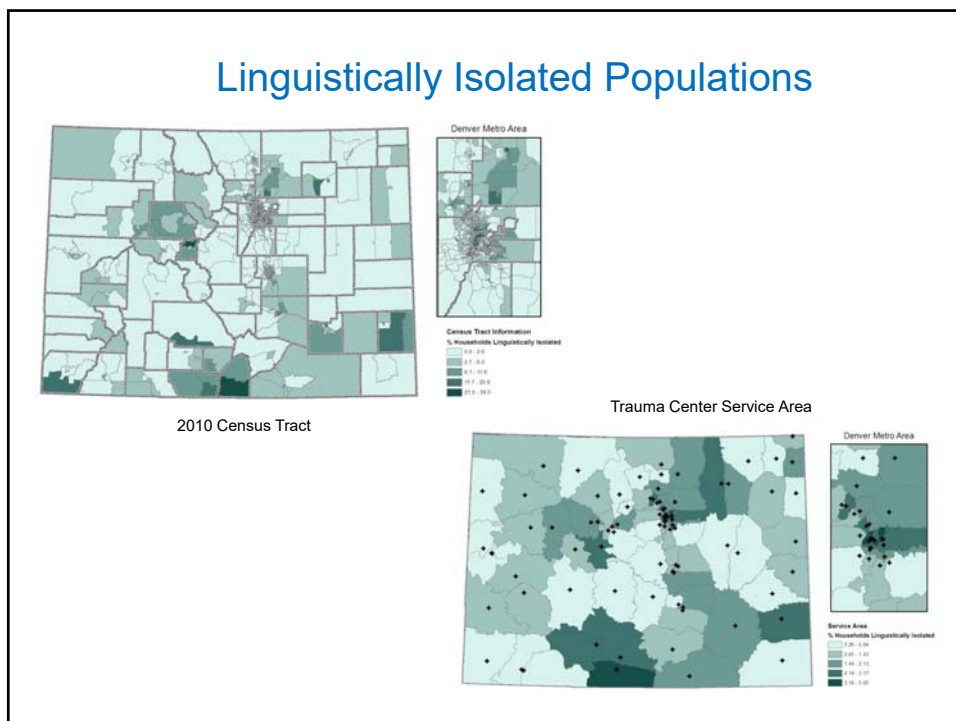
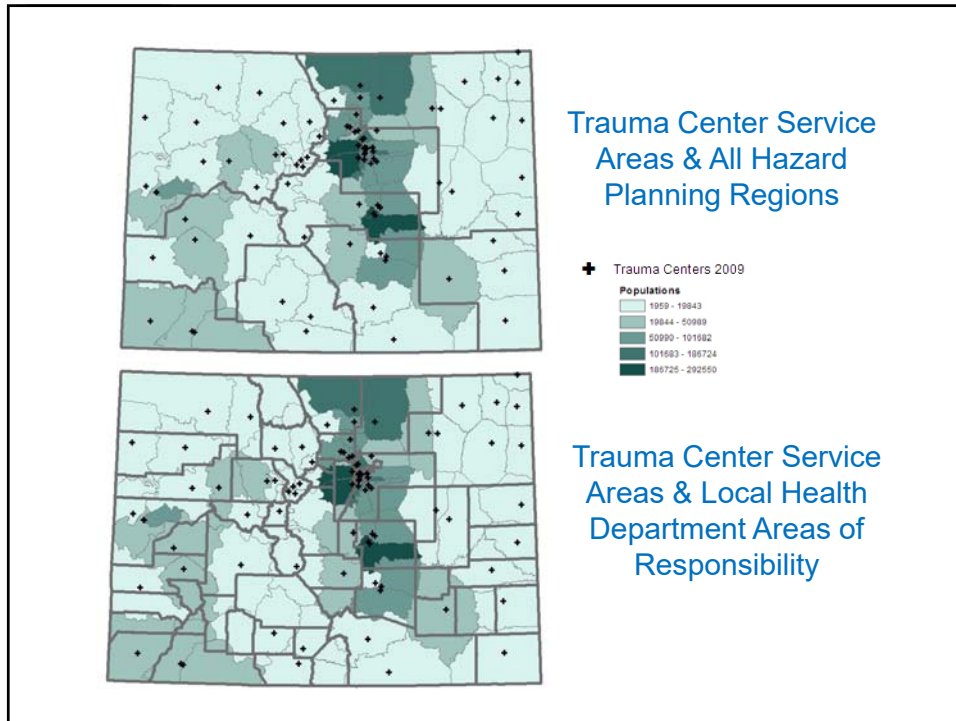
Kreisberg, D, **DSK Thomas**, M Valley, S Newell, E Janes, and C Little. Vulnerable populations in hospital and healthcare emergency preparedness planning: A comprehensive framework for inclusion. *Prehospital and Disaster Medicine*. 31(2):211-9 (doi: 10.1017/S1049023X16000042). Epub 2016 Feb 2.



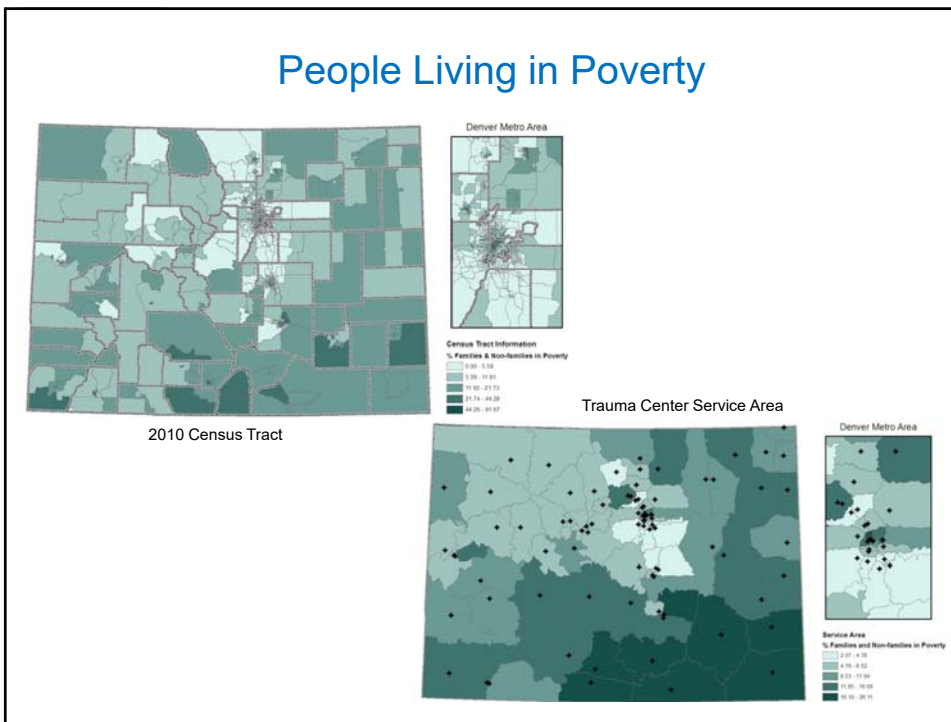
## Health Disparity Framework/ Vulnerability Assessment

- Based on the literature, fifteen variables were compiled from the U.S. Census,
  - Individually evaluated
  - Statistically combined to identify communities where characteristics converge

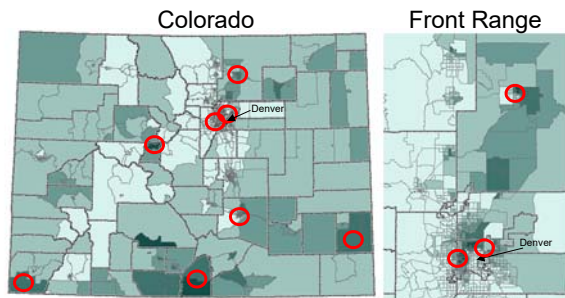
Category	Variable from 2000 U.S. Census at Tract Level	Denominator
<b>Groups in High Need of Services</b>	Seniors (age 65+)	Total Population
	Children (age 0-14)	Total Population
	Women of reproductive age (age 14-44)	Total Population
<b>Socio-economic Status</b>	People living in group quarters	Total Population
	Poverty (families and non-family households below poverty)	Households
	Female-headed households	Households
	Home ownership	Homes
	Median income	None
<b>Indicators of Deprived Environment</b>	Households with more than one occupant per room	Households
	Housing without basic amenities	Homes
<b>Indicators of Cultural and Linguistic Barriers and Awareness</b>	Population without high school diploma	Total Population
	Linguistically isolated households	Households
	Hispanic population	Total Population
	Non-white minority	Total Population
<b>Transportation Mobility</b>	Households without vehicles	Households



## People Living in Poverty



## Statewide Vulnerability Assessment



- Coalescence around combination of poverty, no high school diploma, linguistic isolation, Hispanic, and low median household income
- While informative, masks specific pressures, constraints, opportunities, and views that exist within a particular community and so more detailed analyses in these areas is warranted
- Identification of 8 communities for conducting focus groups

## Understanding Latino Community Recovery after the September 2013 Colorado Flash Floods

Issamar Pichardo<sup>1</sup>, Jeannette Rodriguez<sup>1</sup>, Deborah Thomas, PhD<sup>1</sup>, Andrew Rumbach, PhD<sup>2</sup>, Lily Lizarraga<sup>2</sup>, Waverly Klaw<sup>2</sup>, David Lizarraga<sup>2</sup>, Jeremy Nemeth, PhD<sup>2</sup>, Carrie Makarewicz, PhD<sup>4</sup>, and Leah Cole<sup>3</sup>

<sup>1</sup>Department of Geography & Environmental Sciences, University of Colorado Denver; <sup>2</sup>Department of Planning & Design, University of Colorado Denver; <sup>3</sup>Colorado School of Public Affairs, University of Colorado Denver

### Introduction/ Background

In September, 2013, Colorado experienced several days of extreme rainfall, which resulted in flash floods coming down from the mountains to towns along the rivers. President Obama declared a Federal Disaster Declaration on September 12<sup>th</sup>. The Latino population in some of the affected towns was about half of the total population. Disaster impacts and recovery are often disproportionately experienced between subpopulations. Barriers, such as language and legal status contribute to social vulnerability. One of the major factors that encouraged the path of our project is a lack of research on the effects that natural disasters have on Latino communities in the U.S., particularly during the recovery process.

### Objectives

1. To record the resources most identified through Spanish language media.
2. To understand the effects that natural disasters have on the recovery process for Latino communities in Colorado through house hold interviews.
3. To identify organizations most involved in the response and recovery process through content analysis.

### Methods

#### Case Study of Colorado Floods

- Content analysis of Spanish-language media outlets
- Household Interviews
- Key informants interviews with organizations

#### Data Collection:

- 1) Collect articles and conduct a content analysis of Spanish-language media sources, such as newspapers and TV news
  - Newspaper articles and television news segments were selected when the flood coverage included issues affecting Latino communities.
  - Added some English-language outlets when article focused on Latino population and/or migrants; these included the commentary in response to the story.
- Newspapers Coded
  - Categories:
    - ✓ Organizations & individuals mentioned
    - ✓ Aid – Financial, emotional, donations
    - ✓ Housing hardship & recovery
    - ✓ Transportation – Evacuation & damage evaluation
  - Most Common Media Sources
    - Somos Noticias Colorado Univision, La Voz Colorado, El Comercio de Colorado, El Semanero
- 2) Household surveys in affected areas
  - 29 Spanish speaking families participated

### Flood Affected Counties




### Migrant Population Density Near Flooded Zone



### 2013 Flood Impacts in Lyons, CO





### Preliminary Findings

#### Household Surveys

- Immigrant populations are minimally taken into account during response to natural disasters
- Assistance is commonly provided only in English, and in very limited situations in Spanish
- Language and legal status are two of many barriers immigrants may have to overcome, others including stereotypes and stigma and/or racism, all acting as barriers to getting the aid needed.
- Latino populations work as a community and helped each other in creating greater resilience after disasters.
- Women take a big role in the recovery process as they often are the ones that seek resources and take care of all the paperwork that has to be done in order for their family to recover; males commonly work or look for work.
- They rely on the resources that neighbors are using and support each other emotionally as well as with paperwork.

#### Media Content Analysis

- The top 3 organizations mentioned in the media were: FEMA, Red Cross and National Guard; this were not the same organizations that were mentioned in household surveys.
- Somos Noticias Colorado distributed the most information and updates, but household surveys did not report media being their first source of resource information.
- The most frequently mentioned topics in media were: response, recovery, damage and situation assessment but not resources.




### Limitations


- Some areas were wiped out and residents were unable to return home. It was a challenge, or even impossible, to locate those residents who had moved, sometimes even out-of-state, making it hard to get a good understanding of the people's experiences.
- Time scale: depending on when people are interviewed, opinions and memories of the event change.
- Limited geography: the study only focused on three affected towns.
- People who were involved in organizations at the time of the event may not be affiliated with the organization anymore, making it hard to get the organizations perspective on the event.

### Next Steps

- Finalize content analyses of media sources.
- Interview organizations that played a key role during respond and recovery processes.
- Finalize analysis of household interviews.

The project was supported by the Undergraduate Research Quarterly Fund & NSF COMSER 09-0511. Special thanks to the Undergraduate Research Organization.

# Closing Thoughts



1. Evaluating Social Vulnerability
  - Influence policy changes
  - Identify gaps in data, information and resources
  - Support prioritization of mitigation strategies
  - Inform interventions
  - Increase protection and enhancement of economic structures
  - Assist in the creation of self-protective measures
  - Support institutions in their role for increasing resilience and disaster prevention
  - Generate dialogue and communication
2. Apply to evaluate equity in activities in other sectors