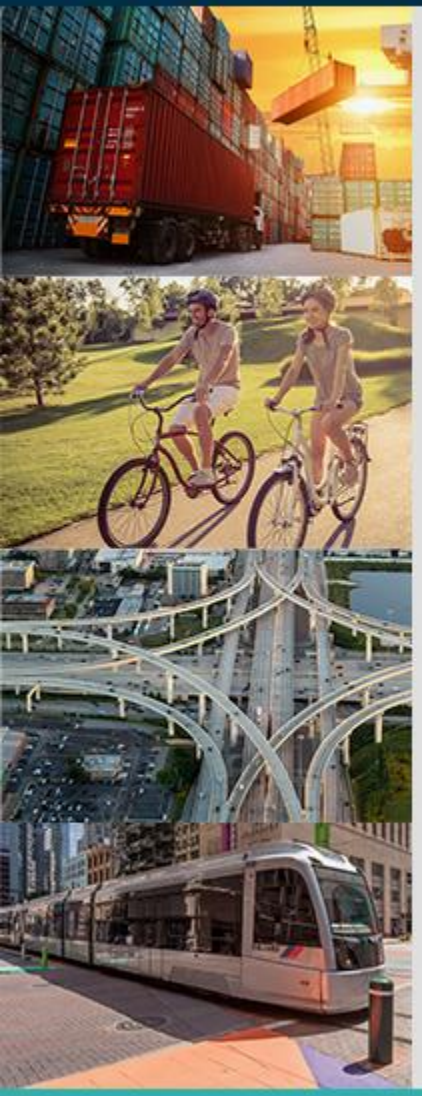
H-GAC Airport Ground Access Survey and Activity-Based Sub-Model Development

ETC INSTITUTE RSG®

H-GAC Houston-Galveston Area Council

Regional Collaboration • Transportation Planning • Multimodal Mobility

Outline

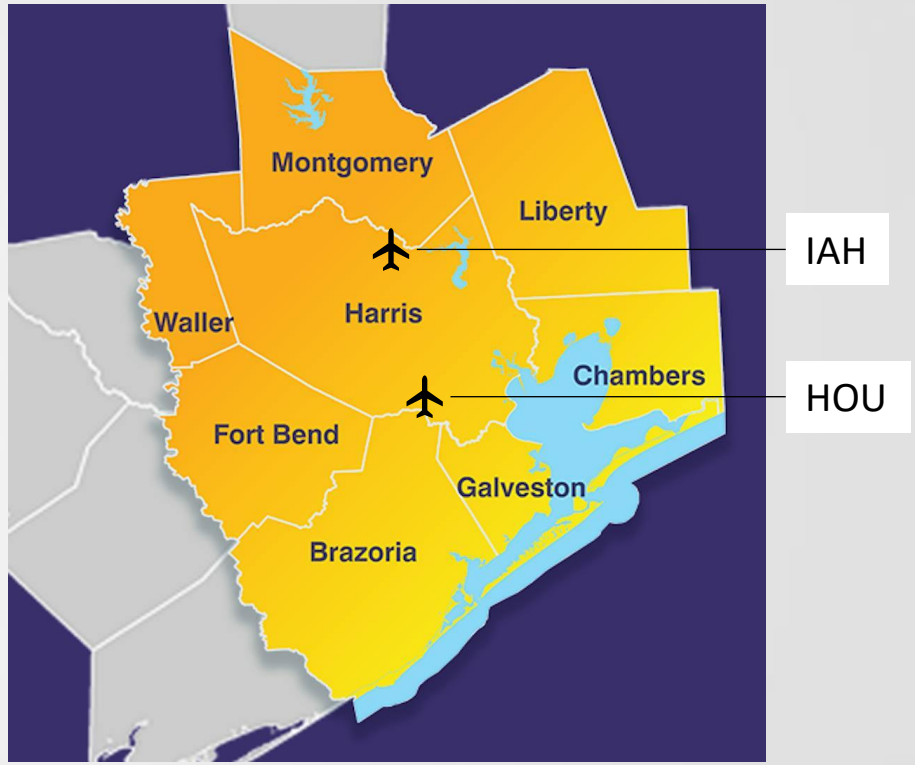


- **Part 1**: 2023 Airport Ground Access Transportation Survey
  - Airport Surveys Overview
  - Methodology
  - Key Survey Results
- **Part 2**: Airport Sub-Model
  - Overview
  - Model Structure
  - Calibration and Validation Results
  - Applications and Scenarios

Airport Surveys Overview

- Conducted by: ETC Institute in partnership with RSG
- Airports Covered:
  - George Bush Intercontinental Airport (IAH)
  - William P. Hobby Airport (HOU)
- Survey Period: November 2023
- Target Group: Non-connecting air passengers
- Purpose:
  - Understand ground access travel patterns
  - Add ground access trips to regional travel demand model

H-GAC Region



Methodology

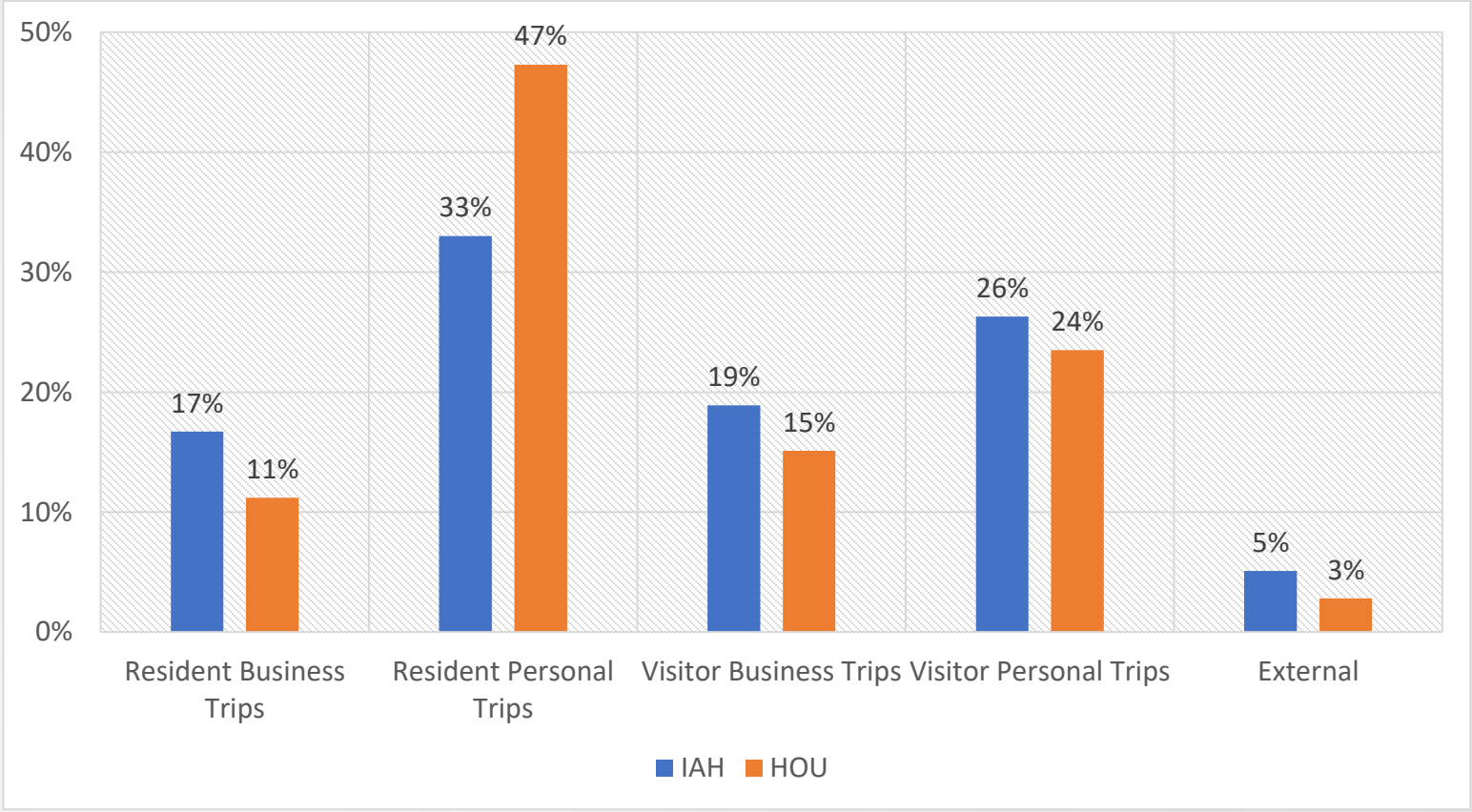
- Sampling plans were based on seat availability of non-connecting departing flights by day of week and time of day.
- Data Collection
  - Tablet intercept surveys by trained interviewer
  - Locations: departure gates, food courts, baggage claim, etc.
  - Information Collected: sociodemographic data, travel mode, parking choices, etc.
- Survey Results
  - 5,202 valid responses
  - Represents ~105,000 non-connecting passengers per day

Airport	Total Complete Surveys	Valid Records	Weighted Total
IAH	3,457	2,953	79,434
HOU	2,534	2,249	25,649
Total	5,991	5,202	105,083

Key Survey Results

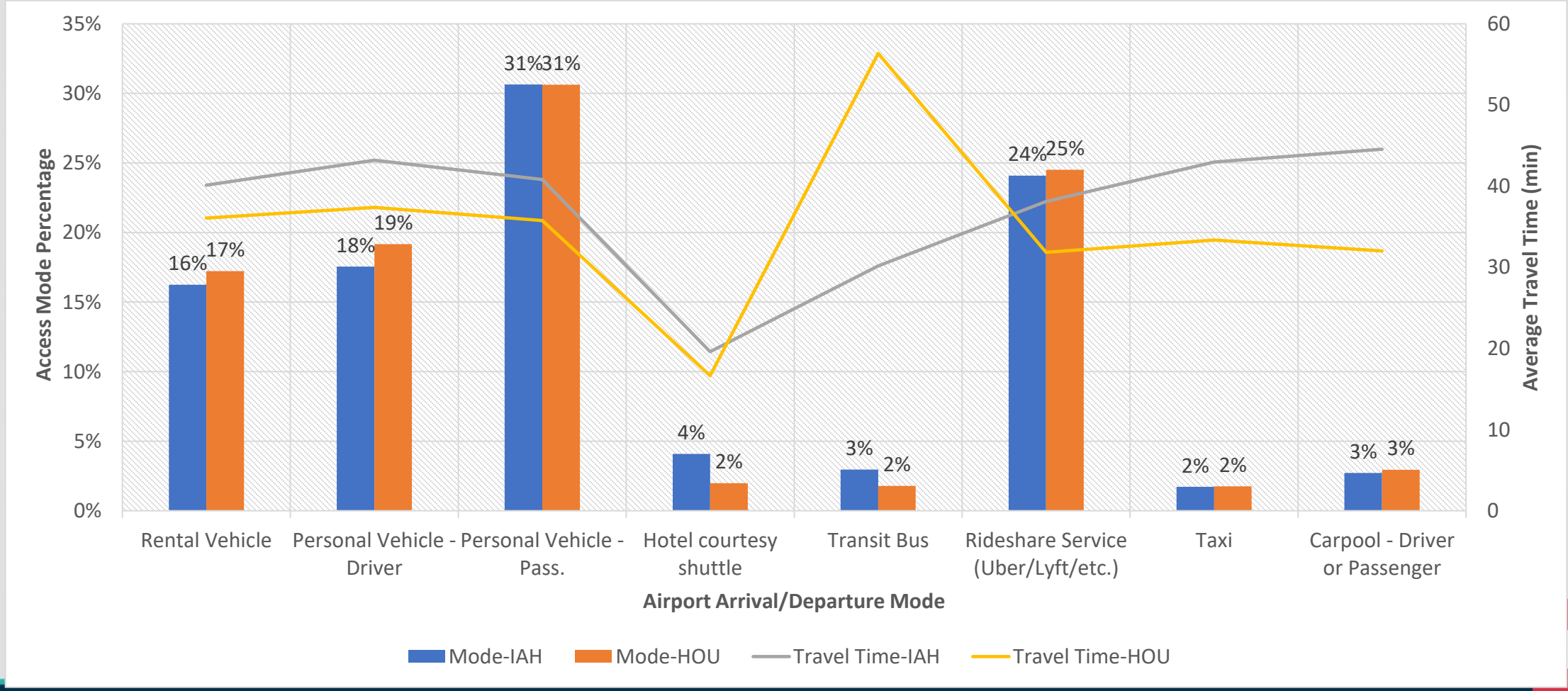
Airport Ground Access Market Segmentation/Purpose

- Resident business
- Resident personal
- Visitor business
- Visitor personal
- External - trips to/from outside the H-GAC region



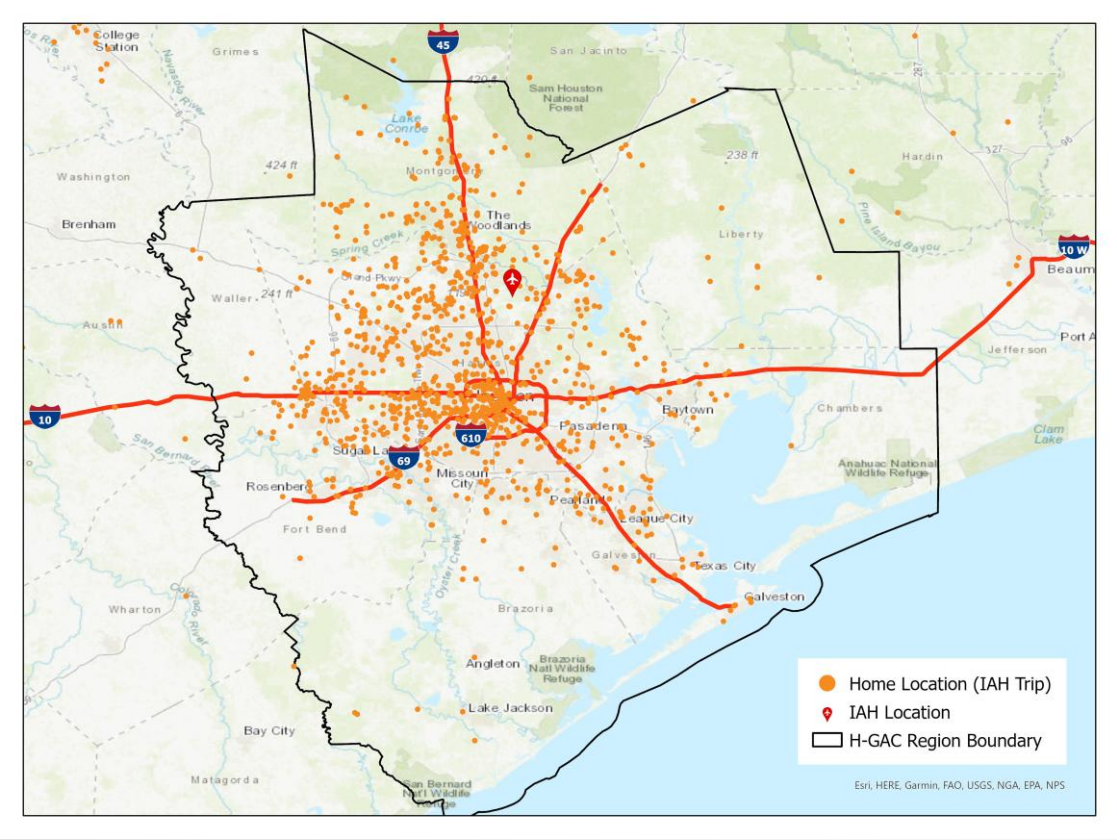
Key Survey Results

Access Mode Share and Average Travel Time

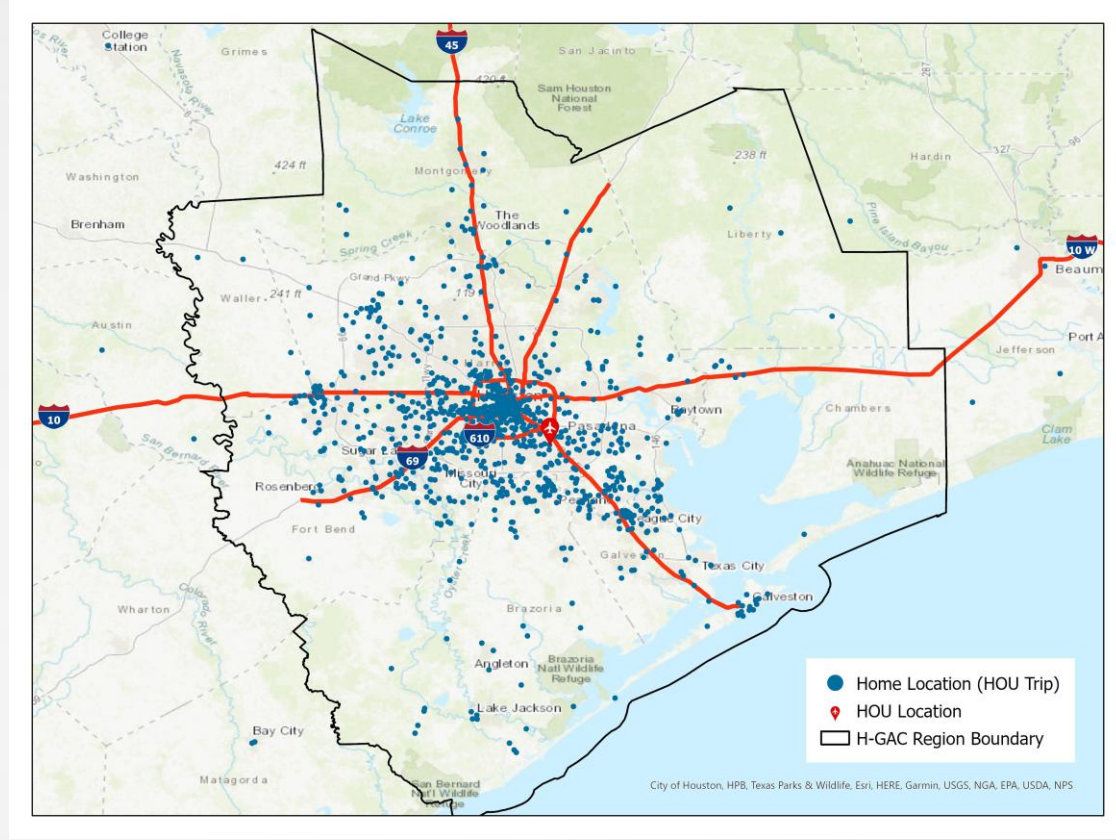


Key Survey Results

Resident Home Locations



IAH Travelers

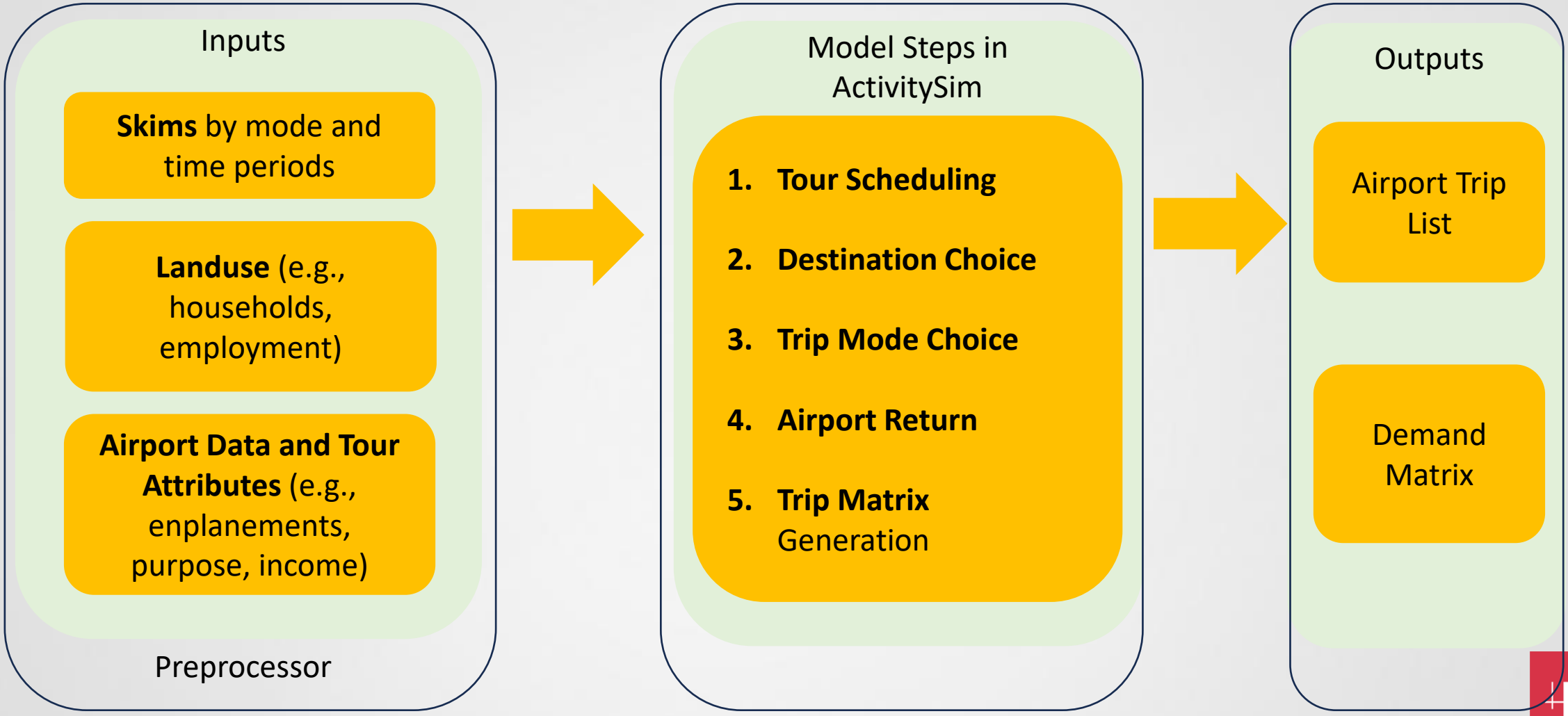


HOU Travelers

Airport Sub-Model Overview

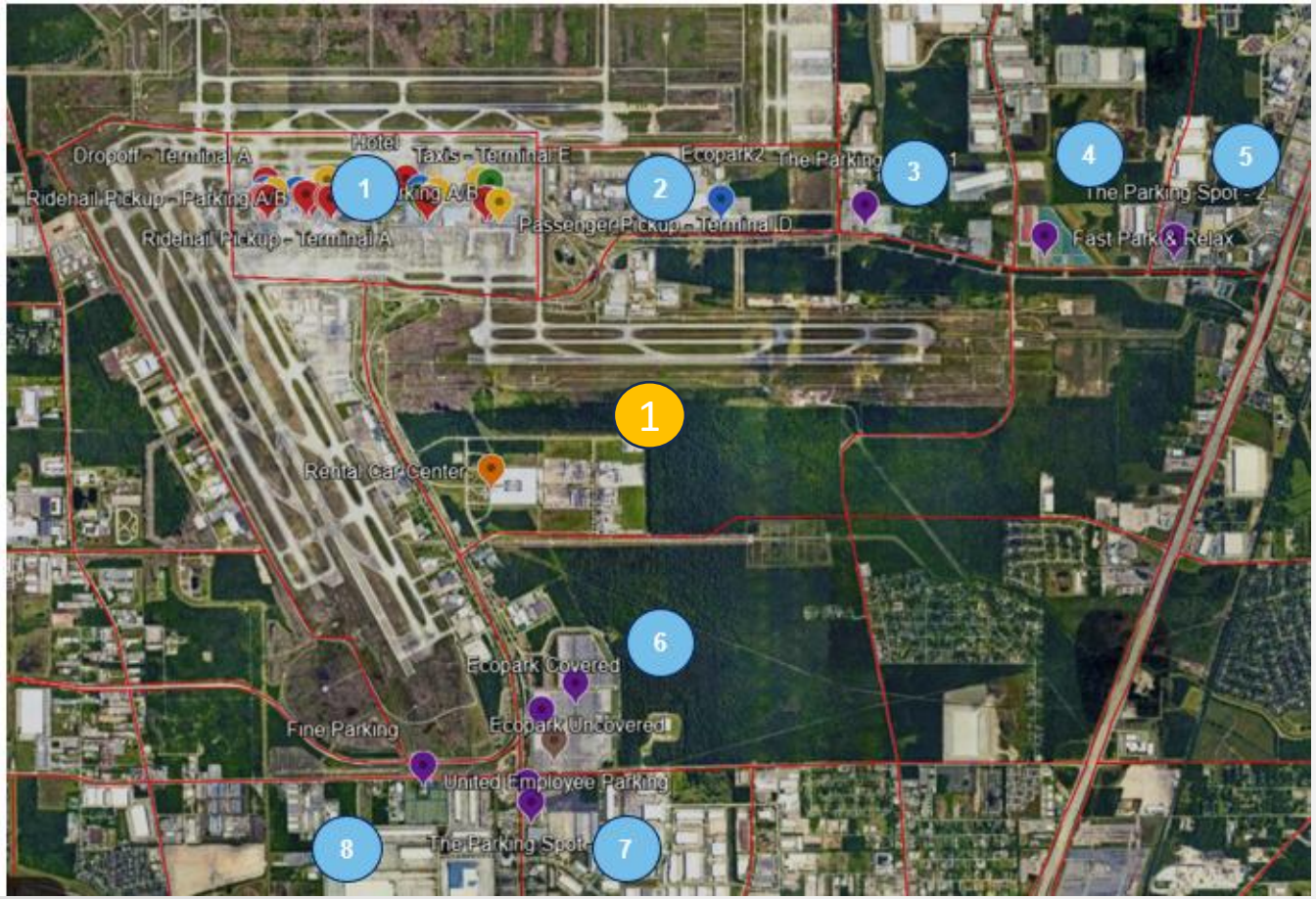
- Purpose
  - Model airport passenger ground access travel to/from IAH and HOU
  - Support H-GAC's regional Trip-Based (TBM) and Activity-Based (ABM) models
- Platform and Framework
  - Built using ActivitySim, based on the framework initially developed by the San Diego Association of Governments (SANDAG)
  - Customized for the Houston region
- Key features
  - Supports various airport access (e.g., parking, ride-hail, and rental car)
  - Enplanement forecast for different passenger types and tour attributes

Airport Sub-Model Structure



Airport Parking and Rental Car Location Configuration

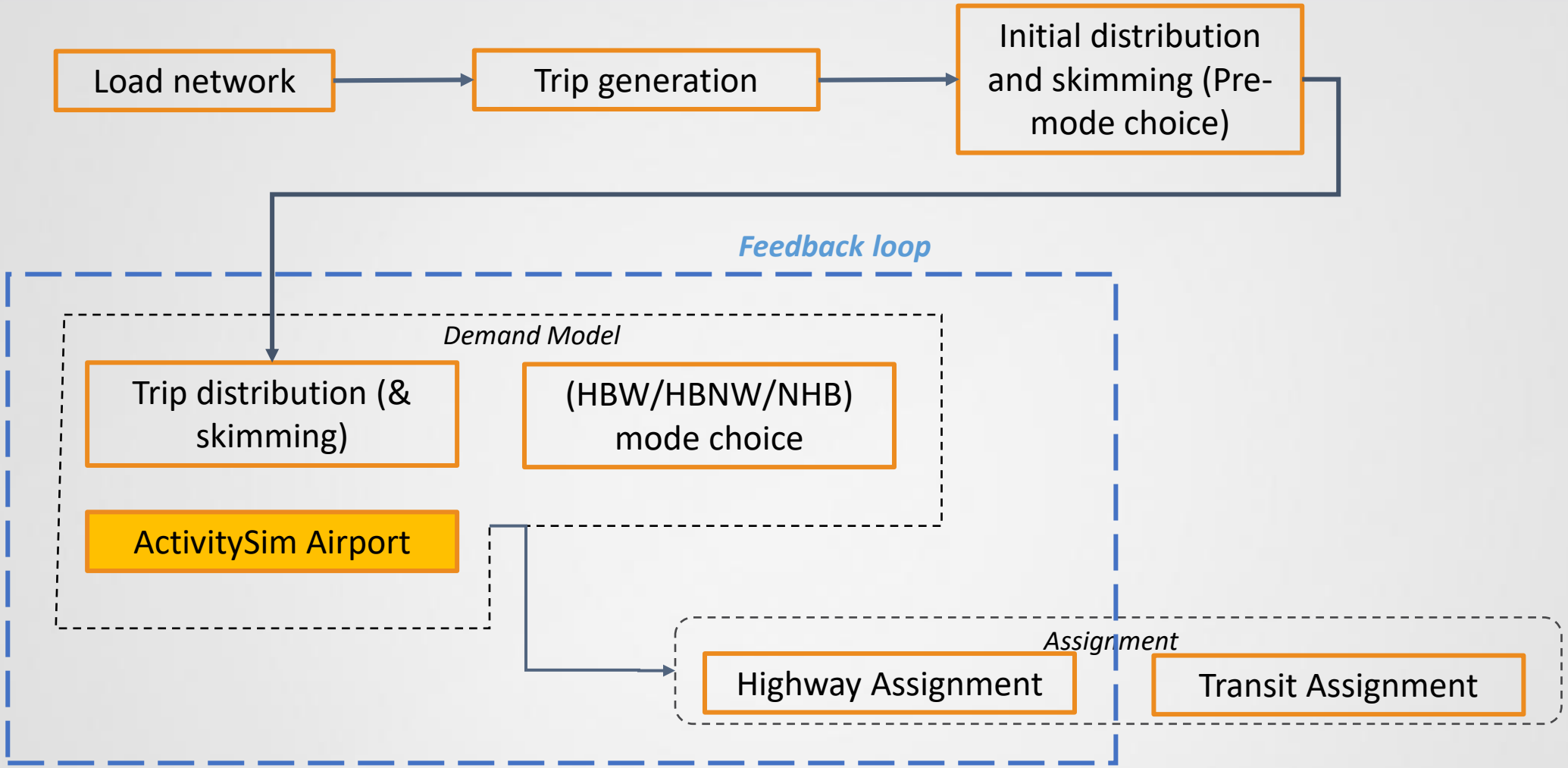
IAH Parking and Rental Car Locations



Up to 10 parking locations and 5 rental car locations for each airport

- Configurable to reflect airport infrastructure changes
- Locations are defined at the TAZ level using their IDs
- Each location includes input information:
  - Cost
  - In-vehicle-time
  - Walk time
  - Wait time

Airport Sub-Model Integration with TBM

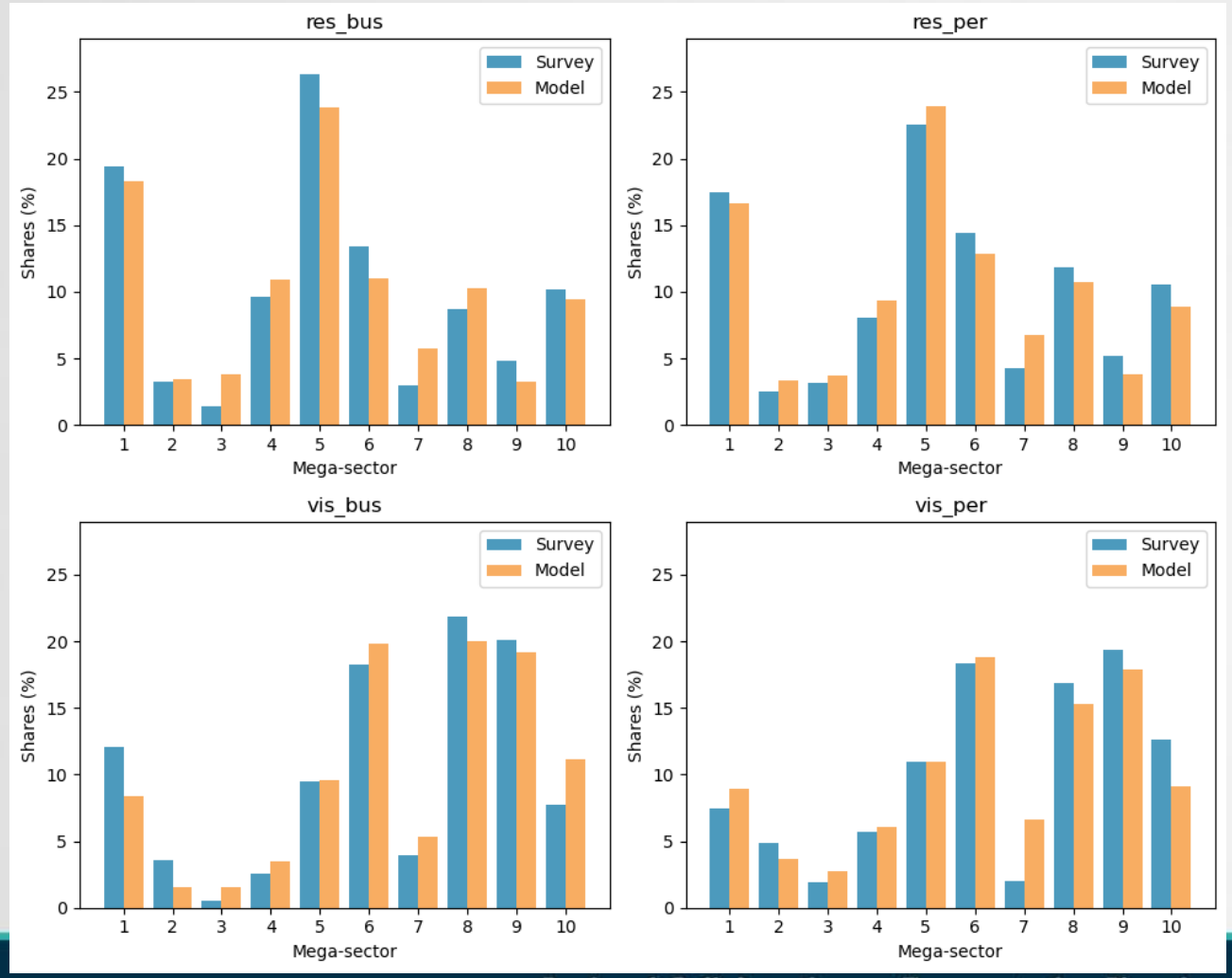


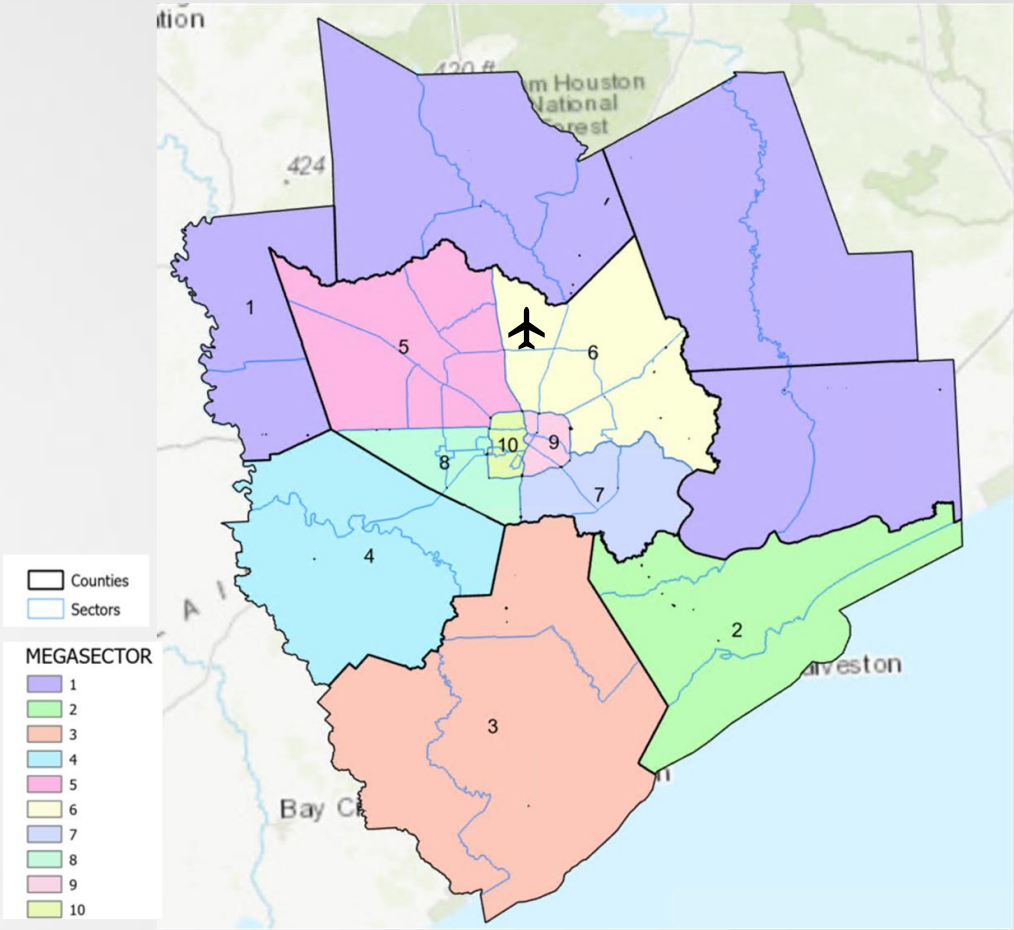
Model Calibration & Validation Results

IAH Mega-Sector Destination Choice - Model VS. Survey

Resident Trips

Visitor Trips



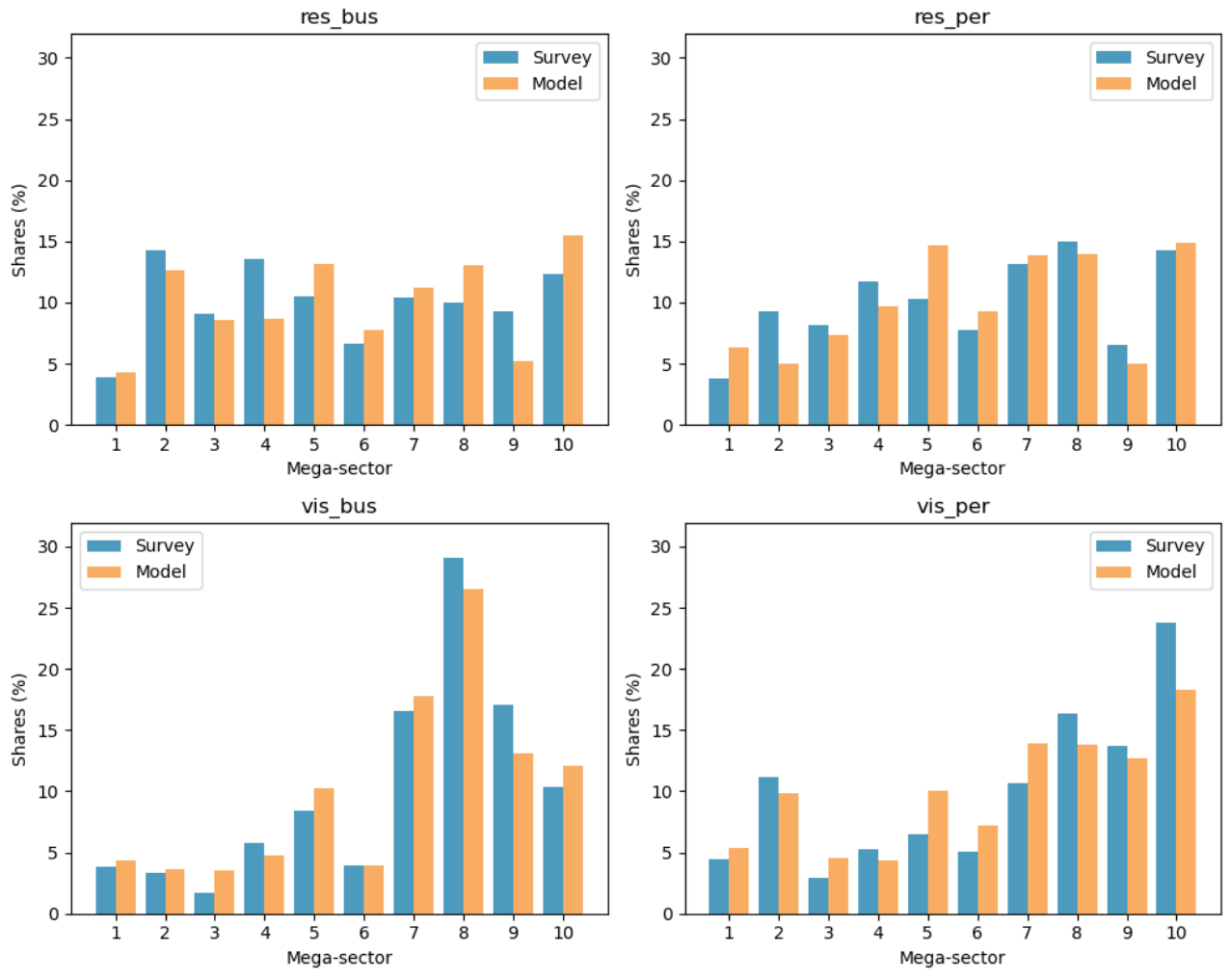


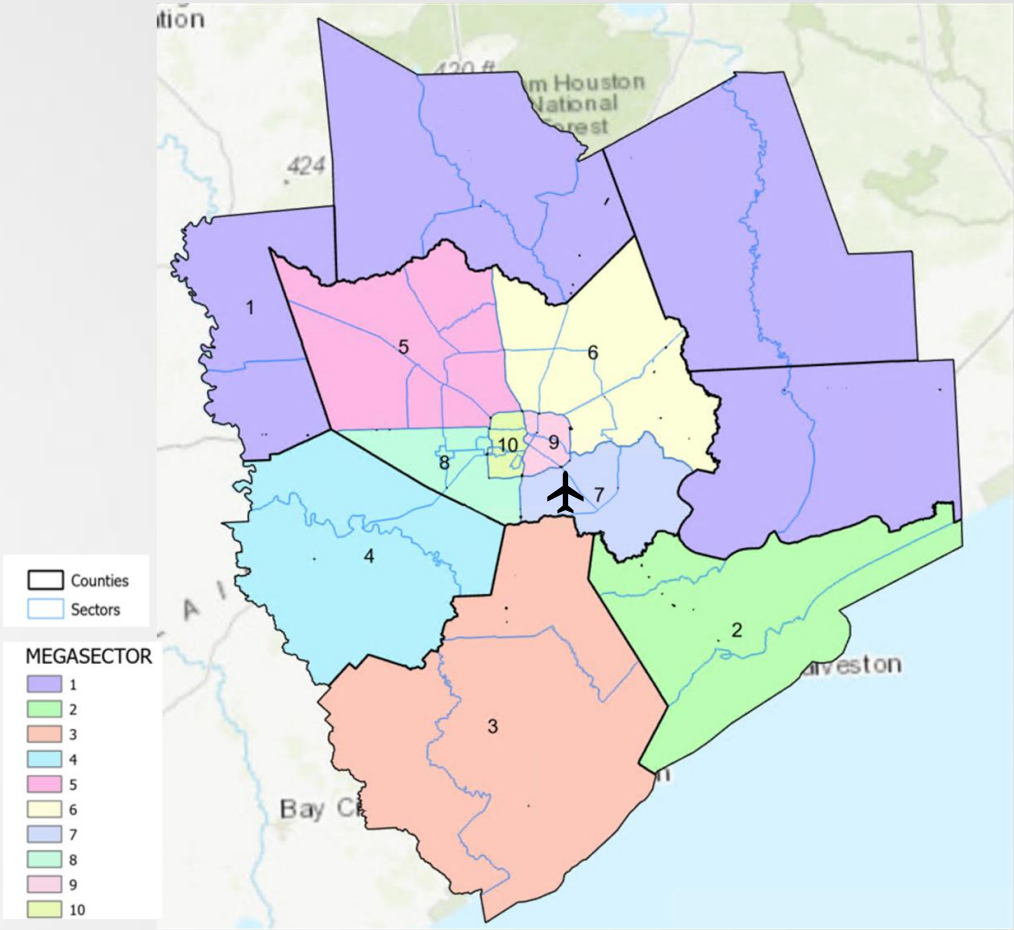
Model Calibration & Validation Results

HOU Mega-Sector Destination Choice - Model VS. Survey

Resident Trips

Visitor Trips

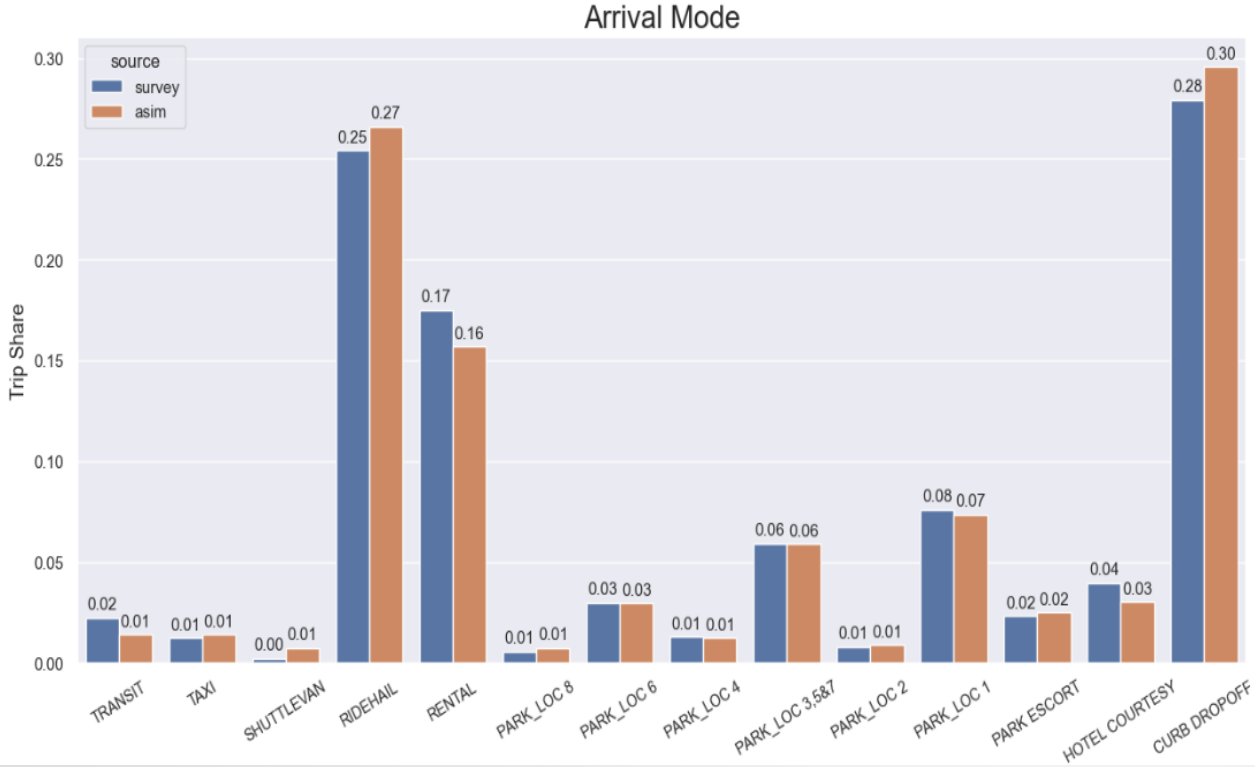




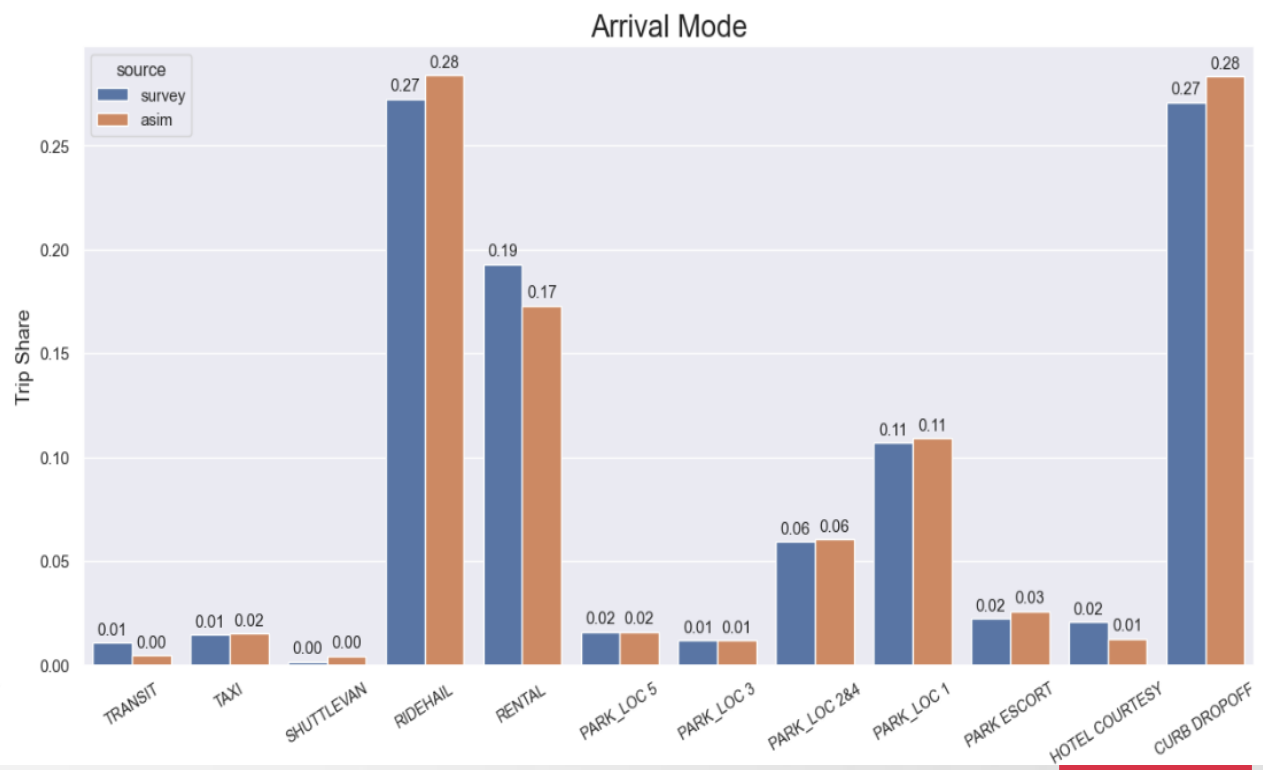
Model Calibration & Validation Results

Mode Choice - Model VS. Survey

IAH

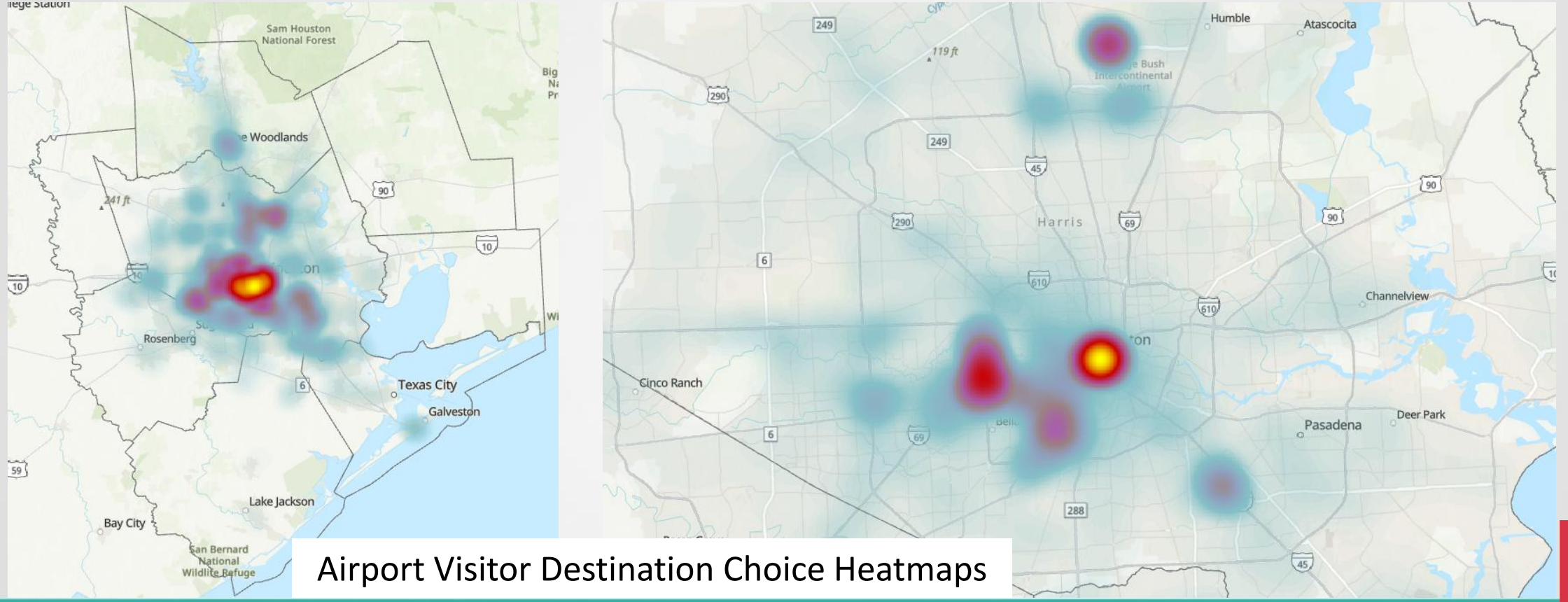


HOU



Applications

- Airport visitor trips for Houston FIFA 2026 World Cup Scenario Planning Study
- Leveraged enplanement rates and hotel inventory



Airport Visitor Destination Choice Heatmaps

THANK YOU!

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