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SCAG

Transportation Data Analysis Technical Assistance Program

JULY 2026

Multi-Modal Opportunity Network

Anaheim

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Transportation Data Analysis Technical Assistance Program Overview

The SCAG Transportation Data Analysis Technical Assistance (TA) Program was established to advance the use of emerging transportation data platforms in local and regional planning practice. The program operates under SCAG's Regional Pilot Initiatives Partnership Program, which carries out demonstrations of next generation technologies to guide the Southern California region toward a more sustainable region. The TA Program demonstrates how public agencies can utilize big data analytics to address complex transportation planning questions that support regional sustainability goals aimed at reducing transportation-related carbon reduction emissions.

To support this effort, SCAG procured a regional subscription to StreetLight Insight®, providing data access at no cost to local agencies through June 2026. This subscription enables access to multimodal origin-destination data, safety analytics, truck telematics data, near real-time speed data, transportation network company activity data, and integrated transportation network tools. This subscription enables public agency staff and regional stakeholders to analyze local and regional travel behavior patterns using big data analytics to inform decisions that reduce emissions, improve multimodal access and connectivity, mitigate safety risk, and ensure equitable access to the broader transportation system.

The key objectives of the TA Program include:

- Encourage a culture of data-driven decision-making across the region.
- Bridge traditional and emerging planning approaches, integrating big data with established planning tools and policy frameworks.
- Appropriately scope and right-size complex transportation research questions for big data analysis.
- Empower local partners through technical guidance, hands-on analytical support, and expanded access to advanced mobility datasets.
- Promote cross-platform validation, encouraging comparison between big data sources and traditional datasets to enhance data literacy and analytical reliability.
- Document best practices for leveraging big data in transportation planning and public sector decision-making.
- Equitably deliver data access and technical guidance, prioritizing capacity building among smaller and underserved jurisdictions.

SCAG solicited research questions from public agencies through a request for questions process. Selected case studies demonstrate practical applications of mobility analytics to address transportation safety, congestion, transit performance, demand management, and land use impacts on transportation.

Case Study Overview

Anaheim's Multi-Modal Opportunity Network (MMON) is a GIS segment-based framework intended to identify where pedestrian, bicycle, and transit-access investments are most likely to produce meaningful safety and access benefits. Developed under the SCAG Transportation Data Analysis Technical Assistance Program, the MMON uses quantitative data across six evaluation categories to create a systematic framework that supports project implementation and strategic network planning.

The results of the MMON analysis, along with supporting datasets and evaluation metrics, are presented in an interactive web-based map at the following link: MMON Viewer.

Purpose of the Multimodal Opportunity Network

The MMON is intended to support how the city approaches multimodal improvements by bringing consistency and strategy to early project prioritization and selection. It provides a framework that helps the city standardize the project selection process with comparable citywide quantitative data and observable trends. In addition, the MMON is designed to be usable across programs and defensible in public and funding settings, with detailed criteria and documented data sources to support grant applications and transparent decision-making in making improvements.

The MMON is designed to advance the following objectives:

- Support data-driven prioritization by identifying roadway segments where multimodal improvements are most likely to yield high safety and accessibility benefits.
- Improve consistency in early project screening by applying uniform, quantitative criteria across the entire city roadway network.
- Strengthen transparency and defensibility in decision-making by clearly documenting evaluation criteria, data sources, and analytical assumptions.
- Enable cross-program usability, allowing the same network framework to inform transportation planning, capital programming, and grant development efforts.

The MMON can be used by the city in a variety of planning and implementation contexts, including:

- Early project identification and screening, helping city staff narrow large sets of potential corridors or segments to a focused set of high-opportunity locations.
- Active transportation and safety planning, location-specific strategies and improvements, and systemic, network-wide assessments.
- Grant application support, providing a defensible, data-driven basis for demonstrating needs, benefits, and project readiness.
- Interdepartmental coordination, offering a shared analytical framework that can be referenced across different departments and between stakeholders.
- Public communication and stakeholder engagement, helping explain why certain corridors or locations are prioritized using clear, map-based evidence.

Methodology

Anaheim's Multi-Modal Opportunity Network (MMON) was developed using the following workflow:

1. Establish a consistent roadway segment network to analyze.
2. Integrate and connect key datasets to the network.
3. Convert data and attributes into respective scoring category points.
4. Normalize, weight, and aggregate the category scores to determine a composite score.

Scoring Framework

The MMON assigns each roadway segment with a composite score from 0 to 100 based on six categories and associated weights as described in Table 1. The scoring structure is built to be interpreted on two levels: 1) a single composite score per segment for an overall grade and citywide comparison and 2) category scores that clarify details and how the segment aligns with priorities.

See **Appendix A** for more details on specific scoring criteria, conflation methods, and assumptions.

Table 1. Scoring Category Weights

Scoring Category	Weight
Safety Risk	25%
Bicycle Connectivity	20%
Demand	20%
Access Priority	15%
Transit & Multimodal Integration	10%
Practicality	10%

Data Sources

SAFETY RISK

The Safety Risk category analyzes the level of risk that exists for bicyclists and pedestrians on Anaheim's roadways. The maximum Safety Risk score a segment can receive is 20. Table 2 outlines potential criteria that make up the Safety Risk category.

Table 2. Safety Risk Category Criteria and Scoring

Criteria	Value	Score	Source
Bicycle-Pedestrian Collisions	Count	0-5	UC Berkeley SafeTREC Transportation Injury Mapping System (TIMS)
Bicycle-Pedestrian Fatal & Severe Injury (KSI) Collisions (segments with at least one bike-ped KSI)	0 or 1	0 or 5	UC Berkeley SafeTREC (TIMS
High Average Daily Traffic (ADT) (based off the 75th percentile ADT of all segments)	0 or 1	0 or 5	StreetLight Data
High Observed Speed (segments with 85th percentile speeds higher than 35 mph)	0 or 1	0 or 5	StreetLight Data

BICYCLE CONNECTIVITY

The Bicycle Connectivity category evaluates how well roadway segments link to the existing and planned bikeway network, highlighting where new connections can close gaps and strengthen overall bicycle system continuity. The maximum Bicycle Connectivity score a segment can receive is 10. Table 3 outlines potential criteria that make up the Bicycle Connectivity category.

Table 3. Bicycle Connectivity Category Criteria and Scoring

Criteria	Value	Score	Source
Existing Bike Facility	Yes or No	Yes = 0 or No = 5	City of Anaheim
Connection to Existing Bike Facility (at least one connected segment with an existing bike facility)	Yes or No	Yes = 5 or No = 0	City of Anaheim

DEMAND

The Demand category evaluates the potential for pedestrian and bicycle activity based on surrounding land use, population characteristics, and the presence of destinations that generate trips. The maximum Demand score a segment can receive is 20. Table 4 outlines potential criteria that make up the Demand category.

Table 4. Demand Category Criteria and Scoring

Criteria	Value	Score	Source
Near a Park, School (Public & Private), or Community/Senior Center (within ¼-mile)	Yes or No	Yes = 5 or No = 0	City of Anaheim
High Bike-Ped Activity Generating Area (within ¼-mile of a Census Block Group in the top 75th percentile of bike-ped activity)	Yes or No	Yes = 5 or No = 0	StreetLight Data
Mode Shift Potential (within ¼-mile of a Census Block Group that has a high proportion of auto trips that travel <3 miles)*	Yes or No	Yes = 5 or No = 0	StreetLight Data

**Mode Shift Potential Communities are defined as Census Block Groups that have a higher proportion of auto trips that travel less than three miles. Census Block Groups that make up these communities are in the top 75th percentile based on the proportion of total auto trips starting or ending in the Census Block Group that are less than 3 miles, relative to all Census Block Groups in the city.*

ACCESS PRIORITY

The Access Priority category highlights segments where residents face greater transportation disadvantages, such as lower incomes, limited vehicle ownership, or other barriers to mobility. The maximum Access Priority score a segment can receive is 15. Table 5 outlines potential criteria that make up the Access Priority category.

Table 5. Access Priority Category Criteria and Scoring

Criteria	Value	Score	Source
Proximity to a Disadvantaged Community (within ¼-mile)	Yes or No	Yes = 5 or No = 0	CalEnviroScreen 4.0
Proximity to Low-Vehicle Access Community (within ¼-mile)*	Yes or No	Yes = 5 or No = 0	Census, 2025 American Community Survey
Proximity to Non-Vehicle Commute Community (within ¼-mile)**	Yes or No	Yes = 5 or No = 0	Census, 2025 American Community Survey

**Low-Vehicle Access Communities are defined as Census Block Groups that have a higher proportion of households that have one or no vehicles. Census Block Groups that make up these communities are in the top 75th percentile based on proportion of households, relative to all Census Block Groups in the city.*

***Non-Vehicle Commute Communities are defined as Census Block Groups that have a higher proportion of the population that commutes via non-vehicular mode (e.g., walking, biking, taking transit). Census Block Groups that make up these communities are in the top 75th percentile based on proportion of population, relative to all Census Block Groups in the city.*

TRANSIT & MULTIMODAL INTEGRATION

The Transit & Multimodal Integration category focuses on how roadway segments support first- and last-mile access to transit. The maximum Demand score a segment can receive is 10. Table 6 outlines potential criteria that make up the Transit & Multimodal Integration category.

Table 6. Transit & Multimodal Integration Category Criteria and Scoring

Criteria	Value	Score	Source
Segment is on a High-Quality Transit Corridor (segments that have scheduled headways of 20 minutes or less)	Yes or No	Yes = 5 or No = 0	General Transit Feed Specification (GTFS)
Major Transit Stop (segment has at least one major transit stop)	Yes or No	Yes = 5 or No = 0	TBD

PRACTICALITY

The Practicality category considers the practical conditions that affect the implementation of bicycle and pedestrian improvements. The maximum Practicality score a segment can receive is 15. Table 7 outlines potential criteria that make up the Practicality category.

Table 7. Practicality Category Criteria and Scoring

Criteria	Value	Score	Source
Segment is near a freeway ramp	Yes or No	Yes = 0 or No = 5	City of Anaheim, Caltrans
Segment is on a truck route	Yes or No	Yes = 0 or No = 5	City of Anaheim, Caltrans
Segment has a proposed bicycle facility	Yes or No	Yes = 5 or No = 0	City of Anaheim

Data Collection and Validation

The MMON development is fundamentally a data integration process, so it's crucial to validate and confirm the quality of data. The validation approach prioritizes a consistent roadway segment network and clear documentation of thresholds and coverage. Attributed scores and data should remain in separate fields within the same roadway network to ensure that the MMON is easy to access, update, and track.

Each input dataset should be able to be refreshed and re-run through the same workflow when the respective data sources are updated without requiring analysts to redefine criteria, definitions, and scoring logic. As such, the criteria described in the above section are applicable in any time period and scores can be updated by "swapping in" updated datasets within the same roadway network. Validation should also focus on consistency checks that protect the MMON from flawed data over time. The base segment layer must remain stable and uniquely identified via a persistent segment ID so that scores can be compared across versions, and project status can be tracked reliably. Each refreshed input should pass key quality checks, such as flagging negative values and checking completeness of data (e.g., no large gaps in data).

85TH PERCENTILE SPEED VALIDATION AND ADJUSTMENT

As part of the MMON development, 85th percentile speed values were reviewed for continuity and reasonableness across connected roadway segments. In some cases, estimated 85th percentile speeds greater than 35 mph appeared inconsistent with adjacent segments of similar functional classification, cross-section, and surrounding land use. Potential sources of error include low sample sizes, temporal sampling limitations, and the inclusion of connected vehicle pings from adjacent or parallel facilities that do not reflect operating conditions on the target segment. For a limited number of these cases, the estimated speed value was replaced with the value from directly connected or adjacent segments to improve network-level consistency. These adjustments were applied conservatively and only where discontinuities were clearly attributable to estimation of artifacts rather than observed changes in roadway conditions.

AVERAGE DAILY TRAFFIC VALIDATION

Average daily traffic (ADT) estimates used in the MMON were reviewed against the 2025 OCTA Master Plan of Arterial Highways (MPAH) volume map to assess reasonableness and corridor-level consistency. MPAH volumes are based on Caltrans annual ADT data and reflect average five-day (i.e., weekday) volumes. In contrast, StreetLight volume estimates represent a typical day derived from observed travel patterns across a January-September 2025 analysis period. Differences in data sources, temporal aggregation, and count definitions may introduce variation between discrete volume estimates. Despite these methodological differences, StreetLight-derived volumes generally aligned with the Master Plan of Arterial Highways' volumes by functional classification and corridor, supporting their use for comparative, network-level analysis within the MMON.

The Network

Anaheim's Multi-Modal Opportunity Network (MMON) is intended to function as a network, not only as a ranking. Multimodal outcomes depend on continuity and access—a single high-scoring segment may be valuable on its own, but a connected set of segments can impact behavior and improve safety at scale to support both segment-level prioritization and corridor-level projects.

How Segments Are Classified

Segments are classified into tiers based on the composite score assigned. Each segment is translated into five priority classes: Low Priority, Low-Medium Priority, Medium Priority, Medium-High Priority, and High Priority. As scores are weighted in the individual scoring categories, the priority classification scale can be maintained across updates and is detailed in Table 8.

Table 8. Segment Priority Classification

Priority Class	Composite Score
Low Priority	0-19
Low-Medium Priority	20-29
Medium Priority	30-44
Medium-High Priority	45-59
High Priority	60 or above

Interpreting the Scores

The MMON can be interpreted by analyzing the following questions:

1. Where is overall opportunity for targeted improvement highest and how does it connect with the overall network?
2. Why is overall opportunity high and what priorities does it align with?

OVERALL OPPORTUNITY

The MMON is especially useful for identifying corridor patterns and targeted improvement opportunities. Roadways with the highest opportunity have many segments that are High or Medium-High Priority and strongly support corridor-level planning or improvements. High opportunity "nodes" exhibit more isolated segments that score high while adjacent segments score lower and would benefit more from targeted countermeasures rather than a full corridor update. Generally, the priority classifications listed above can be understood as described.

High-Priority segments represent the most compelling investment opportunities, typically combining severe safety deficiencies, critical network gaps, high demand, and service to disadvantaged communities. These segments demonstrate strong performance across multiple scoring categories rather than an exceptional score in a single dimension.

Takeaway: Highest priority for standalone capital projects, competitive grants, and key improvement focus areas.

Medium-High-Priority segments are secondary to High-Priority segments, scoring highly in at least one scoring category and providing the most value when acting as connectors between High-Priority segments.

Takeaway: Near-term implementation when funding aligns, strong grant candidates for specific scoring categories, inclusion in longer corridor projects

Medium-Priority segments have credible opportunity with weaker overall scores and are more context-dependent. They could still align well under more opportunistic programming lenses and gap closure needs.

Takeaway: Neighborhood-scale improvements, incorporation into large corridor projects or longer-term citywide planning (e.g., active transportation plan, complete streets plan).

Low-Medium-Priority segments lack a clear, explicit reason to move forward. They may score modestly across categories without a dominant driver, or they may score well on one dimension but lack broader strength regarding the quantitative criteria.

Takeaway: Low-cost improvements or maintenance, specific location-based city priorities, supporting higher-priority projects or plans.

Low-Priority segments represent the lowest overall opportunity under the current data and weighting assumptions. This does not imply a complete lack of investment opportunity but suggests that these segments are not expected to compete well against higher priority class segments for near-term investment.

Takeaway: Lowest priority for discretionary investment, low-cost improvements, or maintenance, reassessed with MMON updates.

ALIGNMENT WITH CITY PRIORITIES

The highest-opportunity segments and corridor patterns should be analyzed to understand the underlying factors and scoring categories. A high composite score can be driven by different combinations of scoring categories, and those combinations should guide how a segment is framed, which funding opportunities it supports best, and what implementation pathway is most appropriate.

For example, segments that score highly in the Safety Risk and Access categories align most directly with vision zero initiatives, grants, and near-term improvements. On the other hand, segments that score highly in the Bicycle Connectivity and Demand categories might align better with complete streets or active transportation priorities.

How to Use the MMON

This section describes how Anaheim should use the Multi-Modal Opportunity Network (MMON) to support decisions, projects, funding applications, and implementation tracking. The intent is to make the MMON function as a starting point to support the city's multimodal advancement and future pursuits.

Navigation

The MMON is published as an online map that allows users to view the composite score by tier while also detailing the underlying scoring category points. It is able to show the prioritization outcome and the evidence behind it in one online map.

The MMON is also able to be enhanced in the future to ensure transparency via other interactive elements, such as incorporating it into a dashboard to allow clear filtering by prioritization class, scoring category points, and geography.

Identifying Priority Locations

Based on an initial review of the overall score and priority classes, some corridors of high priority include:

- Anaheim Boulevard
- Ball Road
- Euclid Avenue
- Harbor Boulevard
- Katella Avenue
- La Palma Avenue
- State College Boulevard

The city can refine, filter, and identify priority locations by following the general steps to develop a defensible list of potential projects to be advanced through feasibility studies, engagement, and long-term programming.

1. **Establish the purpose and city needs.** Clarify what the city is trying to produce in the prioritization in terms of both current local and regional multimodal focuses, near-term needs, previous or ongoing corridor studies, and the available or upcoming funding opportunities.
2. **Define the candidates using priority classes.** Use priority classes and overall scoring to filter down to a more manageable and defensible set of segments.
3. **Organize the candidates into corridors or isolated segments.** Separate the segments based on continuity by identifying multiple candidate segments for connected corridors or identifying more isolated segments where targeted treatments and funding pathways are more appropriate.

4. **Identify key trends.** Understand the underlying scoring categories behind segments to identify trends across multi-segment corridors and understand how they align with city needs and available funding opportunities.

Grant Applications and Transportation Planning

Anaheim can use the MMON priority segments for highly competitive grants and funding opportunities, detailing candidate corridors based on documented quantitative criteria and trusted data sources. Specific scoring categories can be used to tailor a project's narrative to program requirements, clarifying that the documented criteria align with a grant's goals. Some examples of major funding programs where the city could utilize the MMON include

- **Safe Streets and Roads for All:** Supports a safe system approach by identifying high-risk multimodal segments using systemic, data-driven analysis to prioritize safety investments and implementation-ready projects.
- **Highway Safety Improvement Program:** Establishes a consistent, data-driven process for identifying and prioritizing roadway segments with elevated safety risk for all users, supporting both systemic and corridor-based safety projects.
- **Active Transportation Program (ATP):** Identifies high-opportunity walking and bicycling corridors by combining safety needs, access to destinations, network connectivity, and equity indicators to support competitive, network-based ATP applications.
- **Better Utilizing Investments to Leverage Development:** Supports identification of multimodal projects that improve access to jobs and activity centers, enhances safety and mobility, and delivers measurable economic and quality-of-life benefits.
- **Caltrans Sustainable Transportation Planning Grant Program:** Provides a data-driven framework to support multimodal planning studies, corridor plans, and active transportation strategies aligned with state sustainability and equity goals.
- **Transportation Development Act Article 3:** Justifies pedestrian and bicycle projects by demonstrating documented safety, access, and connectivity needs.
- **Congestion Mitigation and Air Quality Improvement Program:** Identifies corridors with potential for mode shift and emissions reduction by linking multimodal access improvements to travel behavior and demand patterns.
- **Regional Early Action Planning:** Aligns multimodal investments with access to housing, jobs, and services in growth and infill areas.

Over time, the city can also track how priority segments move through feasibility, concept definition, funding, and delivery to support both accountability in terms of how the MMON has been incorporated and strategic adaptation to continually improve how the city pursues grant applications.

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