Social Equity and Advanced Air Mobility

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Presentation Overview

- Potential Social Equity Impacts of AAM
  - Vertiport placement and operations
  - Affordability and accessibility
  - Environmental justice and the allocation of public resources
- STEPS Equity Framework Applied to AAM
- Intersection of Aviation and Local Communities
- Role of Public Participation
- Concluding Thoughts
- Q&A

Potential Social Equity Impacts of AAM

- Vertiport Placement and Operations
  - Risks of displacement, gentrification, and disinvestment/neighborhood decline
  - Uncertain if living and working near a vertiport will be considered positive or negative
  - If ***positive***, vertiport placement could contribute to **gentrification**
  - If ***negative***, vertiport placement could contribute to **neighborhood decline and disinvestment**
- Concerns Related to Routing
  - Flights over low-income and minority communities
  - Temporal impacts of flight operations (e.g., late-night flights over residential neighborhoods)
  - Increased air traffic over sensitive land uses
  - Noise, visual pollution, and other impacts associated with the flight paths

Potential Social Equity Impacts of AAM

- Affordability
  - Many market forecasts estimate that air taxis will between $6 and $11 per mile, depending on aircraft occupancy
  - Comparable to helicopter and limousine services
- Accessibility
  - Important to consider access for people with disabilities
  - **USDOT Complete Trip Concept:** *If one link in the trip is not accessible, then access to a subsequent link is unattainable and the trip cannot be completed using AAM*

Image Source: USDOT

Potential Social Equity Impacts of AAM

- Environmental Justice (EJ) and the Allocation of Public Resources
  - Environmental justice is the fair treatment and meaningful involvement of all people
  - Fair treatment means no group of people should bear a disproportionate share of the negative environmental consequences
  - Meaningful involvement entails providing people with an opportunity to participate in decisions about activities that may affect their environment or health
- Applying EJ principles to AAM
  - Public should have the opportunity to participate and influence a regulatory body's environmental decisions (e.g., vertiport placement, if a vertiport is built, etc.)
  - No group should disproportionately bear the negative environmental impacts

STEPS Framework Applied to AAM

Spatial barriers create physical gaps in the transportation network (e.g., service area gaps)

Temporal barriers create gaps in the transportation network during particular travel times (e.g., schedule gaps)

Economic barriers include financial challenges (e.g., affordability)

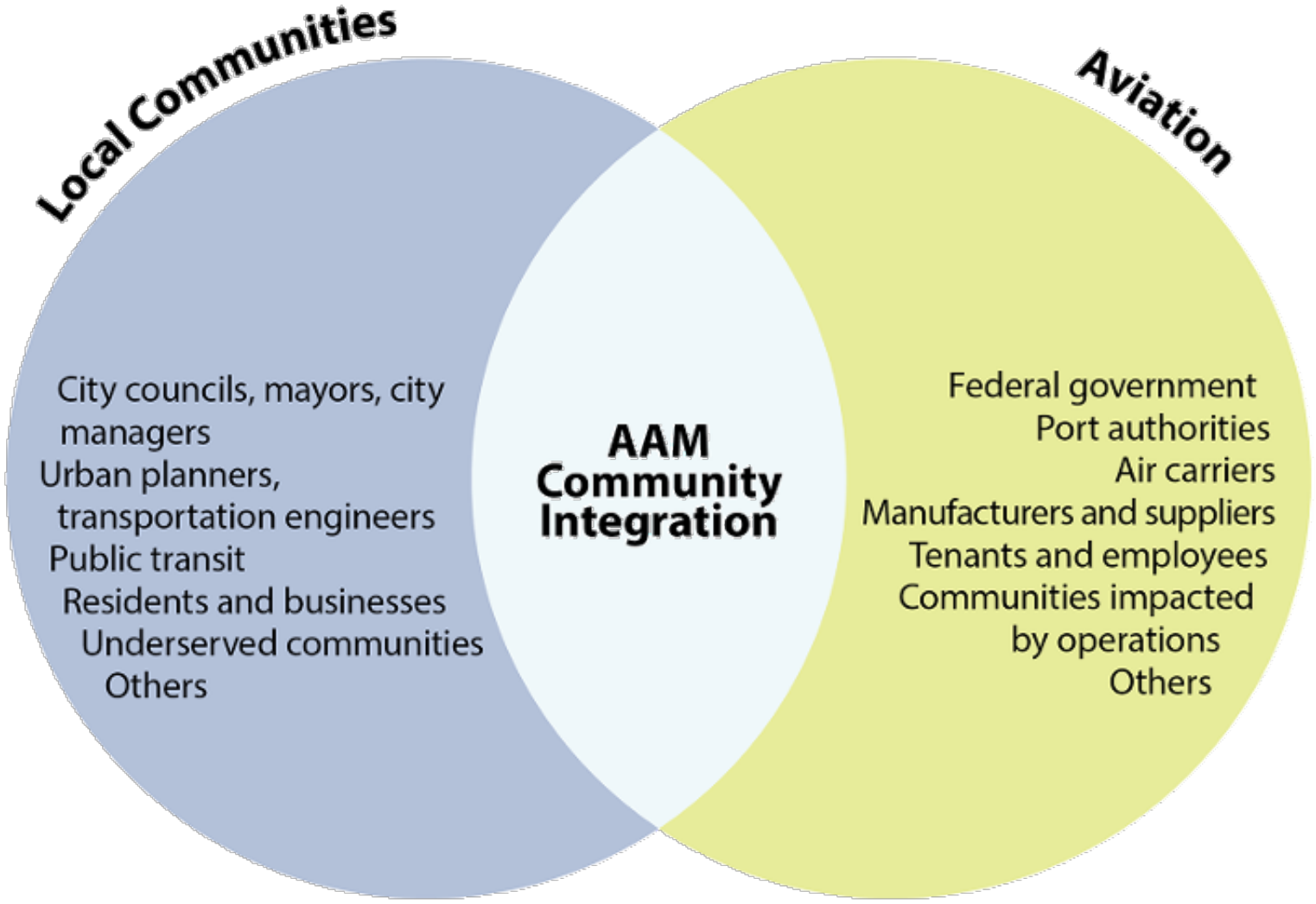
Physiological barriers include physical and cognitive limitations that make using AAM difficult or impossible for certain individuals (e.g., ADA access)

Social barriers include social, cultural, safety, and language challenges

Elements	Opportunities	Challenges	Potential Policy Interventions
Spatial	AAM has the potential to bridge spatial, topographical, and built environment gaps (e.g., water, mountains, megaregions).	AAM could present spatial barriers if a service is unavailable in a particular neighborhood, city, or region. Additionally, AAM could encourage some households to live further from urban centers, contributing to exurbanization and the spatial growth of regions.	The public sector could provide incentives to support routes that have limited transportation connectivity (i.e., essential air service for AAM in rural areas).
Temporal	AAM could provide supplemental services at times when other forms of mobility are unavailable (e.g., late-night transportation).	AAM might present temporal challenges, such as services that are unavailable during particular times or services that impact underserved communities during particular times of day (e.g., late-night noise).	Policies that restrict late-night operations over low-income and minority residential communities could reduce the temporal impacts of AAM on underserved populations. However, this would also need to be balanced against limiting late-night AAM service.
Economic	AAM has the potential to create new direct and indirect employment opportunities and possibly reduce the mismatch between affordable housing and jobs. AAM also has the potential to revitalize neighborhoods around vertiports.	AAM could present economic challenges for users and nonusers, such as lack of affordable services and gentrification in neighborhoods around vertiports. Conversely, if a vertiport is viewed as a detractor due to noise or other impacts, vertiports might have an adverse impact on the economic development in their vicinity.	Special pricing or subsidy programs for underserved populations and socially desirable use cases (e.g., aeromedical and emergency response) could help to make AAM accessible for more people. There are also opportunities to create workforce training programs for underserved communities.
Physiological	AAM could provide additional mobility options for travelers who may not be able to travel long distances or times.	AAM might present physiological challenges if the infrastructure, aircraft, and services are not accessible for people with disabilities and older adults.	The incorporation of universal design principles (creating products and services that are accessible to people with a wide range of abilities, disabilities, and other characteristics) into aircraft, facilities and vertiports, and apps can help make AAM more accessible for all.
Social	AAM has the potential to expand access to employment and critical services, such as rural health care delivery and emergency response.	AAM could have social and environmental impacts, including noise and aesthetics, on underserved populations or disadvantaged communities.	Targeted stakeholder and community outreach may assist in identifying early impacts and identifying specific strategies that could help mitigate the adverse impacts of AAM on underserved populations.

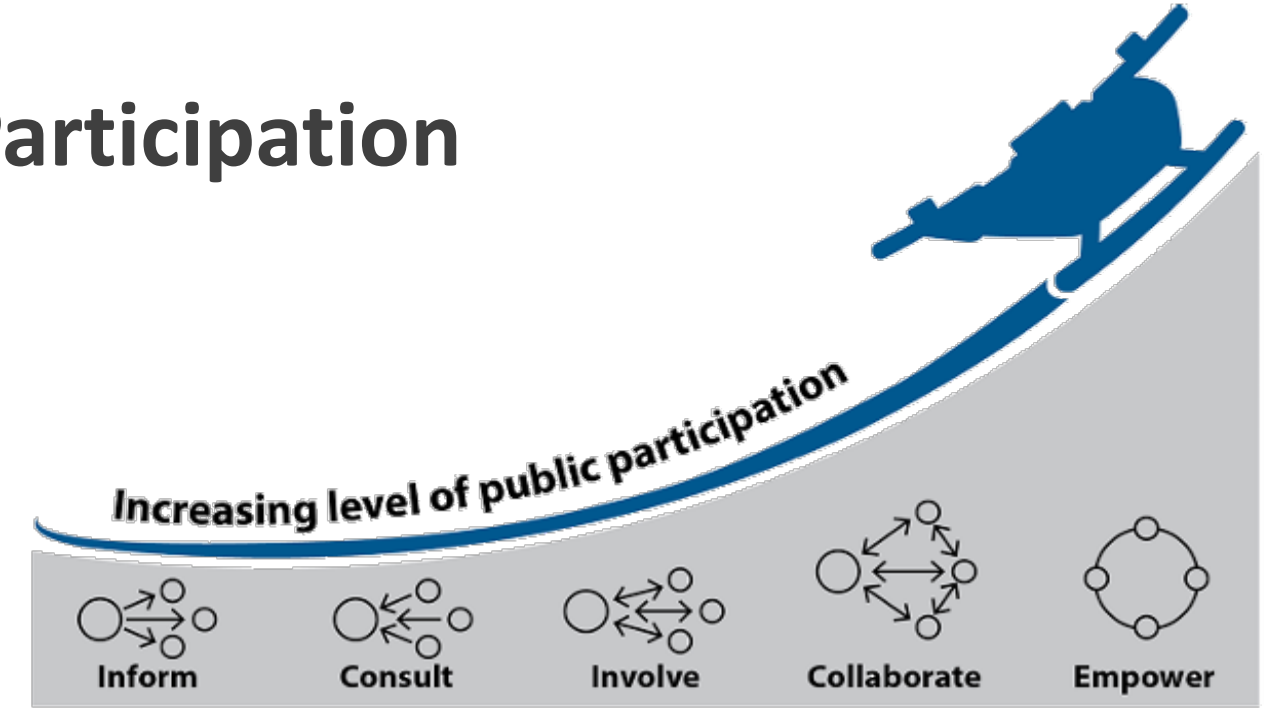
Source: Cohen et al. 2024

Intersection Aviation and Local Communities



Source: Cohen et al. 2024

The Role of Public Participation



	Inform	Consult	Involve	Collaborate	Empower
Goal	To provide the public with balanced and objective information.	To obtain feedback from the public on analysis, alternatives, and decisions.	To work with the public to ensure that concerns and aspirations are understood and considered in decisions.	To partner with the public in each aspect of the decision.	To place final decision-making in the hands of the public.
Promise	"We will keep you informed."	"We will listen to and acknowledge your concerns and aspirations."	"We will work with you to ensure that your concerns and aspirations are directly reflected in the decisions made."	"We will look to you for advice and innovation and incorporate this in decisions as much as possible."	"We will implement what you decide."

Source: Cohen et al. 2024
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Concluding Thoughts

- Research is needed to understand the potential equity impacts of AAM as the ecosystem grows and evolves
- Stakeholder and community engagement is needed to guide equitable outcomes
- Policy is likely needed to leverage opportunities, mitigate adverse impacts, and support broad societal benefit

Image Source: Reinvent

https://www.planning.org/publications/report/9286262/

Urban Air Mobility: History, Ecosystem, Market Potential, and Challenges
https://escholarship.org/uc/item/8nh0s83q

Advanced Air Mobility: Demand Analysis and Market Potential of the Airport Shuttle and Air Taxi Markets
https://www.mdpi.com/2071-1050/13/13/7421

The Potential Societal Barriers of Urban Air Mobility
https://escholarship.org/uc/item/7p69d2bg

NASA Urban Air Mobility Market Study
https://ntrs.nasa.gov/citations/20190001472

USDOT Mobility on Demand Planning and Implementation Guide
https://rosap.ntl.bts.gov/view/dot/50553

More resources available at www.tsrc.berkeley.edu

Thank You.

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