

Urban Mass Transit Adaptation to Climate Change

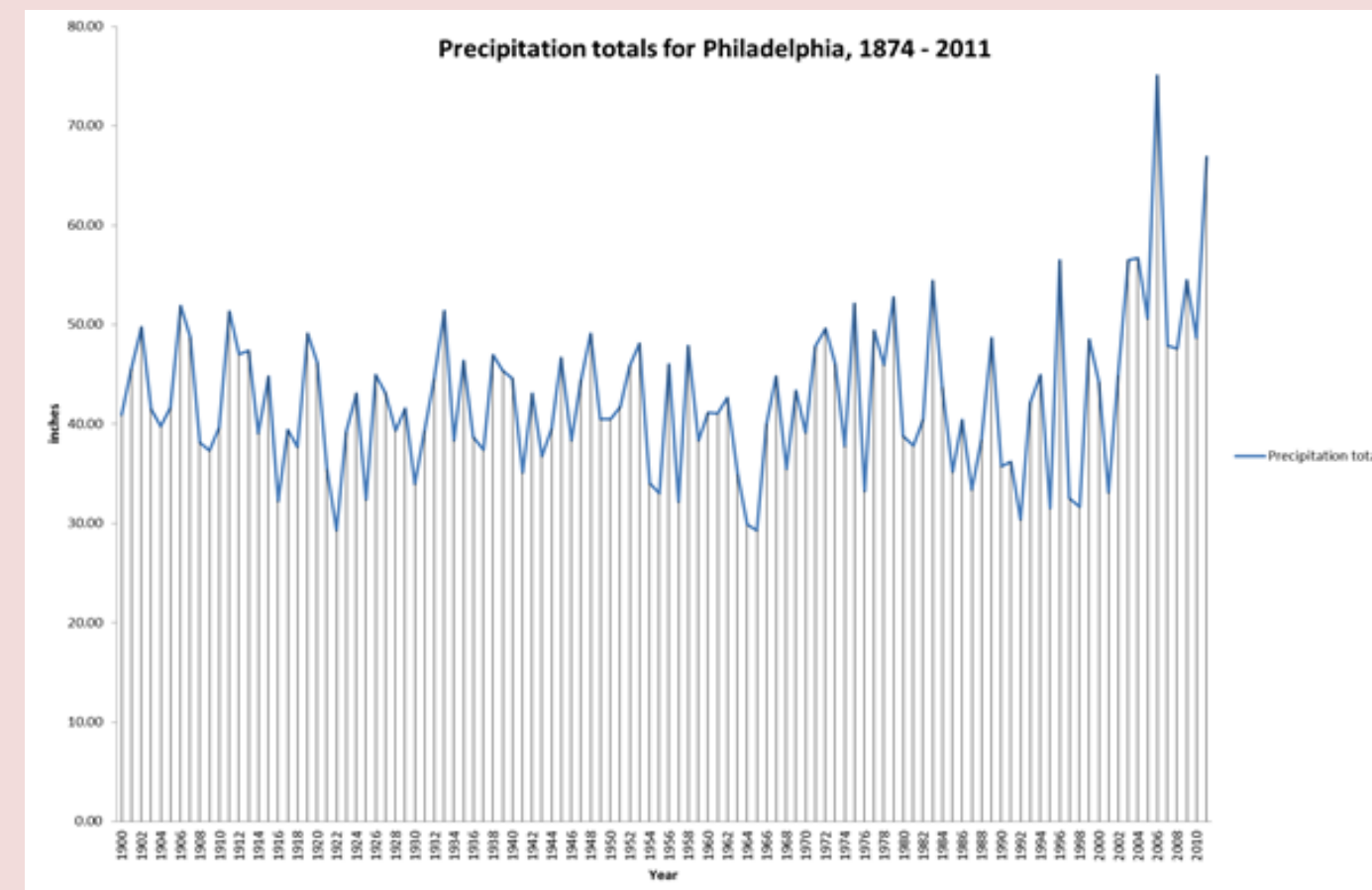
Institutional Decision-making, Resilience and Vulnerable Outcomes

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Research Question

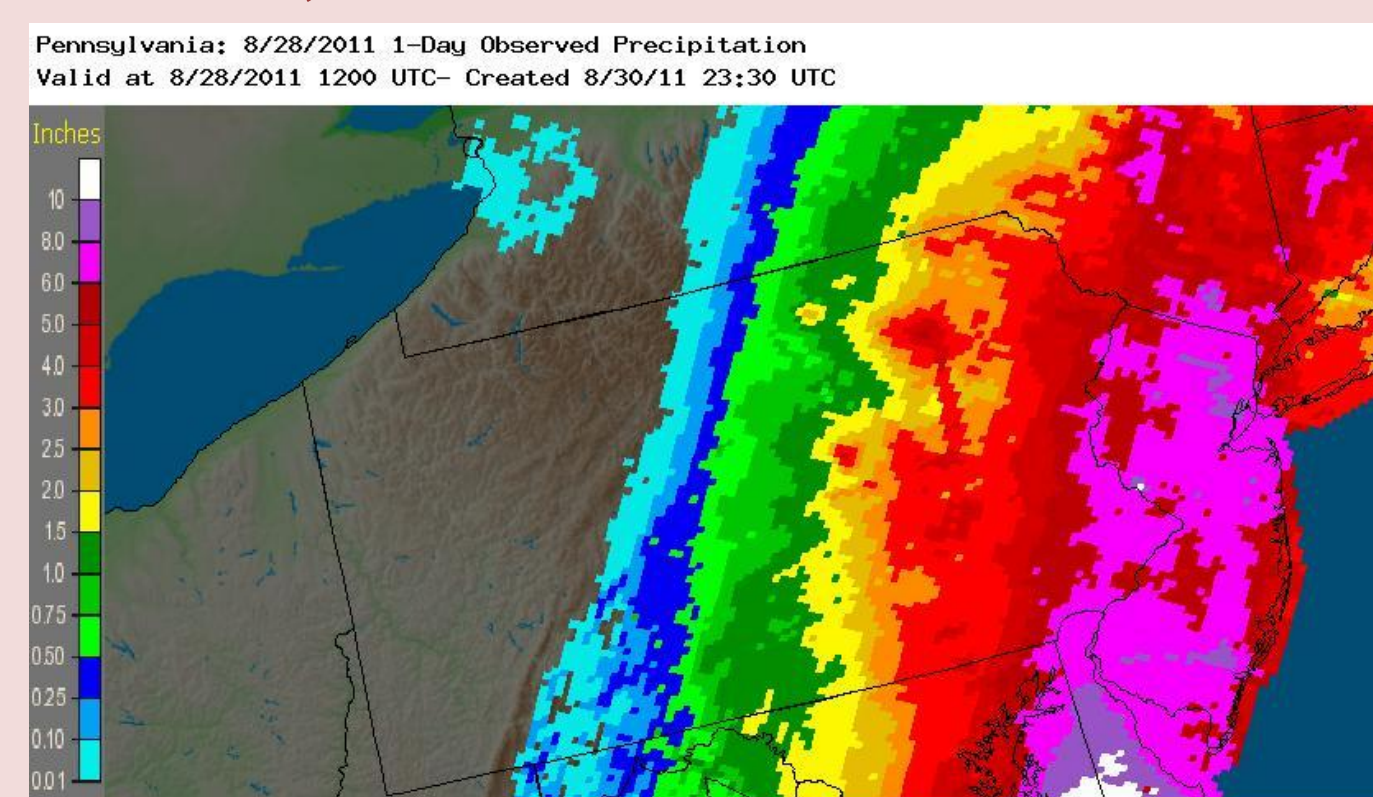
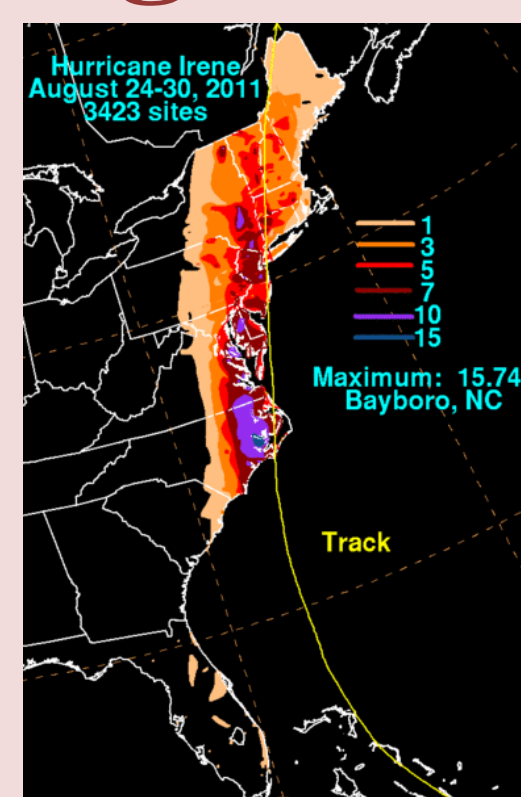
What is the degree of likelihood that a mass transit agency's decisions and actions toward climate resilience will lead to the opposite effect?

- How, where and when are agency resources distributed while responding to environmental change conditions in the present and planning and investing for the future?
- Under what conditions are agency responses to environmental change conditions most (in)effective?
- What agency considerations are given to other institutions and service populations toward its response ideas and strategies?
- How do agency officials perceive environmental change conditions across urban space?
- What do agency officials want and believe they need to adapt to climate change? What is the availability of their resource demands?

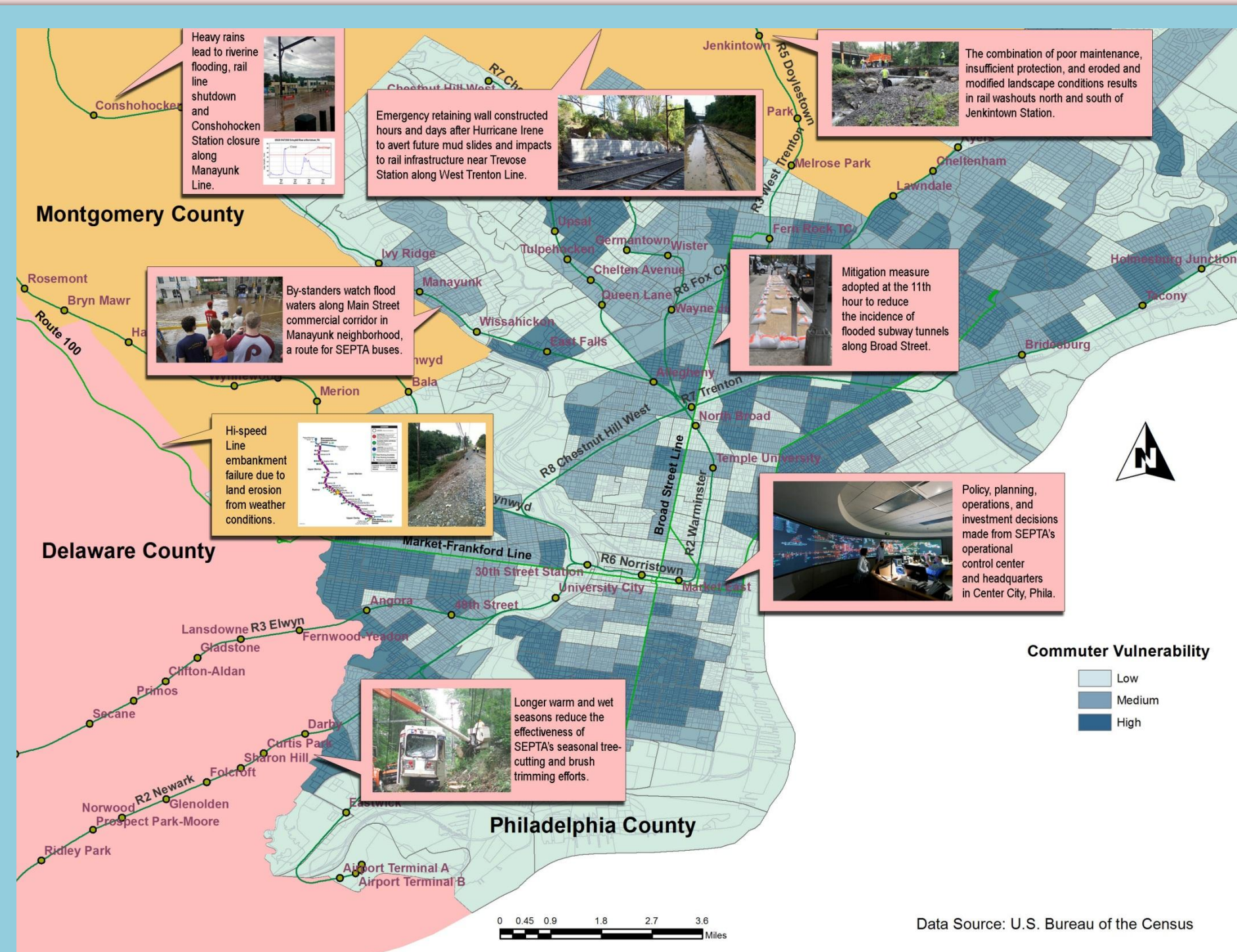


Case Study: Southeastern Pennsylvania Transportation Authority

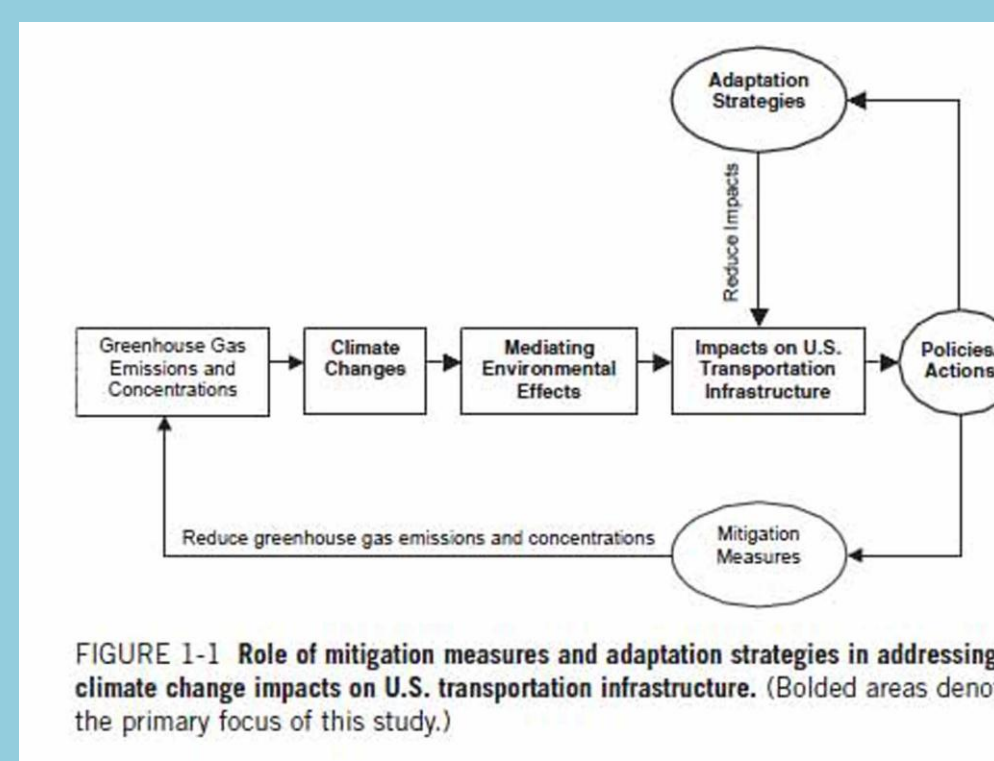
Hurricane Irene, August 21 – 28, 2011



The Southeastern Pennsylvania Transportation Authority (SEPTA) manages a multi-modal “legacy” transit system, including bus, commuter rail, subway, trolley, hi-speed rail, and ADA and shared-ride vehicles that provide service to central city and suburban populations in Pennsylvania, New Jersey and Delaware. In addition to community and place-based differences, SEPTA must account for infrastructure obsolescence, incompatibility issues between new and old equipment that impede recovery, and power supply issues when mitigating severe weather risks and impacts and adapting “hard” and “soft” assets to climate change trends.



Transportation Mode	Expected Infrastructure Design Life (years)
Highways, bridges, and tunnels	10–20
Pavement	50–100/30–45
Bridge/tunnels	50–100
Public transportation	Up to 50
Rail track	Up to 50
Marine transportation	50
Docks and port terminals	40–50
Air transportation	10
Runway pavements	40–50
Terminals	100
Pipeline	100



Research Method

Semi-structured interviews were used as the primary data collection method. Interviews produce data that allow for an analysis of patterns of thought, actions and actual and potential outcomes (Dunn 2005). Pre-determined questions were designed to elicit interviewees' responses on issues **dealing with severe weather risk and impact mitigation and climate change adaptation**.

Findings

Executive-level male (6) and female (2) officials representing SEPTA participated in semi-structured interviews between July 2011 and February 2012. They represented the agency's Office of the General Manager, Control Center Operations, Finance and Planning, and Engineering, Maintenance and Construction. The likelihood the agency's decisions and actions toward climate resilience will lead to vulnerable outcomes is principally based on the degree to which these and other policy, planning, operations, and investment decision-makers bank on the presence, integrity and sustainability of:

- Shared circumstances, management philosophies, management practices, and technologies across the agency;
- Shared mobilities with similarly situated institutions, political jurisdictions, and service populations;
- Shared infrastructure and system interdependencies;
- Shared investment priorities and commitments of public/private institutions; and
- The enduring belief that mobilizing, prioritizing and distributing resources toward protecting and developing the agency's capital interests leads to widespread vulnerability reduction, resilience and adaptation

Works cited:

Niedzielski, M.A., and Malecki, E.J. (2012) Making tracks: rail networks in world cities. *Journal of the Annals of the Association of American Geographers* 102(6): 1409 – 1431.

Dunn, K. (2005) Interviewing in Qualitative Research Methods in Human Geography, ed. I. Hay, Oxford University Press, Oxford, 79-105.