

## Abstract

Public health professionals need to track socioeconomic characteristics in order to better understand susceptibility to health risks. Examples include: poverty, education, minority status, age, vehicle availability, and housing conditions.

### Objectives:

- Meet the need for environmental risk indicators at the NH town level
- Develop the capability to analyze and report census tract data

### Relevance:

- Supports emergency preparedness and public health planning by identifying vulnerable populations
- Apply Social Determinants of Health

### Methods:

- Replicate the 15-item Social Vulnerability Index (SVI) developed by CDC/ATSDR (Flanagan et al. 2011) add health insurance coverage
- Use American Community Survey 5 year estimates which are available by census tract and updated annually
- Flag tracts where measure is above 90<sup>th</sup> percentile for NH

### Conclusion:

- Identifies areas where population may be at increased risk for poor health
- Has the ability to examine single vulnerability measures which is important for interpretation

## Introduction

Vulnerability is the extent to which people are likely to be affected (Flanagan, 2011).

There are many social characteristics that have been logically and in some cases empirically connected to human vulnerability.

Knowledge of social vulnerability characteristics can help in public health, especially in emergency preparedness.

Social vulnerability impacts a population's response in all phases of disaster management:

- Mitigation: reducing the potential risk
- Preparedness: getting plans and resources ready
- Response: protecting and rescuing
- Recovery: rebuilding

A social vulnerability index (SVI) and measures can help:

- Program planning and performance
- Health and social service agency budgeting and policy
- Engage community organizations in emergency preparedness

NH hazard events include: floods, forest fires, power outages, cold weather, winter storms



Allenstown, NH May, 2006 Flood

## Limitations

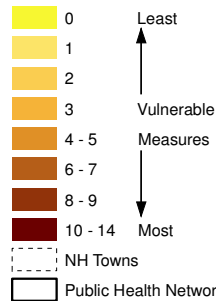
The research literature is not in agreement on which social vulnerability measures are most relevant or on their correlation with health outcomes.

Some population groups, such as college students, have unique characteristics that cause anomalies in the measures requiring careful interpretation.

Some measures, such as minority status, are more relevant to some NH communities than others.

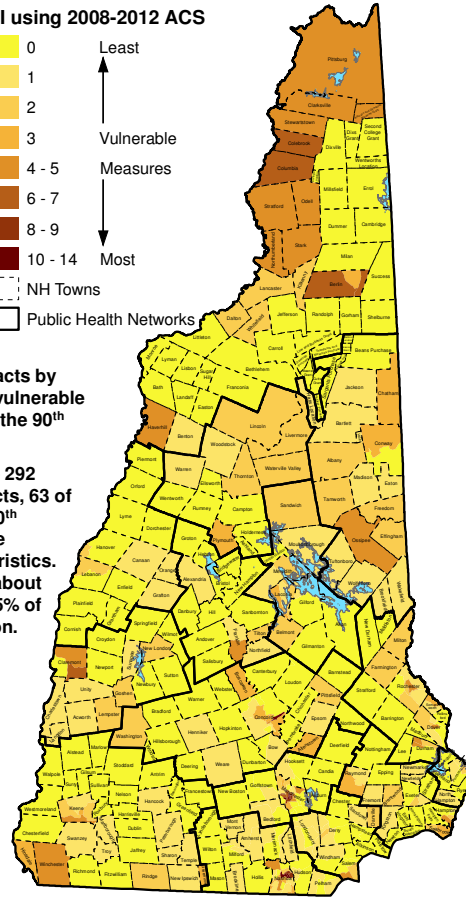
## Social Vulnerability Index (SVI)

### SVI using 2008-2012 ACS



Map shows census tracts by number of unusually vulnerable measures (exceeding the 90<sup>th</sup> percentile within NH).

As an example, Of the 292 populated census tracts, 63 of these are above the 90<sup>th</sup> percentile in 3 or more vulnerability characteristics. These tracts contain about 256,000 people or 19.5% of the NH 2010 population.



Source: American Community Survey 2008-2012 5 year estimates. Census tracts ranked for each measure across New Hampshire.

## References

- Flanagan, B.E., Gregory, E.W., Hallisey, E.J., Heitgerd, J.L., and Lewis, B. (2011). A social vulnerability index for disaster management. *Journal of Homeland Security and Emergency Management*: Vol. 8: Iss. 1, Article 3.
  - U.S. Census Bureau. American Community Survey. <http://www.census.gov/acs/www/>
  - CDC/ATSDR The Social Vulnerability Index (SVI) <http://svi.cdc.gov>
  - Cutter, S.L., Boruff, B.J., Shirley, W.L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly* 84(2):242-261.
- Additional bibliography available upon request.

## Measures

### Socioeconomic Status:

- 1 Poverty, population living below Federal poverty level (%)
- 2 Unemployed, age 16 and over and seeking work (%)
- 3 Per capita income (in 2012 inflation-adjusted \$)
- 4 Education, age 25+ without a high school diploma (%)
- 5 Health Insurance, age less than 65 without insurance (%)

### Household Composition / Disability:

- 6 Children, population age less than 18 (%)
- 7 Elderly, population age 65 and over (%)
- 8 Disability, age 5 or more with a disability (%)
- 9 Single parent, percent of households with children (%)

### Minority Status / Language:

- 10 Minority, Hispanic or non-white race (%)
- 11 Limited English, age 5 and over who speak English less than "Well" (%)

### Housing / Transportation:

- 12 Large apt. bldgs, housing units 10 or more per building (%)
- 13 Mobile homes, percent of housing units (%)
- 14 Crowding, housing units with more than one person per room (%)
- 15 No vehicle, households with no vehicle available (%)
- 16 Group Quarters, population living in group quarters (%)

## Conclusions

The Social Vulnerability Index (SVI) is a useful tool for emergency preparedness and public-health planning. It helps identify demographic groups and geographic locations with higher vulnerability to environmental and public health hazards.

An overall social vulnerability index has some usefulness in identifying locations with populations having generally higher vulnerability to environmental hazards.

Using annually updated measures from the American Community Survey facilitates ease of maintaining an up-to-date and useful SVI.

This iteration of the SVI is an exercise designed to test a methodology that will lead to an index useful to NH planners. It should not be used to infer conclusions about NH communities.

Because most health and safety concerns have different sensitivity to social vulnerability characteristics planners and policy makers need to access and consider the component measures.

The SVI is not a substitute for qualitative experts especially those familiar with local areas and populations. The SVI is best used as a starting point for discussion and not the basis for conclusions.

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