DOES ENGLISH FLOOD RISK FUNDING PROTECT THE MOST VULNERABLE?

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CONTEXT

Climate change is increasing the frequency and number of people vulnerable to flooding. Yet, is is unclear who are the most vulnerable in England, as there are different ways of defining and measuring vulnerability (*Table 1*). This creates challenges for evaluating if the most 'vulnerable' are receiving adequate protection and funding from the government.

	Social Vulnerability Variables	Flood Vulnerability Variables	Flood Risk Variable
Index of Multiple Deprivation (IMD)			
Social Flood Vulnerability Index (SFVI)			
Neighbourhood Flood Vulnerability Index (NFVI)			(2% of index)
Social Flood Risk Index (SFRI)			

Table 1: Summary of the vulnerability indexes

AIMS AND METHODS

1. How does the use of different vulnerability definitions impact those who are categorised as vulnerable to flooding?

Measured through GIS comparison of four flood vulnerability indexes across different geographical scales in England (*Table 1*).

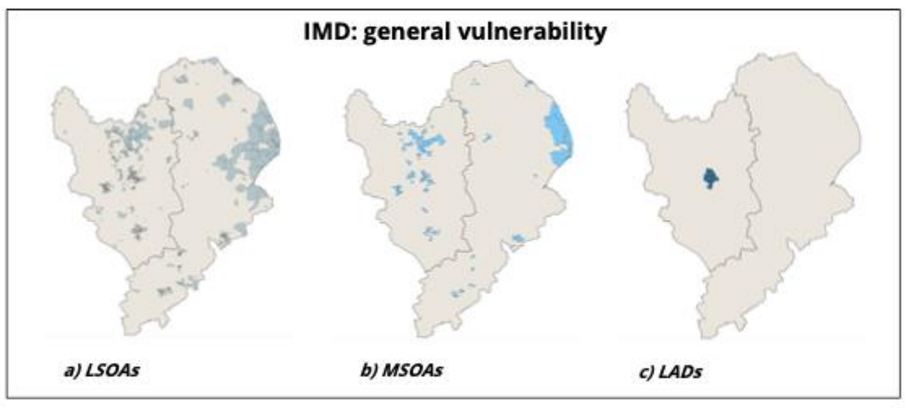
2. What is the relationship between where flood projects are funded, patterns of vulnerability, and spatial scales?

Measured through longitudinal statistical analysis, using data from the National Audit Office[4] for homes protected from 2015 to 2021, flood risk data from the EA flood plain zones, and four vulnerability indexes (*Table 1*).

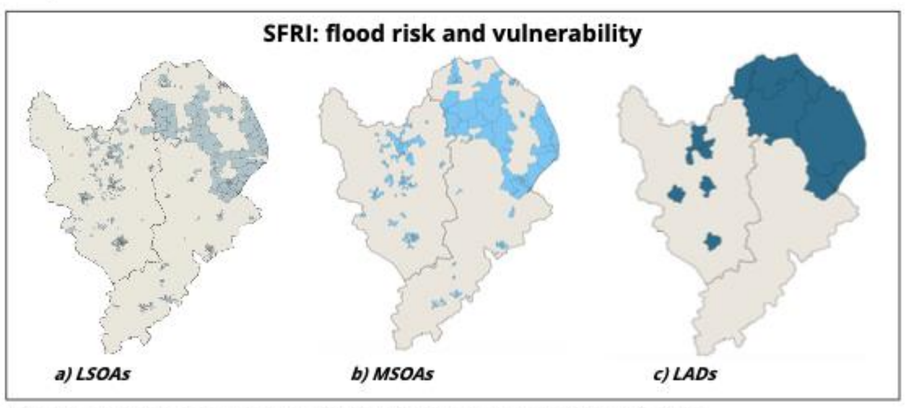
RESULTS

Aim 1

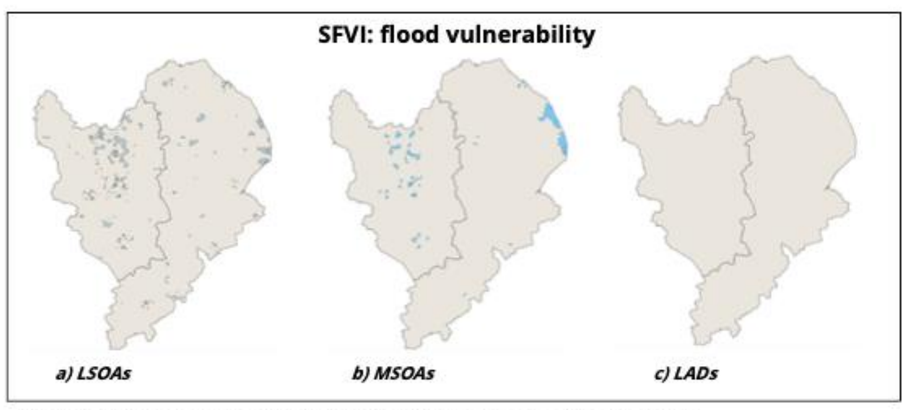
- **In the East Midlands, vulnerability is interpreted differently depending on the indicator and spatial scale used (*Figure 1*).**
- **Moving from smallest scale to largest scale causes vulnerability scores to disappear due to aggregation.**



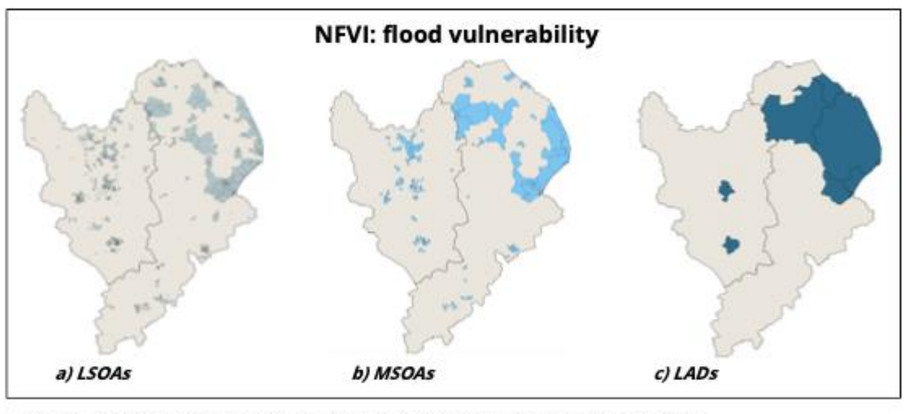
High vulnerability according to the IMD is classified as an area being in decile 1 or 2 (Hall and Bailey, 2020).



High vulnerability according to the SFRI is classified as scoring over 12.5 on the index.



High vulnerability according to the SFVI is classified as scoring over 2.5 on the index.



High vulnerability according to the NFVI is classified as scoring over 0.5 on the index.

Figure 1: Comparison of the four flood vulnerability indexes/definitions.

Aim 2

- **Upper-tier Local Authority Districts with higher levels of flood risk and social vulnerability received more funding between 2015 to 2021 (*Figure 2*). Yet, this is not the scale that flood scheme funding decisions are made.**

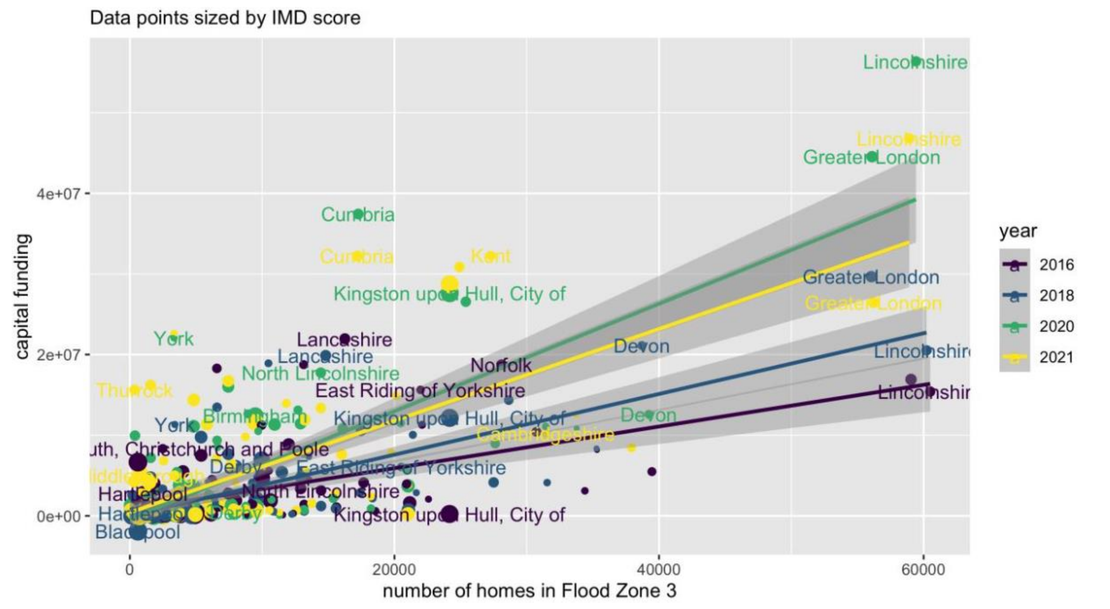


Figure 2: Relationship between funding, homes at risk, and vulnerability.

KEY FINDINGS

- **Funding for flood schemes is decided on a local level, yet there is no funding data available for LSOAs.**
- **The EA cannot fully monitor the relationship between vulnerability and funding without making data available for LSOA administrative units.**
- **Where LSOA data is unavailable, vulnerability indexes that are consistent across different areal units are more 'useful' to policymakers.**

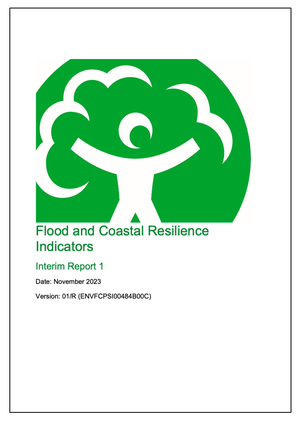
NEXT PHD STEPS: RESILIENCE

The next step of this research is a focus on resilience, which is the current focus of EA flood risk management[5]. Resilience is defined by the EA as:

"The capacity of people and places to plan for, better protect, respond to and recover from flooding and coastal change."[5]

The next two years of the PhD will bring vulnerability and resilience together, to:

1. **Understand the rationale and overlap between flood resilience and vulnerability, and how these fit into 'successful' outcomes of flood risk management.**
2. **Assess the effectiveness of indicators at predicting resilience and vulnerability in England.**
3. **Understand the policy implications of measuring resilience.**



References:

[4]National Audit Office (2020) *Managing flood risk: a data visualisation* [Online]. Available from: https://www.nao.org.uk/other/managing-flood-risk-a-data-visualisation/ [Accessed 1 March 2022].

[5]Environment Agency (2020) National Flood and Coastal Erosion Risk Management Strategy for England.