



A Program of The Actuarial Foundation

Modeling the Future Challenge

MTFC Team Resource from FEMA + NRI

This resource is designed for [MTFC teams](#) who are looking to get started exploring and choosing their own project topics to model risks - especially if they are risks that could involve natural disasters.

Note: Use of the NRI is optional and no team is required to use NRI data.



9/13/23 Webinar Recording
<https://vimeo.com/864210602>

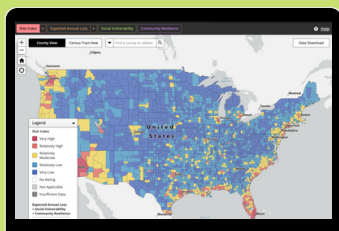
What is FEMA?

FEMA or the [Federal Emergency Management Agency](#), was officially created in 1989 through an executive order by President Jimmy Carter. Its history can be traced back to 1803. On March 1, 2003, FEMA became a part of the Department of Homeland Security. FEMA's mission is to help people before, during and after disasters and their core values and goals help them achieve it.



To ensure success for the agency, the emergency management community, and those they serve, FEMA strives to instill equity as a foundation of emergency management, lead whole of community in climate resilience, and promote and sustain a ready FEMA and prepared nation.

What is the NRI?



The [National Risk Index](#) is an easy-to-use, interactive tool that shows which communities are most at risk to natural hazards. It includes data about the expected annual losses to individual natural hazards, social vulnerability and community resilience, available at county and Census tract levels. The Risk Index can be used to support resilience building efforts and ensures that resources go where they are needed most.

Check out how are others using the tool:

<https://www.fema.gov/flood-maps/products-tools/national-risk-index/best-practices>



Community Disaster Resilience Zones will build disaster resilience across the nation by driving federal, public and private resources to the most at-risk and in-need jurisdictions. The Community Disaster Resilience Zones Act was signed into law by President Joe Biden on December 20, 2022. *Learn more here on how your project could relate to this new law:*

<https://www.fema.gov/partnerships/community-disaster-resilience-zones>



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How can the NRI help teams get started in the MTFC?

An MTFC team may want to begin its consideration of a particular type of disaster by understanding the potential financial impact of that type of disaster in different parts of your state; NRI could be used quite directly to gain that understanding. As an actuary's or MTFC analysis goes deeper, the NRI results (since they use the same geographical units as the census) can be combined relatively easily with census data, or with other data sources that are reported using census areas, to support analyses that are focused on specific community or business issues.



Is your team investigating a topic that involves natural disasters? Some useful places to start investigating your topic can be found in these links.

18 FEMA-Identified Natural Hazards <https://hazards.fema.gov/nri/natural-hazards>

NRI Factors for Determining Risk <https://hazards.fema.gov/nri/determining-risk>

- **Social Vulnerability** <https://hazards.fema.gov/nri/social-vulnerability>
- **Community Resilience** <https://hazards.fema.gov/nri/community-resilience>
- **Expected Annual Loss** <https://hazards.fema.gov/nri/expected-annual-loss>

How do Actuaries Support Disaster Mitigation?

Actuaries are experts at evaluating the potential financial consequences of uncertain future events. Many property/casualty actuaries are working to develop and calibrate computer models of various types of disasters; and interpreting and applying the model results to key business and community issues arising from potential disasters. Some of the work focuses on helping insurance companies design and price insurance coverages that help families and businesses in the event of disasters. Other actuaries help the insurance companies manage the financial risks that they will face when a future disaster affects a large number of their customers all at the same time and often work on multi-disciplinary teams that include experts in a number of different fields.

The [Casualty Actuarial Society \(CAS\) Climate Change Resource Library](#) is a repository of recent climate change research and the [Society of Actuaries \(SOA\) Research Institute's Catastrophe and Climate Strategic Research Program](#) studies the impact of catastrophic events, changing climate patterns and frequency/severity of events on the public and insurance industry. Understanding of the underlying risk is the first step toward resiliency and mitigation. The FEMA National Risk Index could be an important addition to an actuaries toolkit. In addition to the [Actuarial Climate Index](#), [Surveys of Emerging Risk](#), and an index like FEMA's may be helpful in product design, strategy and risk management.



No individual actuary or MTFC team would have the time, expertise or resources to create such an analysis or tool, so the **NRI gives us a significant (and very credible) jump start in understanding the likelihood of different types of disasters affecting a particular geographic area**, and the potential consequences if they do so. If your team's topic relates to disaster mitigation, your team supports FEMA's work in disaster mitigation - see the Community Disaster Resilience Zones Act link on how your work could be of real use to FEMA and society!