Minimum Viable Product Demo: ASSERT (AI-Supported Smart Electricity Restoration Tool)

Team iCons (UMass Amherst)

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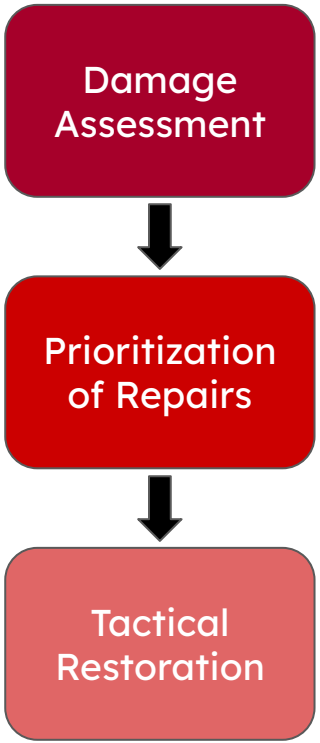
End Users — Utility Emergency Response Teams (UERTs)

- **John Burnap** of Eversource, MA and **Michael Gibeley** of National Grid [MA/RI/NY]
- Factors considered when making decisions about restoration*:
  - Type, availability, proximity of resources
  - Specialized equipment
  - Consequence of delay
  - Number of customers affected
- Factors **missing**: social vulnerabilities



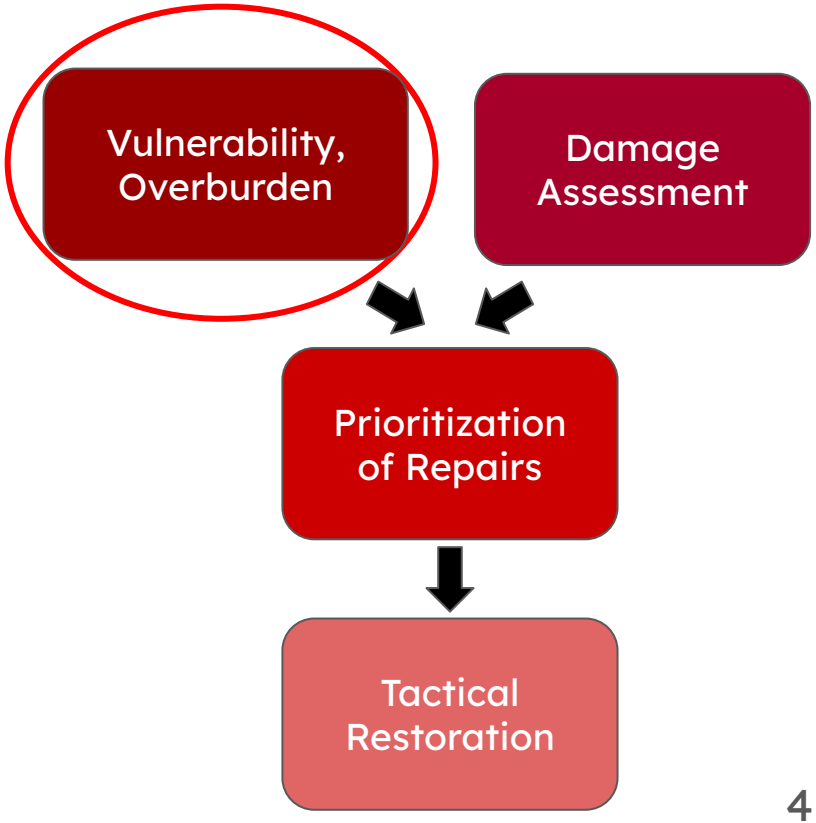
* Eversource Emergency Response Plan Electric (MA)

Thank You to the User Advocates We Spoke With!

- Carol Freeman — National Preparedness Analytics Center, Argonne National Laboratory
- Scott Sternfeld — The Outage Data Initiative
- Hessann Farooqi — Boston Climate Action Network
- Kristen Finne — Department of Health and Human Services
- Jason Eisdorfer — Pacific Northwest National Lab
- Todd Levin — Argonne National Laboratory

ASSERT Objectives

ASSERT aims to add a **lens of power outage overburden and vulnerability** to the utility emergency response's repair and restoration decision-making pipeline.

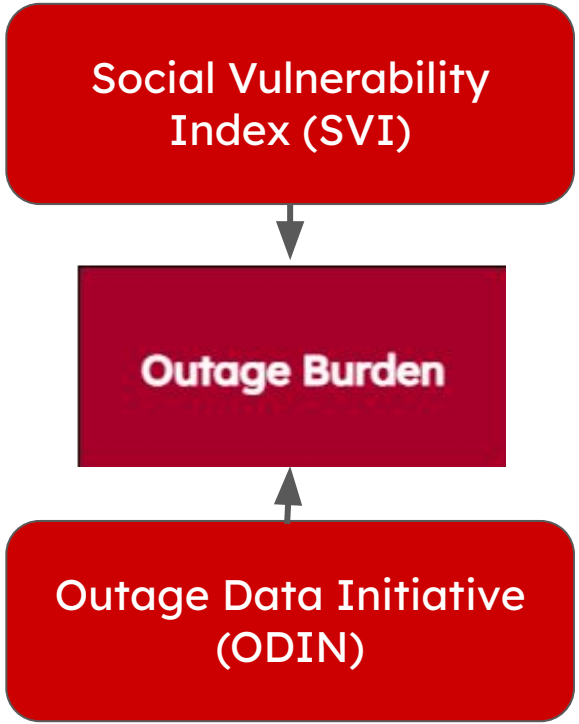


Federal Open Data Used

- ODIN (Outage Data Initiative)

$$\text{Burden} = \frac{\langle \text{outage} \rangle_{\text{county}} - \langle \text{outage} \rangle_{\text{state}}}{\sigma_{\text{state}}}$$

- Correlate most significant **vulnerability indicators** to outage burden using **Linear Regression**.

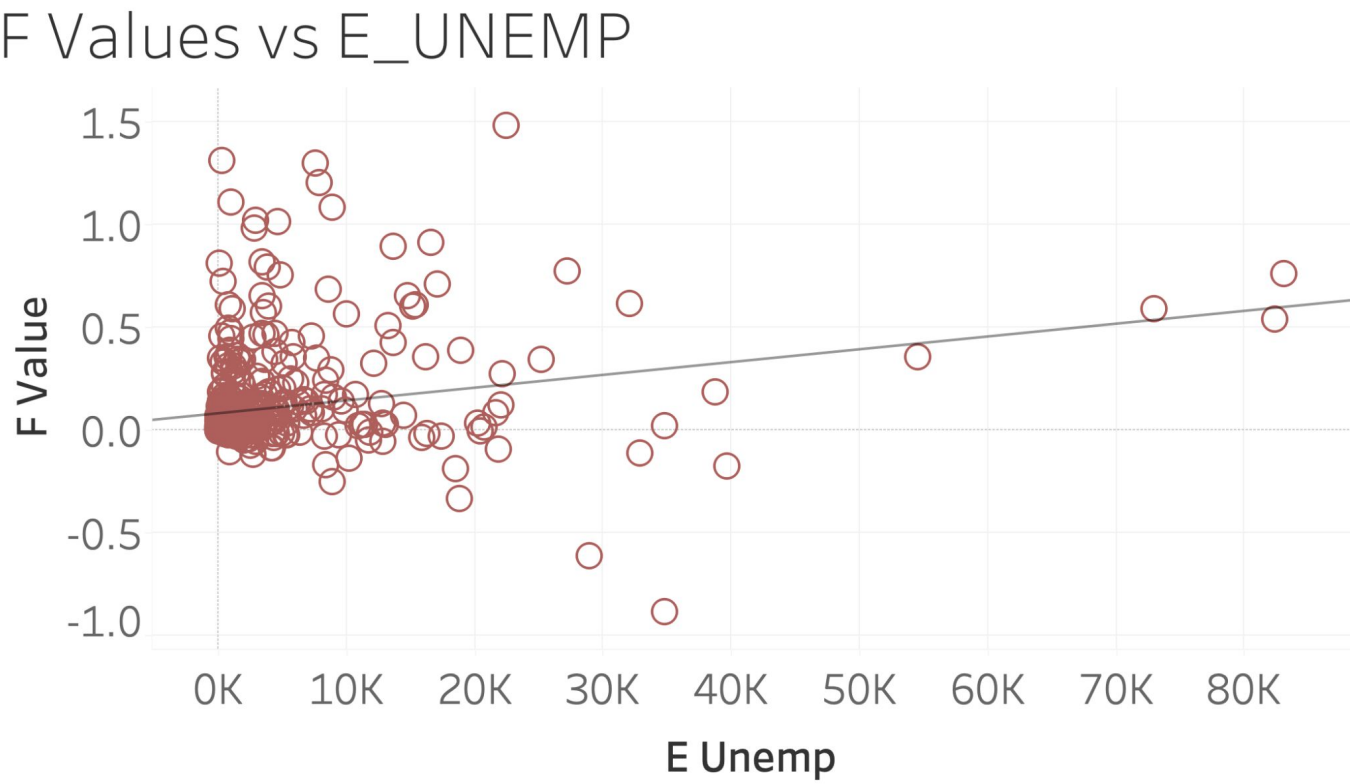


Datasets we are using in our analysis.

ASSERT Brain

- Identified **key metrics** that predict **power overburden** in counties **lacking data**.
- Using **unemployment**, **poverty** and **minority data** to predict power overburden

ASSERT Brain – Continued



Key Metrics for Measuring Impact

Users can describe the extent to which ASSERT fulfils these metrics:

- Ease of use
- Clear purpose
- Aids in deploying resources in areas with little information
- Rapid dissemination of predicted/actual outage burden information

Deployment/Implementation Plan

- We performed a PCA to extract the key factors for
- Selecting method of forming predictions based on factors from PCA
- Linear Regression
- Leaflet GIS tool
- Static site using GitHub Pages
- Translating wireframe to site aesthetics

Product Demo

Live unveiling of ASSERT!
suobset.github.io/assert

Summary and Next Big Steps

Summary:

- ASSERT creates a model for predicting the extent to which counties are overburdened by power outages
- Aimed to aid utility emergency planning pipeline.

Next Big Steps:

- Consult with our Target Users [John Burnap of Eversource and Michael Gibeley of National Grid]
- Expand features and analysis in parallel with ODIN expansion.

Thanks for listening!
Questions?

Thank you to