RTA Next

with PAG Data Science

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MAP Talk

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RTA
Regional Transportation Authority

Delivering our promise to you

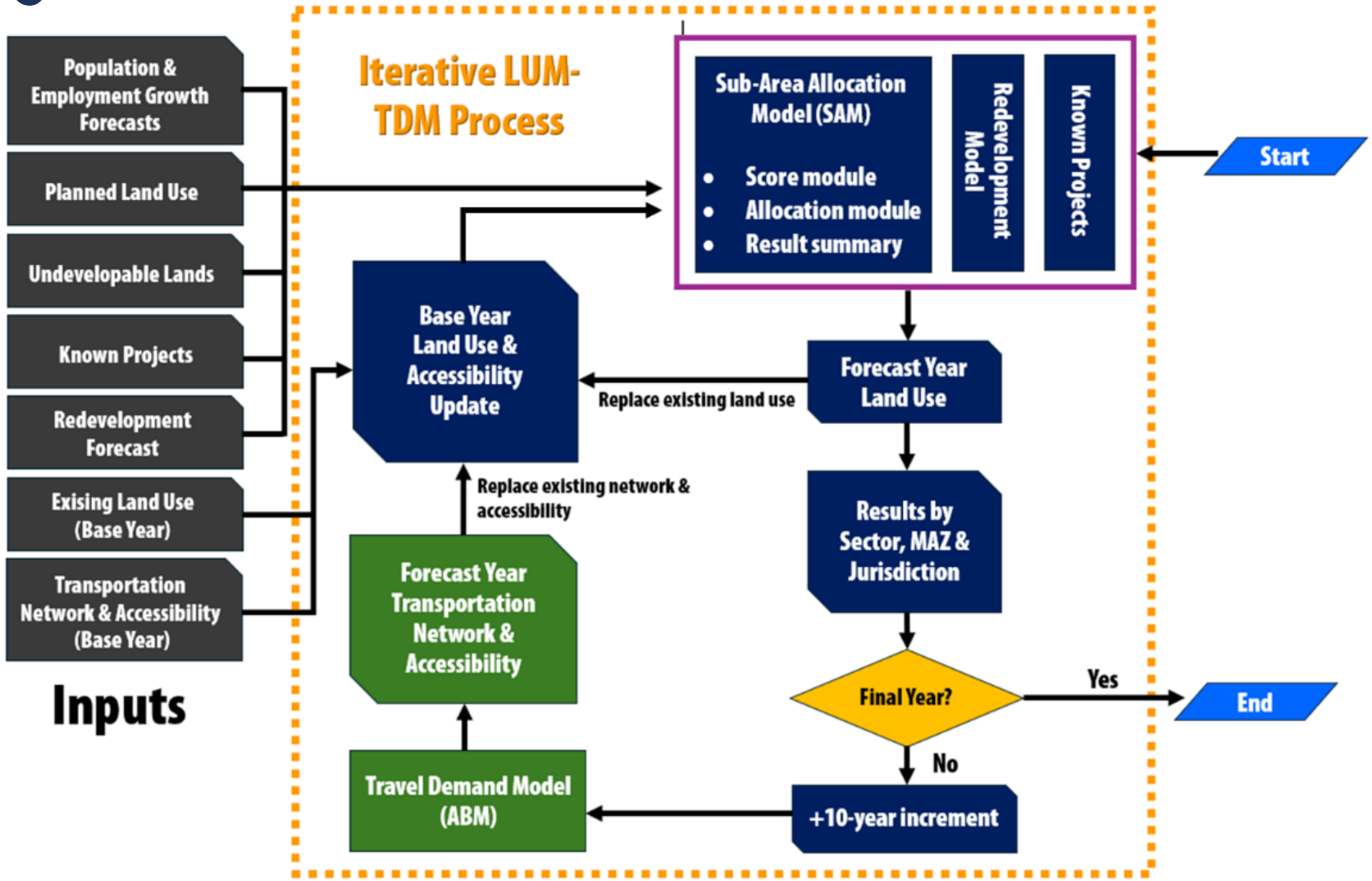
Why Data Science?

- How data is used to inform transportation improvements throughout the region
- What information is tracked and why it's important
  - Traffic delay
  - On-green percentage
  - Transit reliability
  - Pedestrian/bike volumes
  - Crash data

Getting you from point A to point B reliably and safely

PAG Data Science

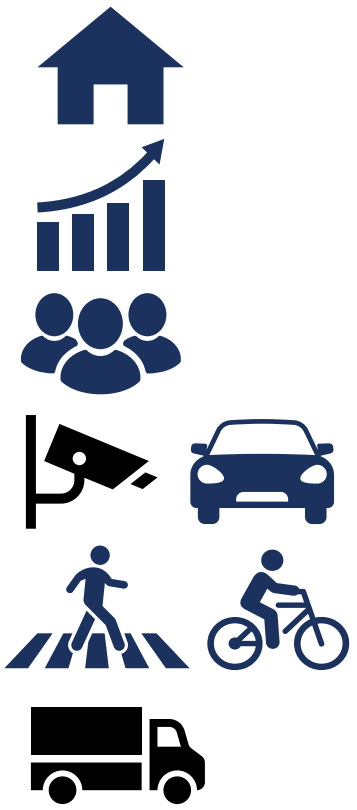
- PAG Modeling
  - Land-Use Modeling
    - SAM
    - UrbanSim (AZ-SMART)
  - Travel Demand Modeling
    - Activity-based model
    - Dynamic traffic assignment model
  - Air-quality Modeling
    - EPA MOVES
  - AI and ML Algorithm Development



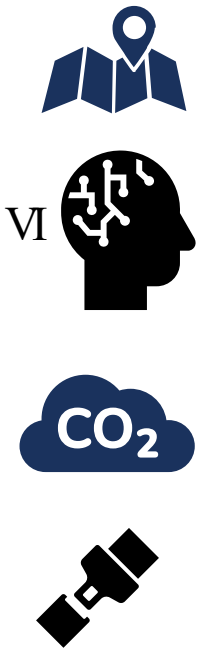
Land-use and travel demand modeling for 2055 RMAP

PAG Data and Analysis

- PAG Data and Analysis
  - Land-use & Socio-Economic Data
    - General & Specific plans
    - Building permit data
    - Population Estimates/Projections
    - Employment data base
  - Multimodal Traffic Data
    - Traffic count data
    - Multi-modal traffic and transportation performance measures
    - Connected vehicle data
    - Freight and crowd-sourced data



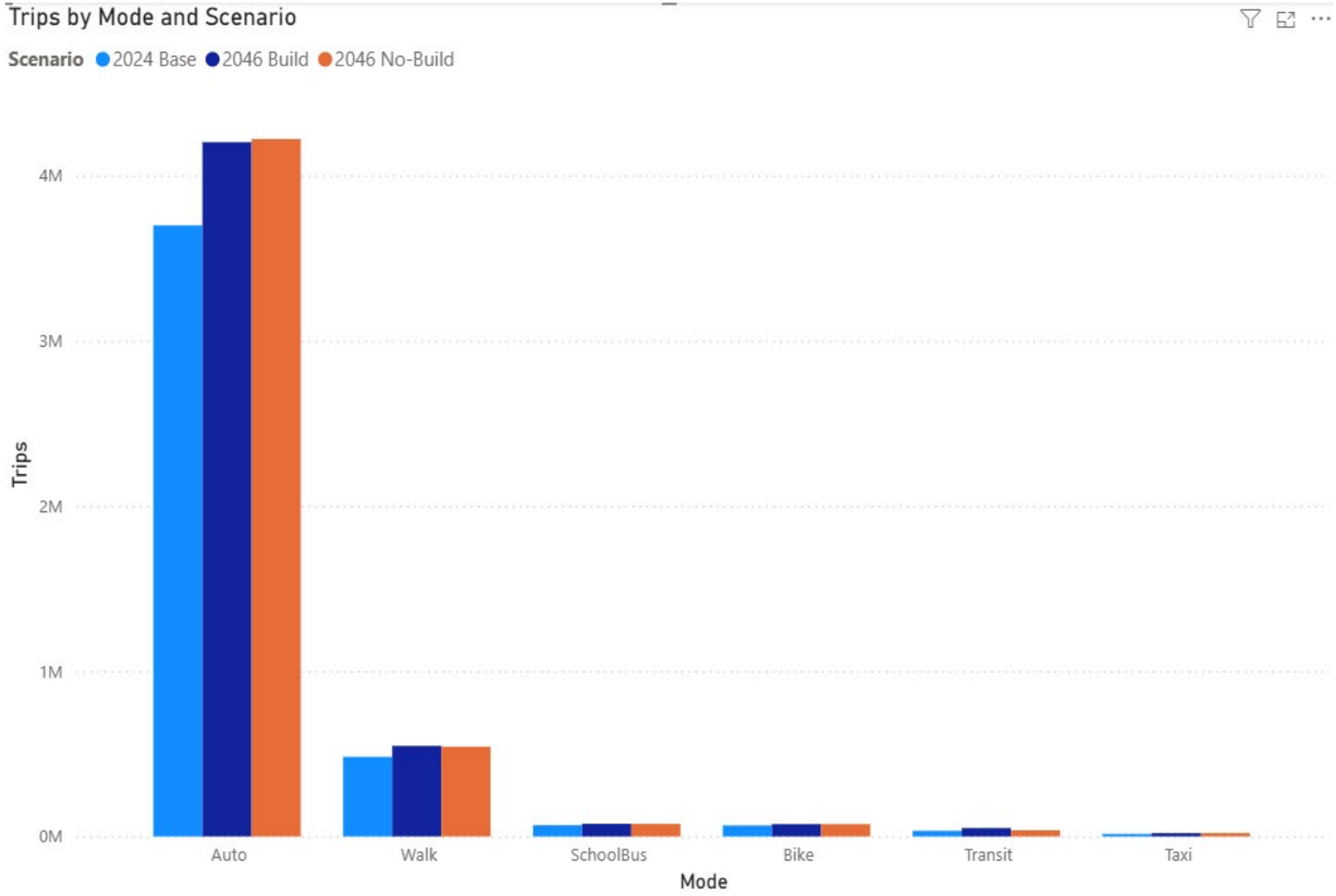
  - Travel Behavior Data
    - Household travel survey
    - Crowd-source data
    - TDM Performance measures and Title VI Analysis
  - Air-quality Data
    - Vehicle registration
    - AQ analysis
  - Safety Data
    - State crash data
    - Performance measures safety analysis



PAG Data Science Team: 3 PhDs, 3 Masters, and 2 Bachelors in Transportation Engineering & Planning, Applied Economics, Mathematics, and Geography (GIS)

Data-Driven RTA Next

- RTA Next Modeling
  - Based on 2055 RMAP modeling, developed 2046 RTA Next model
    - Base year (2024), No-build, and build scenarios
    - Transportation network improvement (road extension/expansion, road diet) and transit service change.
    - Outputs: 30+ performance measures.
      - Ex) Transit Miles, Accessibility, Congestion, and commute time



RTA Next Performance

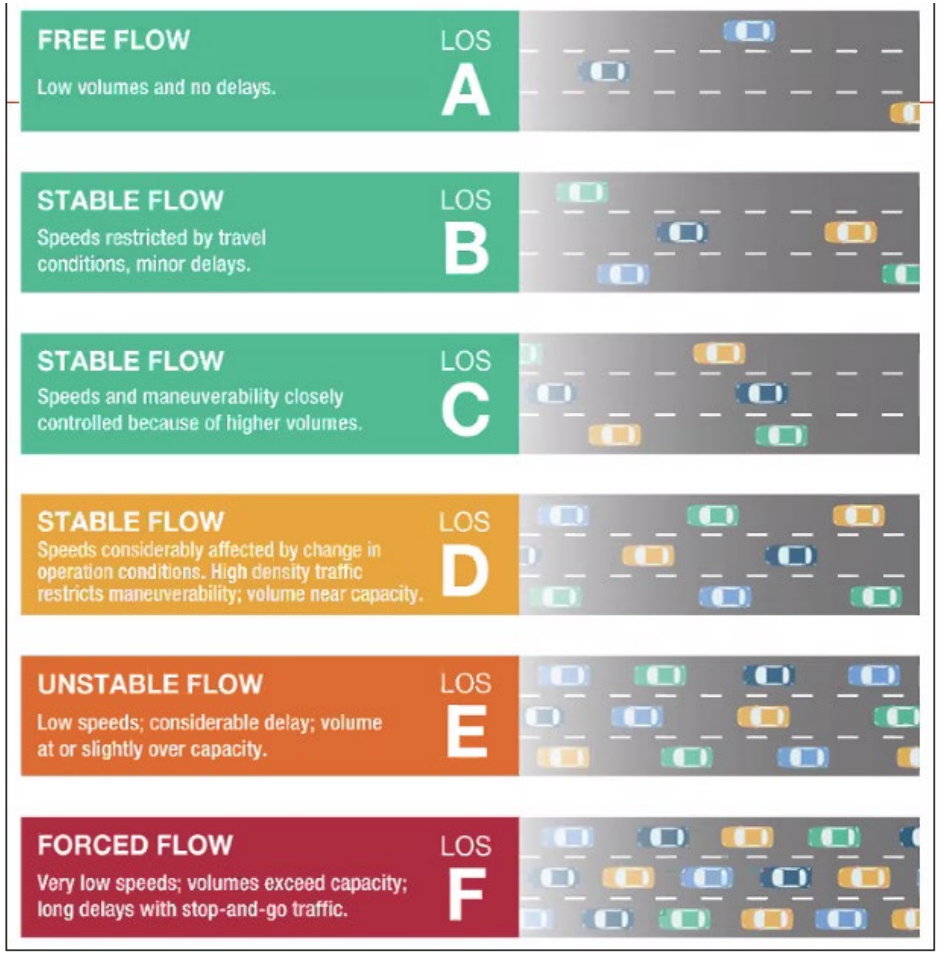
- Regional Delay Estimation
  - Delay= Congested time minus free-flow time
  - Daily peak-hour savings = 5,917 hours
  - Annual peak-hour savings = 2,012,985 hours of delay

	No Build	Build	Savings
Total Delay (hours)	AM: 32,233 PM: 39,948	AM: 29,798 PM: 36,466	AM: 2,435 PM: 3,482
	Peak: 72,182	Peak: 66,265	Peak: 5,917
	Annual: 24,555,342	Annual: 22,542,357	Annual: 2,012,985
Average Delay (minutes/veh-trip)	AM: 4.39 PM: 4.12	AM: 4.10 PM: 3.76	AM: 0.29 PM: 0.34
(hours/veh-trip)	Annual: 48	Annual: 44	Annual: 4

RTA Next Project Level of Service

- Project Level of Service –
  - Volume/Capacity

LoS Class	Traffic State and Condition	V/C Ratio
A	Free flow	0–0.60
B	Stable flow with unaffected speed	0.61–0.70
C	Stable flow but speed is affected	0.71–0.80
D	High-density but the stable flow	0.81–0.90
E	Traffic volume near or at capacity level with low speed	0.91–1.00
F	Breakdown flow	>1.00



RTA Next Project Level of Service

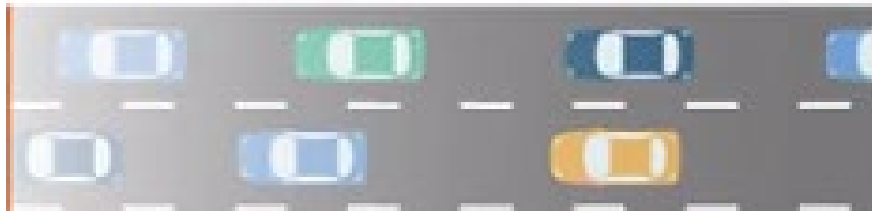
- RTA Next Project List

Project ID	Description	Without RTA Next V/C (VMT-weighted)	With RTA Next V/C(VMT-weighted)	% improvement
3	Lambert Lane: Thornydale to Rancho Sonora	AM: 0.33 PM: 0.31	AM: 0.17 PM: 0.17	AM: 48% PM: 45%
6	Thornydale Road: Cortaro Road to Tangerine Road	AM: 0.59 PM: 0.56	AM: 0.39 PM: 0.36	AM: 33% PM: 35%
10	Valencia Road: Mission Road to Camino Oeste	AM: 0.91 PM: 0.86	AM: 0.69 PM: 0.64	AM: 24% PM: 25%
11	Tangerine Road/I-10 Traffic Interchange	AM: 0.46 PM: 0.52	AM: 0.16 PM: 0.19	AM: 65% PM: 63%
12	Pima Mine Road: I-19 to Nogales Highway	AM: 0.37 PM: 0.38	AM: 0.40 PM: 0.39	AM:-9% PM:-4%
16	Harrison Road: Golf Links Road to Irvington Road	AM: 0.40 PM: 0.49	AM: 0.33 PM: 0.37	AM: 18% PM: 25%

RTA Next Project Level of Service

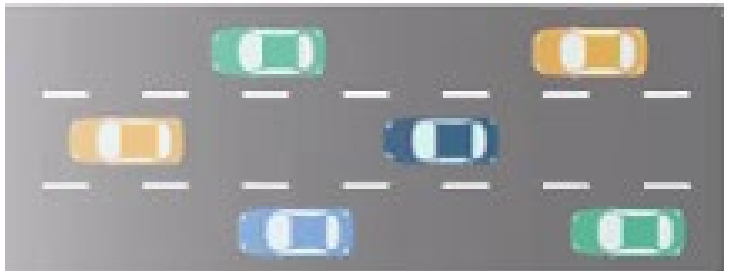
- **Valencia Road: Mission Road to Camino de Oeste** If voters approve RTA Next, congestion on this segment of Valencia during peak commute times will be drastically reduced.

Taking you from this:



Level of Service E **without** RTA Next

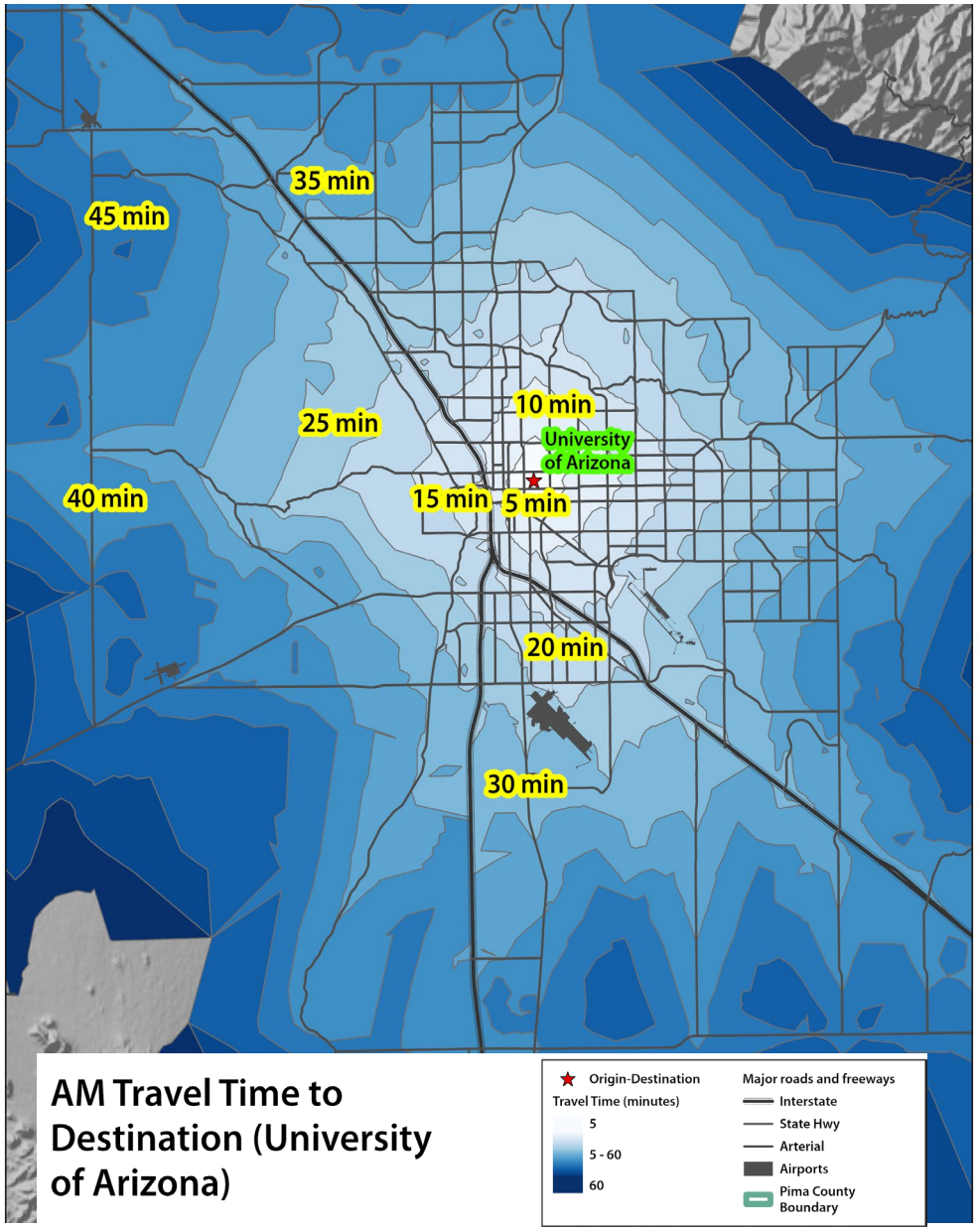
To this:



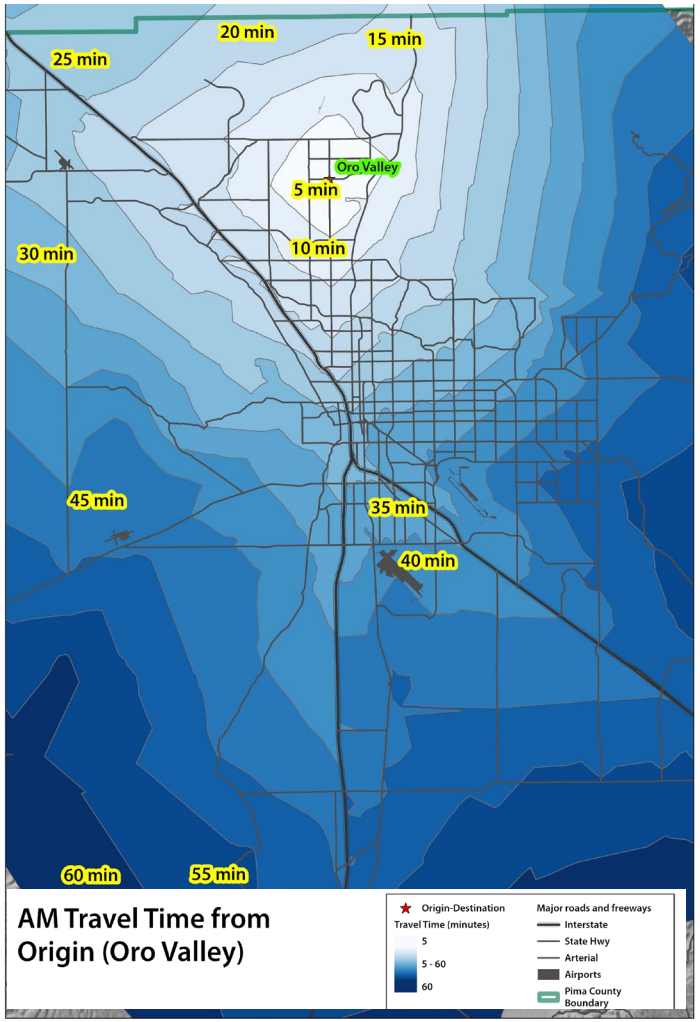
Level of Service B **with** RTA Next

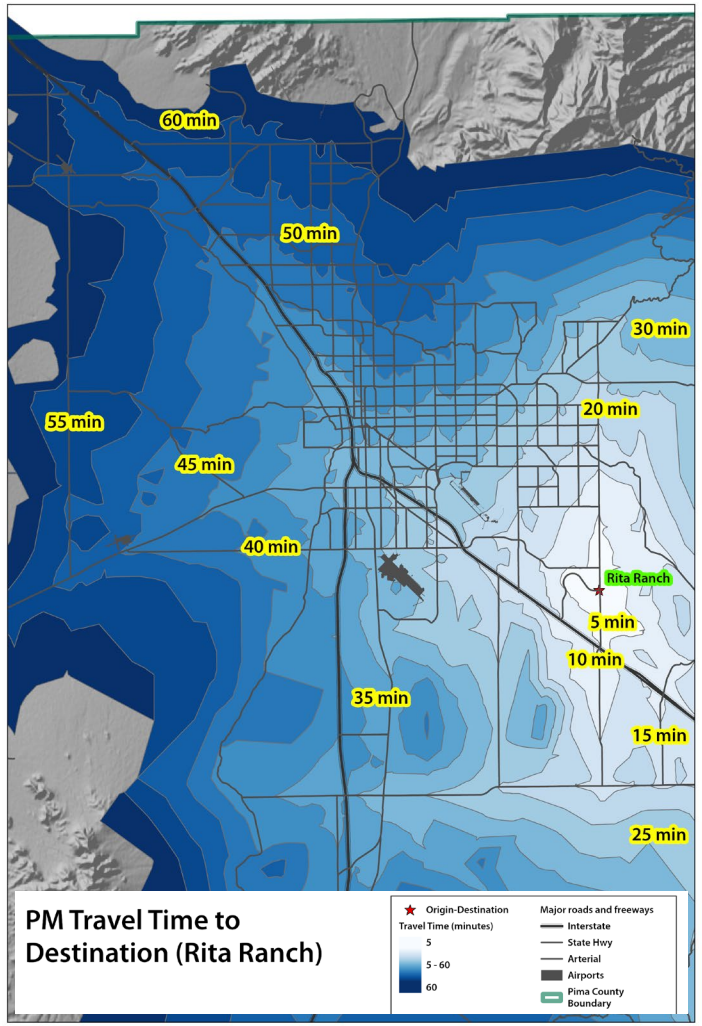
RTA Next Travel Time Analysis

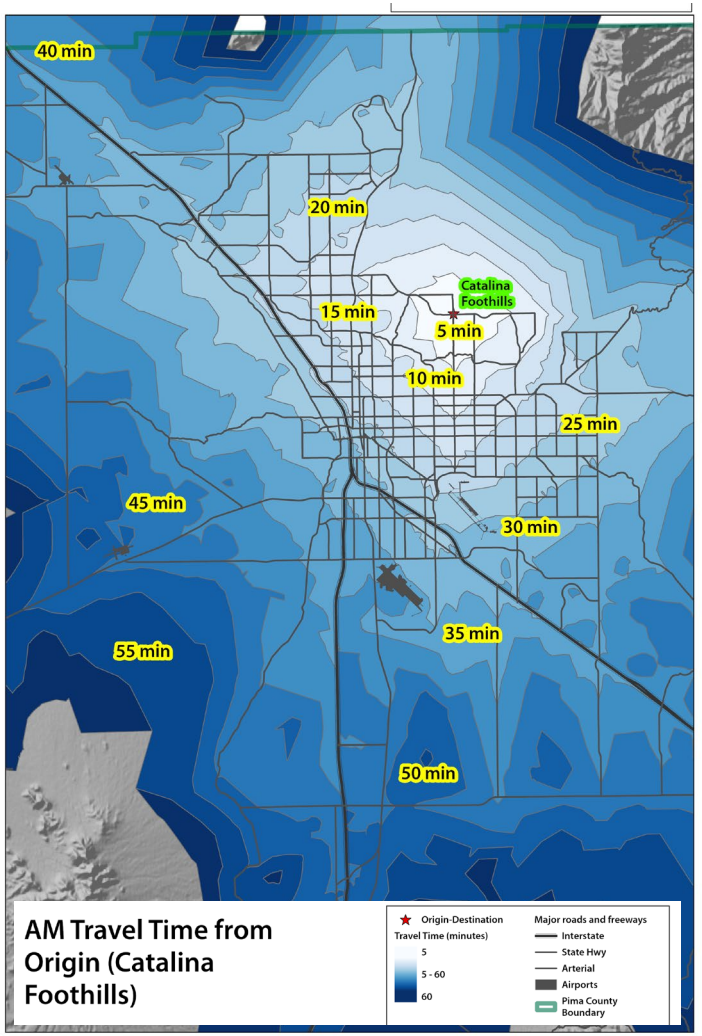
- Model Output
  - 2046 RTA Next build scenario
  - Roadway travel time in AM (6:30AM-8:30AM) or PM (4PM to 6PM)
- Travel Time Analysis
  - **Keeping your commute to 22-minutes** on average even as the population grows by an estimated 100,000 people over the next 20 years.
- Commute time to UA during AM
  - Most of area will be served within 30 minutes arriving to University of Arizona



RTA Next Travel Time Analysis



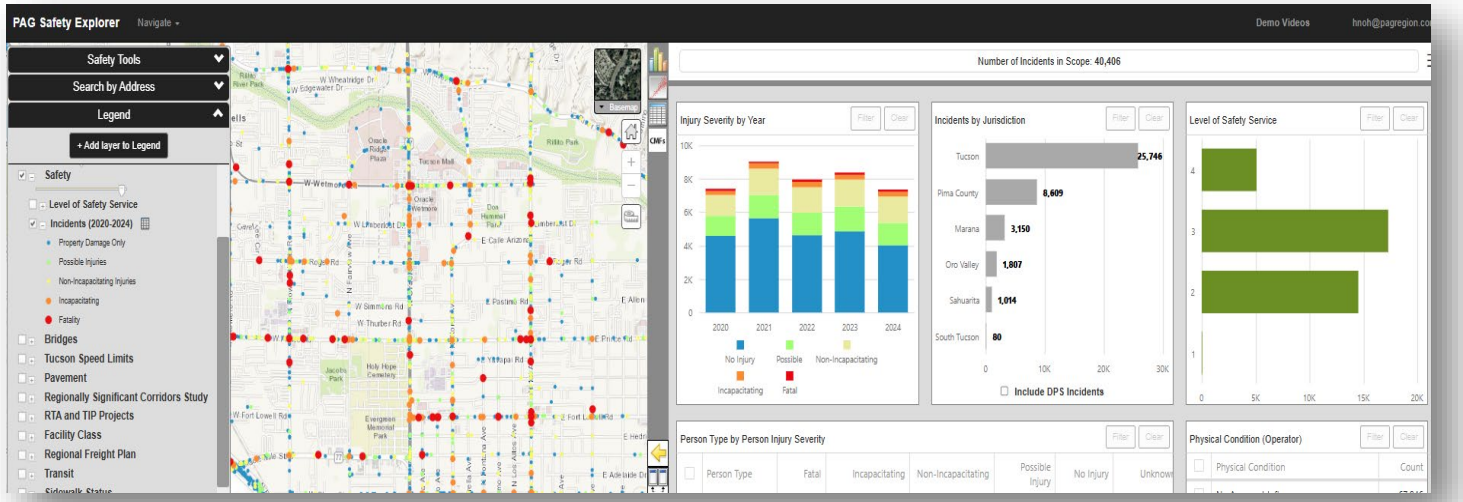




Regional Safety Data & Analysis

- PAG Safety Explorer
  - Arizona State Crash Data
  - Highway Safety Manual (HSM)
  - Safety Performance Function (SPF)
  - Level of Service of Safety (LOSS)
  - Crash Modification Factor (CMF)

- PAG Performance Measure (PM) Dashboard
  - Federal FAST Act* and BIL/IIJA* PMs
  - RMAP PMs



*Fixing America's Surface Transportation Act; Bipartisan Infrastructure Law/Infrastructure Investment and Jobs Act

On-going work

- System Performance Monitoring
  - Continuous monitoring of the regional transportation system and key projects using PAG/RTA resources along with local traffic and transportation data.
    - Ex., Traffic delay, on-green percentage, transit reliability, pedestrian/bike volumes, and crash data
- Scenario Planning
  - Strategic scenario model development and evaluation for new and flexible alternatives.
- Regional Transportation Planning
  - Support for both short- and long-term regional planning efforts (TIP & RMAP), including coordination with the RTA Next and other significant regional transportation projects.

Questions?

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