# Social Science in the VORTEX-SE: Connecting past, present and future research to transform outcomes for our communities.

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# Summarizing Vortex-SE social and behavioral science work:

BIG PICTURE:

VORTEX-SE has embedded social and behavioral science research since its inception. This has examined vulnerability to tornado risk, communication of these risks and the roles of forecasters in this process. Like all good social science research, the process has been iterative and flexible to new knowledge and understanding underpinned by new evidence.

# Iteration is a key strength of VORTEX-SE Social and Behavioral Science:

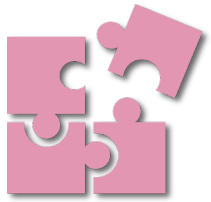
2016 → 2017 → 2018

**Learning**

Understanding the Current Flow of Weather Information and Associated Uncertainty, and Their Affect on Emergency Managers and General Publics.

**Cementing**

Understanding how uncertainty in severe weather information affects decisions.



**Applying**

Using vulnerability as empirical data to improve forecast and warning services.

*Source:* Vortex-SE – Researchers: Jack Friedman, Daphne LaDue and Laura Myers.

Understanding and enhancing public interpretation and use of probabilistic tornado warnings in the southeastern United States, (2018).

Improving accessibility and comprehension of tornado warnings in the Southeast for the deaf, blind, and deaf-blind, (2018).

Tornadoes and Mobile Homes: An Inter-science Approach to Reducing Vulnerabilities and Improving Capacities for the Southeast's Most Susceptible Population, (2018).

How forecasters decide to warn: Insights on tornado risk communication from the Southeast U.S., (2018).

## *Some* of the more recent research themes across the social and behavioral sciences:

# What am I bringing to this field?

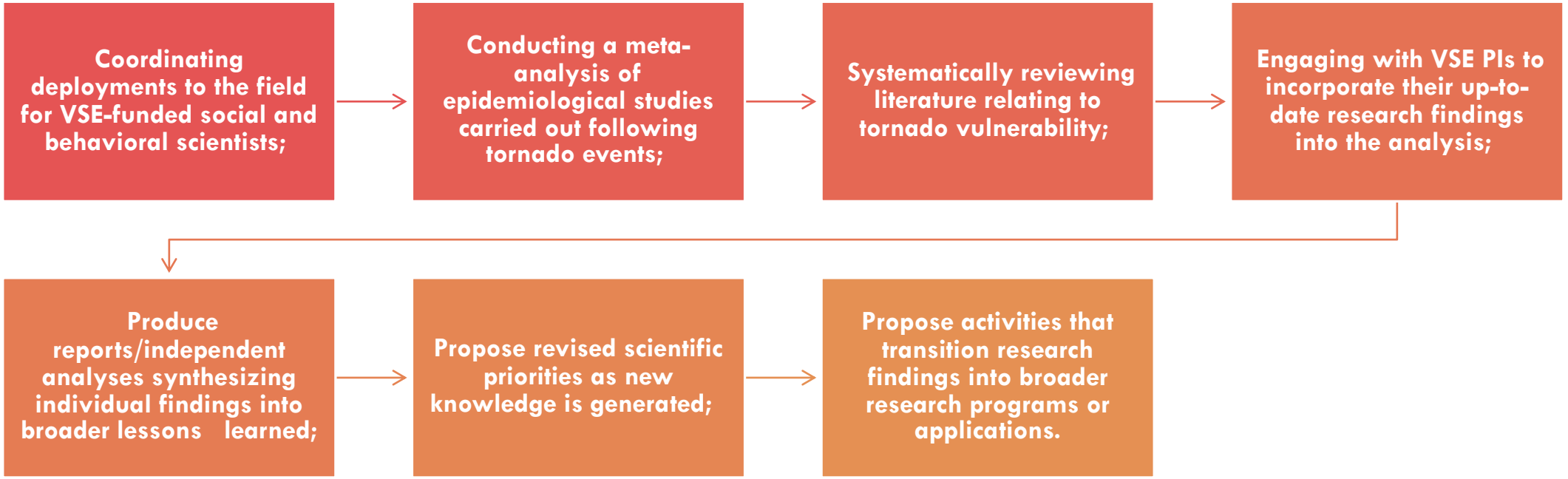
Expertise in disaster risk reduction and learning, specifically transformative learning.

15 years teaching experience working with 11-18 year old's.

Experience working with Emergency management and CERT trainees as part of my PhD research.

Experience working at UN and in policy spaces as part of wider research into social learning practices o build community disaster resilience in Europe.

# What am I doing in my role?



# What about the future?

**New Research priorities:**

Research priorities framed by prior discoveries open new avenues of investigation and opportunities to take novel approaches to address identified gaps.

Such approaches may also require a set of guiding principles that allow for participatory action research (PAR) or participatory learning and action (PLA) approaches to be used to solve how to close gaps together by including researchers, practitioners and the public.

Some of these approaches are not particularly novel or new but have been poorly understood or not used as positivist epistemologies have been applied to the problem.

# Why is this important?

It is hoped that by avoiding some of the more **extractive research** approaches that have consultation at their heart, but rarely (if ever) provide assurances that these will be acted upon.

This runs the risk of eroding trust and widening **value-action gaps** between intentions and behaviors.

Instead, PAR and PLA approaches offer the opportunity to create a better connected and engaged public that can become part of a **broader and deeper social network** working towards the same goals of reducing risk to tornadoes in the SE United States.

Some *potential* research directions informed by knowledge gaps:

## What is the ideal time period to 'force' action when a tornado is warned?

This question came about because 'ideal' times are not known and while a tornado watch is in place, this may encompass a long period of uncertainty. When a warning is issued, there should be certainty and an assumed action on the part of individual in the area in which a tornado warning encompasses.

However, there is a certain degree of 'milling' in which individuals seek to verify that action is required. This might take the place of calling on friends, family or neighbors, checking smart phone apps, news or weather sources on TV or radio or just going outside to verify with their own eyes.

Some *potential* research directions informed by knowledge gaps:

## What are the *actual* vulnerabilities versus the *perception* of vulnerabilities?

There may well be an over-confidence in an individual's belief in the efficacy of their housing structure to withstand a tornado. This may not be borne out by experience, but by a potential lack of knowledge and understanding, or indeed overstated or misleading claims about the structural integrity of their home.

Research suggests that lack of knowledge and understanding coupled with a need for personal control, causes many of those at risk to develop the concept of *illusions of unique invulnerability* (Perloff and Fetzer, 1983).

This in turn allows them to create a certain stereotype for the type of person likely to become a victim of a hazard event; and if they don't fit that stereotype, the perceived risk to them is less (Ronan and Johnston, 2001).

Some *potential* research directions informed by knowledge gaps:

**What are the sheltering options for the wider public served by the VORTEX-SE project?**

This question is framed to be ***inclusive*** of all, regardless of income, education or housing type.
There is a wide acceptance that inequities in the afore-mentioned groups lead to increased exposure and vulnerabilities when tornadoes occur (Brooks et al, 2000; Strader, 2018).
The ways in which we think about sheltering options, the ways in which their use is advised as well as their actual efficacy need to be better understood.
This needs to be ***based on the actual needs*** of the populations we work with and serve.

Some *potential* research directions informed by knowledge gaps:

## Why don't we count survivors?

There has been much research carried out or tornado fatalities for good reason. Understanding baselines for the epidemiology of tornadoes in order to position research and operations that address reducing the number of fatalities is important.

However, we need to not only count survivors but also understand what they did right and/or what circumstances lead to better outcomes (e.g., being in a well-built home vs. a manufactured or mobile home).

# Any Questions?

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