

Introduction

Floods not only cause direct inundation of the streets and buildings but also isolate communities from critical facilities, such as hospitals. The disruption of healthcare facility access will negatively impact community well-being and further exacerbate the health inequity of socially vulnerable population. This research aims to:

- (i) Develop a metric to inform equitable risk mitigation
- (ii) Assess road criticality for access to critical facilities, and post-flooding access restoration
- (iii) Identify critical communities for targeted support.

100,887 nodes (or intersections);
117,491 edges (or roads);
16 hospitals

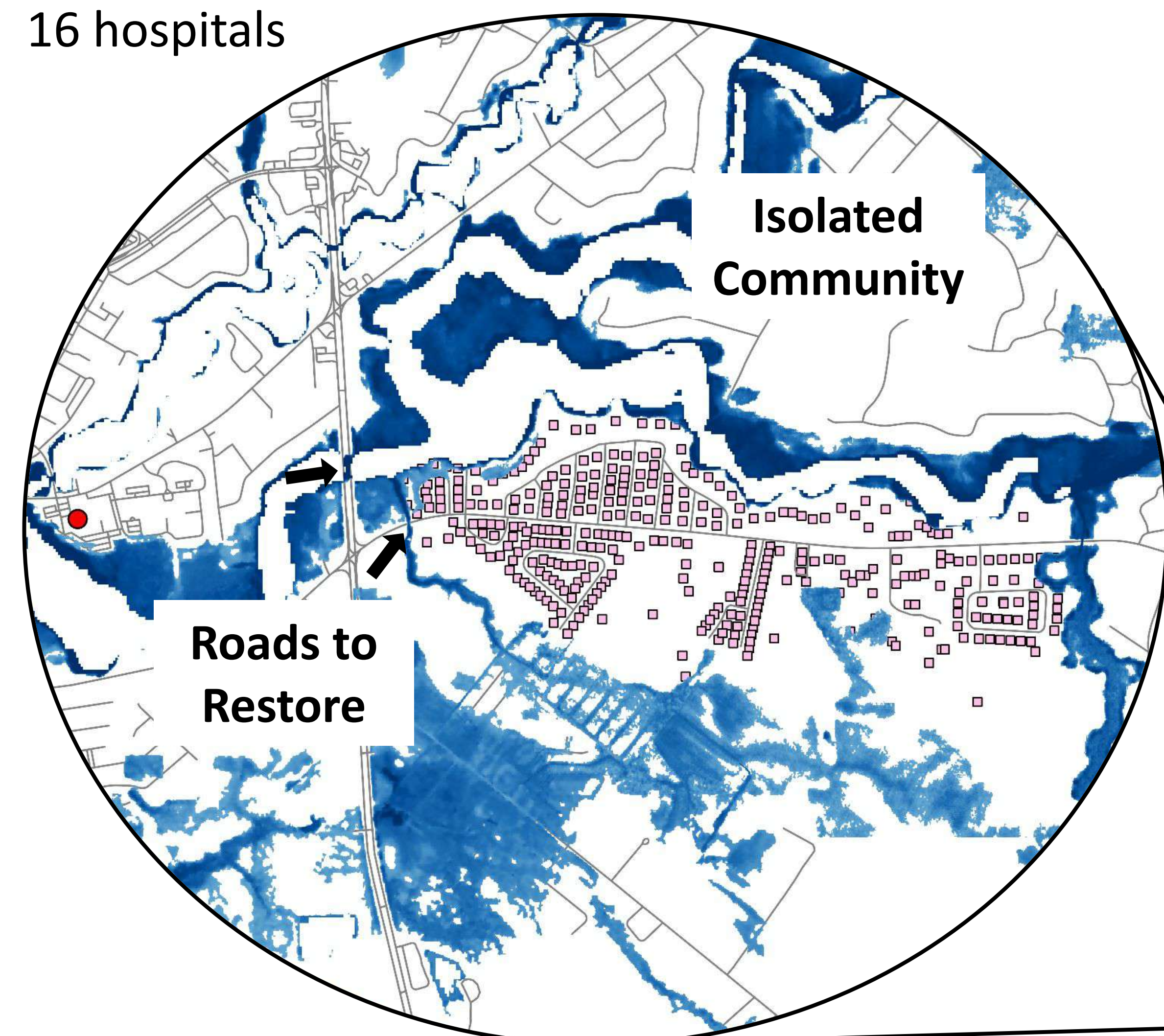
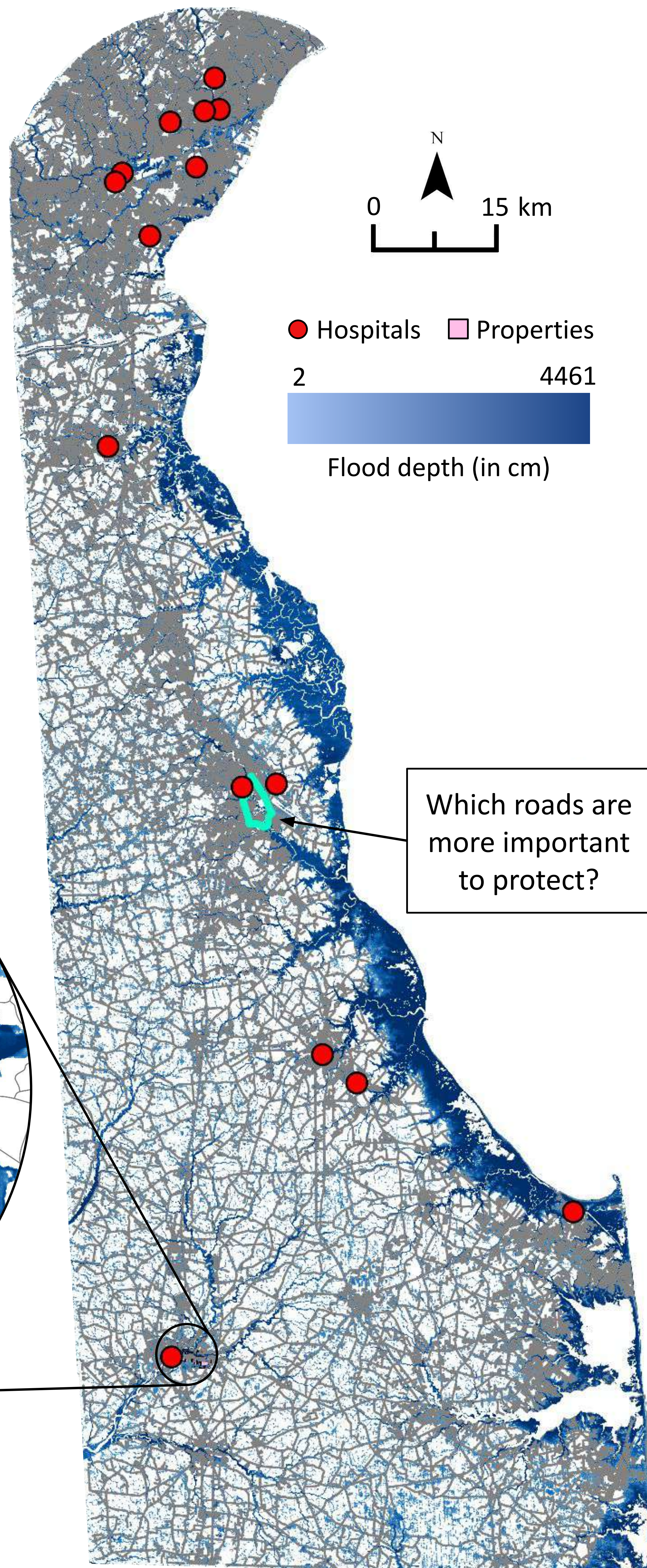


Figure 1. Critical roads connecting disconnected properties with hospitals for post-flooding access restoration.



Results

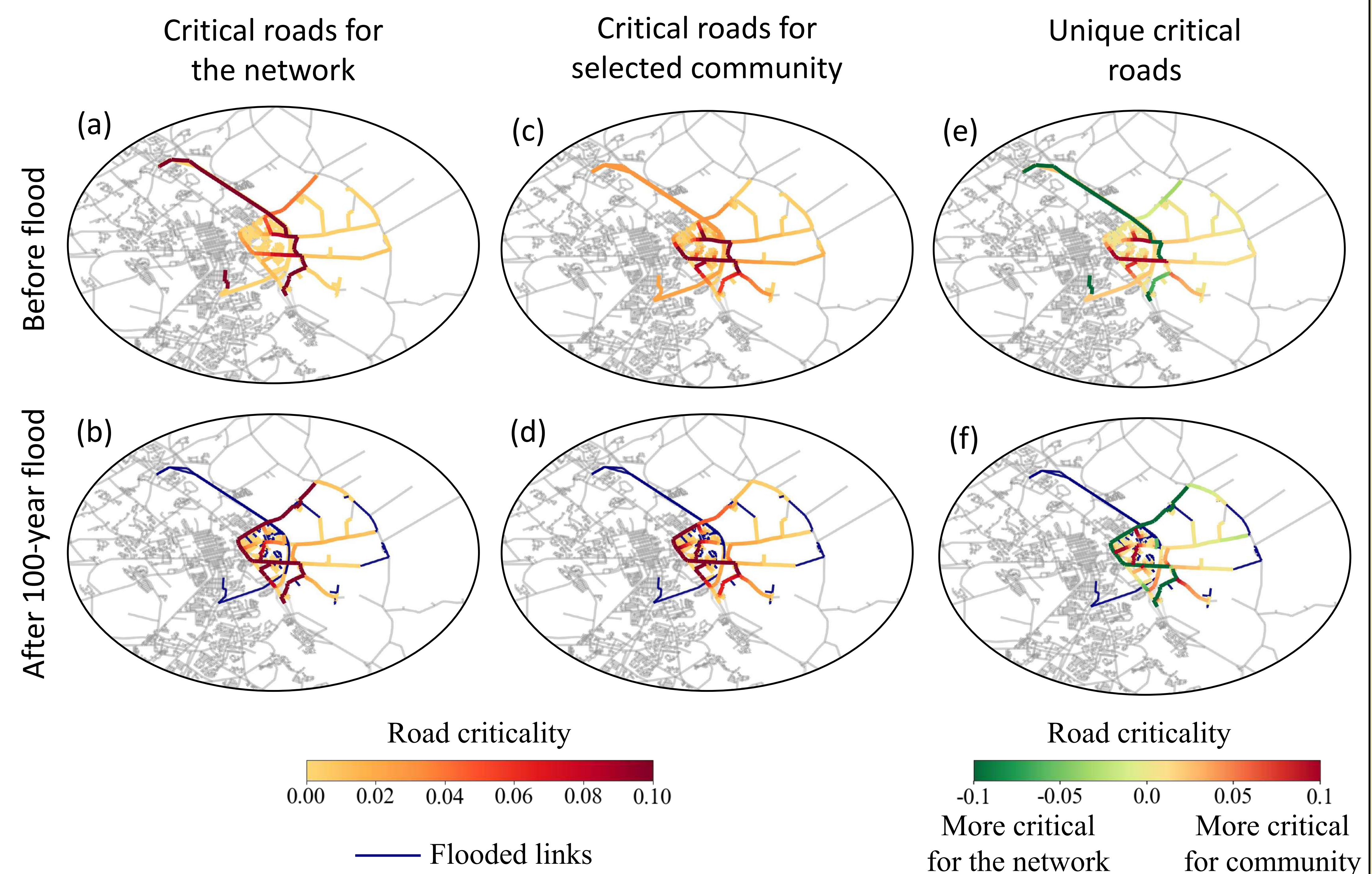


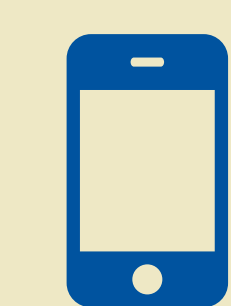
Figure 2. Critical roads for comparison for access to hospitals in Dover, DE. The road criticality is calculated for access to hospitals before flood and after 100-year flood for a small community with social vulnerability index (SVI) 0.972.

Conclusion

12% of nodes are flooded which **cuts off around 48% of the nodes'** access. A total of **4% roads** in the network are required to **reconnect** all the disconnected cluster of properties (around 50%) to hospitals. The results suggest importance of considering the consequences of isolation in flood risk assessment and accessibility improvement. The results also highlight that critical roads might vary on the state level and census tract level.

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