TRANSPORTATION SYSTEM

CONGESTION MANAGEMENT

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

APPENDIX 1 OF 1
TDM TOOLBOX OF STRATEGIES

AS ADOPTED ON MAY 7, 2020

CONNECT SoCal

TECHNICAL REPORT

CONGESTION MANAGEMENT APPENDIX

AS ADOPTED ON MAY 7, 2020

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Education & Marketing

Safe Routes to School Programs

Safe Routes to School Programs (SRTS) involve working with schools and school districts to promote safe active transportation modes for students in order to reduce the number of parent drop-offs.

Implementors

Employers / Property Managers / TMAs

- TMAs/TMOs
- Educational institutions
- Property managers – residential

VMT Reduction:

Impact varies based on number of students and parents interacting with TMAs, schools and property managers.

Public Agencies / Transportation Providers

- School districts
- Municipalities
- Transit agencies
- Regional government/MPOs

VMT Reduction:

Impact varies based on size of school district and active transportation infrastructure.

Other stakeholders

- Students
- School administration
- Bicycle education organizations
- Law enforcement
- Parents
- Teachers
- Residents / businesses
- Planning and engineering departments
- Public Health Departments

Benefits →

- Reduces congestion during peak periods
- Increases safety for students
- Increases health/fitness

Challenges →

- Can require involvement from law enforcement
- Requires ongoing funding for modal change and effectiveness
- Coordination required among school districts, cities, and transit providers

Measurement

Outcomes

- Number of students participating in SRTS-related activities and events

Impacts

- Drop-off time
- Mode split among students

Methods

- Survey results
- Congestion monitoring on roadways surrounding schools

Congestion impacts

Parents dropping off children at school represents a significant level of morning local congestion (10 to 15%). Increasing the number of students walking or bicycling can reduce local congestion.

Implementation tips

Safe Routes to School Programs can be implemented through events such as group bicycle or walking trips or bicycle safety workshops. Programs can also provide rewards to students or their parents for traveling by foot, bike, or in a carpool, and can leverage technology for trip tracking and incentive provision.

Costs

Typically funded through Federal and State grants specific to Safe Routes to School and Active Transportation. Additional costs may be incurred from associated events or promotional material.

Complementary strategies

- Bicycle infrastructure improvements
- Pedestrian infrastructure improvements

As seen in the SCAG region

Durfee Elementary School in El Monte operates "walking school buses," and uses the opportunity to teach students about environmental issues along the way.

SRTS-style programs can also be expanded to support non-school populations. **Los Angeles Walks** operates Safe Routes for Seniors program that helps seniors get around safely on foot.

Education & Marketing

Marketing Campaigns

Marketing campaigns can promote other TDM programs, as well as non-Single Occupant Vehicle (SOV) travel itself. They often include the dispersion of printed material and web promotion through email and social media.

Implementors

Employers / Property Managers / TMAs

- Large employers
- TMAs/TMOs
- Educational institutions
- Property managers – office, retail, residential

VMT Reduction:

Impact varies by size and reach of campaigns.

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- Regional government/MPOs
- County transportation authorities

VMT Reduction:

Impact varies by size and reach of campaigns. Campaigns that target specific populations are more successful

Other stakeholders

- Employees
- Visitors to TMA areas
- Students
- Transit riders
- Residents
- ETCs

Benefits →

- Increases visibility of TDM programs and non-SOV modes
- Campaigns can be produced at a variety of price points

Challenges →

- Can be difficult to measure impacts on congestion or air quality
- Requires ability to reach target audiences

Measurement

Outcomes

- Number of impressions or engagements

Impacts

- Participation in TDM programs
- Transit ridership

Methods

- Participant lists
- Transit ridership data

Congestion impacts

Successful campaigns that result in behavior change will decrease congestion.

Implementation tips

Some marketing campaigns target specific groups of travelers, such as tourists, cyclists or commuters from one community, or reach broader groups through platforms with high volumes of users such as 511 programs.

Costs

Cost varies by size and reach of the marketing campaign. Incurred costs may include graphic design, printing and ad space purchase, events or promotional material.

Complementary strategies

- Subsidization of non-SOV travel
- Mobility as a Service provision
- Employee commute programs

As seen in the SCAG region

Orange County Transportation Authority and **IE Commuter** in San Bernardino and Riverside counties develop marketing material for employee transportation coordinators (ETCs) in Orange County and the Inland Empire to present to their respective employees.

City of Santa Monica Big Blue Bus produced a video explaining how to ride bicycles on their buses.

Education & Marketing

Educational Events

Educational events provide an opportunity for TDM implementors to interact directly with travelers to encourage behavior change.

Implementors

Employers / Property Managers / TMAs

VMT Reduction: ■■□□□

Impact varies by attendance and scope of event

- Large employers
- Small employers
- TMAs/TMOs
- Property managers - office, retail, residential
- Educational institutions

Public Agencies / Transportation Providers

VMT Reduction: ■■□□□

Impact varies by attendance and scope of event.

- Municipalities
- Transit agencies
- County transportation authorities

Other stakeholders

- Employees
- Residents
- Bicycle education organizations
- Students
- ETCs
- Public Health Departments
- Commuters
- Planning and engineering departments

Benefits →

- Increases the visibility of TDM programs and non-SOV modes
- Makes potential users more comfortable with new travel modes

Challenges →

- Can be difficult to measure impacts on congestion or air quality

Measurement

Outcomes

- Number of event attendees or persons spoken to at events
- Satisfaction

Impacts

- Mode split among attendees

Methods

- Survey results

Congestion impacts

Successful events that result in behavior change can decrease congestion.

Implementation tips

Educational events can take many forms, including:

Tabling events: ETC or agency rep sets up a table in a high-traffic area (cafeteria, transit station) and provides resources about TDM programs and travel options.

'Try Transit' events: Sometimes people are hesitant to try new modes because they don't know how to do it. Events that introduce them to taking the bus or riding bikes can help them feel more comfortable in the future.

Zip Code Parties: Help employees find others with whom they could carpool and vanpool by introducing them to others who live or work in the same zip code.

Costs

Costs vary based on size and scope of event.

Complementary strategies

- Guaranteed ride home programs
- Carpool coordination
- Individualized/personalized marketing

As seen in the SCAG region

National Bike Month is celebrated throughout the SCAG Region with events held by county organizations, municipalities, TMAs/TMOs, and individual employers.

SCAG hosts events throughout the region as a part of their **Go Human** campaign which encourages walking and biking.

Education & Marketing

Wayfinding Upgrades

Wayfinding is crucial to ensuring travelers can get where they need to go. It is particularly important to have thorough signage within transit stations and mobility hubs. On-street signage and mobile information can improve the visibility of transit, bicycle and pedestrian amenities.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- Parking lot owners/operators
- County transportation authorities

VMT Reduction:

Wayfinding can be impactful by increasing transit ridership, but may not show measureable impacts.

Other stakeholders

Transit agencies

Commuters

Graphic designers and sign vendors

Benefits →

- Increases the visibility of TDM programs and non-SOV modes
- Makes potential users more comfortable with new travel modes

Challenges →

- May have trouble reaching travelers who are vision impaired or cannot read the language used
- Impacts are difficult to measure

Measurement

Outcomes

- Inquiries to on-site personnel/ security/staff
- User feedback

Impacts

- Mode split
- Transit ridership
- Use of advertised first/last mile options

Methods

- Analysis of recorded feedback

Congestion impacts

Wayfinding that encourages repeat travelers on transit or other modes will reduce congestion.

Implementation tips

Wayfinding within a transit station can help encourage travelers to use alternative modes for their first and last mile. Bus stations and bicycle racks should be clearly marked and easy to access.

Costs

Costs often include design as well as signage itself.

Complementary strategies

- Bicycle transit integration
- Transit improvements
- Pedestrian infrastructure improvements

As seen in the SCAG region

The City of Santa Monica has provided window clings to local businesses highlighting the time required to reach major attractions by foot, reminding travelers they might be able to comfortably walk to their destinations.

Education & Marketing

Individualized/ Personalized Marketing

Individualized Marketing involves targeting travelers who are most likely to change their behavior and encouraging them to participate in a program or use a mode to travel. Talking points or marketing geared specifically toward those groups are developed.

Implementors

Employers / Property Managers / TMAs

VMT Reduction:

- Large employers
- Small employers
- TMAs/TMOs
- Educational institutions
- Property managers - office, residential

Individualized marketing can be quite successful, but requires resource to be impactful on a large scale.

Public Agencies / Transportation Providers

VMT Reduction:

- Municipalities
- Transit agencies
- County transportation authorities
- Regional government/MPOs

Individualized marketing can be quite successful, but requires resource to be impactful on a large scale.

Other stakeholders

- Employees
- Transit agencies
- Residents
- Commuters
- Students

Benefits →

- Likely to be more successful in changing behavior than other types of marketing

Challenges →

- Can be resource intensive to run and may require external support
- Can run into privacy issues with using personal data

Measurement

Outcomes

- Number or percentage of engagements or individuals reached
- Number of individuals who changed their behavior

Impacts

- Transit ridership
- VMT reduction
- Program registrations

Methods

- Survey results

Congestion impacts

Successful campaigns that result in behavior change will decrease congestion.

Implementation tips

It can be beneficial to implement individualized marketing where infrastructure or service improvements have been made to ensure that potential users are aware of those improvements and how they can benefit from using them.

In an organizational setting it might be beneficial to target groups who have expressed an interest in trying out new modes of travel or those whose trips could be made easily with a non-SOV mode. These groups can be identified through survey results or personal data as it is available.

Costs

Costs for marketing campaigns may include staff time to speak to the target audience, as well as costs of information and incentives.

Complementary strategies

- Marketing campaigns
- Transit improvements
- Private shared transportation/ shuttles

As seen in the SCAG region

A major employer in the SCAG Region used zip code data to target the employees who would pilot their new commute program, complete with fully subsidized transit passes. They invited employees who lived along a major transit line to participate, as those employees would likely benefit most from their transit subsidy.

Incentives & Facilitation

Carpool Coordination

Carpooling is an effective way to reduce congestion by using the available seating capacity in personal vehicles. Employers and public agencies can facilitate carpool formation through the provision of online ridematching platforms.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- TMAs/TMOs
- Educational institutions
- Property managers - office, residential

VMT Reduction:

Carpool coordination can be more successful at the site level where commuters are familiar with each other.

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- County transportation authorities
- Regional governments/MPOs
- Carpool platform operators

VMT Reduction:

Carpool coordination can be more difficult at an area-wide level where commuters are connected with strangers.

Other stakeholders

- Employees
- Students
- ETCs
- Residents
- Parking lot owners/operators

Benefits →

- Travelers interested in carpooling are often regularly traveling to one central location
- Travelers using public, open systems to find matches have a larger pool of users, and a better chance of finding a match

Challenges →

- People may be hesitant to travel with those they do not know
- Pool of employees or residents to create carpools may be too small in some locations

Measurement

Outcomes

- Number of participants who register for program or express interest in carpooling
- Number of carpool matches provided

Impacts

- Number of carpools created
- Number of people carpooling over time

Methods

- Survey results
- Data collected from trips logged or recorded on platforms

Congestion impacts

Successful campaigns that result in behavior change will decrease congestion.

Implementation tips

Carpool rides can be established in two manners:

Traditional Carpooling: Carpool partners find each other organically or through a ridematching platform and agree to drive together. Passengers may pay drivers based on their individual agreements.

Dynamic Carpooling: Carpool partners find each other through mobile applications and schedule each ride individually. This allows for travelers with irregular schedules to carpool without committing to one person every day.

Costs

Carpooling costs for riders usually offset the cost incurred by the driver. Agencies who wish to provide ridematching platforms may pay developers for access to their tools.

Complementary strategies

- Direct incentives for non-SOV travel
- Subsidization of non-SOV travel
- Parking facility design and curbside management (designated carpool parking spaces)
- Guaranteed Ride Home programs

As seen in the SCAG region

Los Angeles, Orange, San Bernardino, Riverside and Ventura Counties provide ridematching platforms for commuters and employers in their counties.

Incentives & Facilitation

Vanpool Coordination

Vanpool coordination involves coordinating commuters who take similar trips and providing them access to a vehicle to travel together.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- TMAs/TMOs
- Property managers – office

VMT Reduction:

Vanpool coordination is impactful in reducing VMT as it works especially well for long-distance commuters.

Public Agencies / Transportation Providers

- School Districts
- Municipalities
- Transit Agencies
- County transportation authorities
- Regional Government/MPOs

VMT Reduction:

Public agencies can play a central role in working with vanpool operators and providing subsidies for vanpool travel, thus increasing impact.

Other stakeholders

Employees

ETCs

Vanpool providers

Parking lot owners/operators

Benefits →

- Vanpool riders and drivers save money they would otherwise spend on long commutes
- Riders can spend time on work or leisure instead of driving

Challenges →

- Requires agreements between the public and private sectors which may cause concerns with liability
- Limited park and ride capacity may be difficult to provide sufficient support for vanpool activity in some areas

Measurement

Outcomes

- Number of participants who register for program or express interest in vanpools
- Number of people riding in a vanpool

Impacts

- Number of vanpools created
- Number of participants using vanpools
- Mode split over time

Methods

- Survey results
- Data collected from vanpool providers or subsidy programs

Congestion impacts

Vanpool travel that reduces SOV trips will result in decreased congestion.

Implementation tips

Vanpooling provides a cost-effective means of travel for employees commuting long distances. Often, employers or public agencies will subsidize the cost of registered vanpools even further.

Costs

The cost of renting and operating a vanpool are split among users. Employers and public agencies often subsidize the cost of operating vanpools to make the mode more attractive to commuters

Complementary strategies

- Direct incentives for non-SOV travel
- Subsidization of non-SOV travel
- Parking facility design and curbside management (designated vanpool spaces)
- Guaranteed Ride Home programs

As seen in the SCAG region

Imperial, Los Angeles, Orange, San Bernardino, Riverside and Ventura Counties provide subsidies to vanpools operating through various approved vendors.

Incentives & Facilitation

Telecommuting

Telecommuting describes the process of an employee working from home or a satellite office close to their home, rather than commuting to their traditional workplace.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- TMAs/TMOs
- Property managers - residential

VMT Reduction:

Telecommuting directly reduces trips and VMT.

Other stakeholders

Employees

Developers/ property managers

Benefits →

- Can reduce VMT and congestion, particularly during peak periods
- Provides time savings for employees

Challenges →

- Telecommuting is only appropriate for some industries, may not work universally

Measurement

Outcomes

- Number of employees who telecommute
- Number of days employees telecommute

Impacts

- Trips reduced as a result of telecommuting
- VMT reduced

Methods

- Survey results
- Traffic data

Congestion impacts

Each trip not taken due to the ability to work or perform tasks remotely removes a car from the road.

Implementation tips

The concept of telecommuting can be expanded beyond the virtual workplace. Remote options for appointment-based and educational services can cut back on daytime SOV travel, congestion and VMT.

Costs

The cost of supporting telecommuting includes initial costs (such as remote computers) for employees but may reduce cost of office space, events or promotional material.

Complementary strategies

- Congestion pricing
- Parking pricing
- Employee commute programs

As seen in the SCAG region

In 2019, SCAG conducted a "Future of the Workplace" study to evaluate the nature of employment and the workplace and address its impact on greenhouse gas emissions in the Region.

Incentives & Facilitation

Alternative Work Schedules

Alternative work schedules can reduce the number of vehicles traveling during peak periods by allowing employees to arrive at and leave the workplace outside of peak hours every day, and reduce overall trips through compressed schedules.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- TMAs/TMOs
- Property managers - residential

VMT Reduction:

Alternative work schedules that allow for off-peak travel can reduce congestion. Compressed work weeks can reduce trips and VMT.

Other stakeholders

Employees

Benefits →

- Decreases peak period VMT
- Improves travel time for participants

Challenges →

- Minor employer costs to manage
- May not work universally

Measurement

Outcomes

- Number of employees who travel off-peak
- Number of off-peak trips taken
- Number of employees who work compressed schedules

Impacts

- Trips reduced as a result of alternative work schedules
- Peak hour trips reduced

Methods

- Survey results
- Traffic data

Congestion impacts

Peak hour VMT is improved and participants may see improved travel time.

Implementation tips

Alternative work schedules can take various forms:

Flexible Work Schedules: Employees are able to choose hours that are convenient to them, allowing them to commute outside of peak travel times.

Staggered Shifts: Employers provide regular staggered shifts for employees, leading to workplace coverage for longer during the day and reducing trips taken during peak travel times.

Compressed Work Weeks: Employees work longer days, fewer days per week. Longer days increase the chances that commutes will take place outside of peak hours, and fewer work days per week mean fewer trips taken by employees overall.

Costs

There is little direct cost associated with alternative work schedules, but minor costs may be associated with managing work schedules.

Complementary strategies

- Telecommuting
- Congestion Pricing

As seen in the SCAG region

The South Coast Air Quality Management District operates its entire facility on a four-day per week schedule, decreasing commute trips among employees by 20%.

Other employesr throughout the region operate similar programs.

Direct Incentives for Non-SOV Travel

Employers and other agencies can encourage non-SOV travel by providing rewards such as financial incentives, gift cards, or entrance into raffles or drawings. Incentives are traditionally provided to employees for commute trips, but can be provided for all trips by larger public agencies.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- TMAs/TMOs
- Educational institutions
- Property managers - office, retail, residential

VMT Reduction:

Larger incentives are more effective, as are guaranteed incentives (as opposed to raffles). Employers are often better able to provide sufficient incentives on a site level

Public Agencies / Transportation Providers

- Municipalities
- Transit Agencies
- County transportation authorities
- Regional government/MPOs

VMT Reduction:

Public agencies are less likely to provide ongoing direct incentives, which are more effective.

Other stakeholders

Students

TNCs

Employees

ETCs

Benefits →

- Successful incentives reduce SOV trips, VMT and congestion
- Incentives are a benefit or work retention tool for employers

Challenges →

- Most programs require travelers to log trips daily
- Difficult to prove validity of logged trips

Measurement

Outcomes

- Number of participants in incentive programs
- Number of incentives provided

Impacts

- Trips reduced
- Mode split

Methods

- Survey results
- Trip data from platforms or recorded by employers

Congestion impacts

Incentives can reduce congestion by encouraging non-SOV travel.

Implementation tips

To create behavior change, incentives must be high enough to influence the target group.

Incentives are often monitored and distributed through trip-logging platforms which require users to self-report their trips. Some platforms are able to sense travel mode through users' mobile phones, eliminating the need for users to log into a platform daily, and making it more difficult for them to misreport their travel in order to receive incentives.

Some programs provide incentives for TNC trips, which may reduce VMT if trips are used for a first or last mile connection to transit or used in a shared capacity.

Costs

Costs include cost of the incentives themselves, as well as subscription, purchase, or development of tracking tool and overall program management.

Complementary strategies

- Subsidization of non-SOV travel
- Marketing campaigns
- Mobility as a Service provision

As seen in the SCAG region

IE Commuter, the regional rideshare program for Riverside and San Bernardino Counties, provides incentives of up to $2 per day for the first three months that new non-SOV commuters log their trips on their platform.

Incentives & Facilitation

Subsidization of Non-SOV Travel

Employers and other agencies can encourage non-SOV travel by subsidizing the cost of carpooling, vanpooling, transit or first/last mile trips.

Implementors

Employers / Property Managers / TMAs

VMT Reduction:

Impact varies based on subsidy amount.

- Large employers
- Small employers
- TMAs/TMOs
- Educational institutions
- Property managers - office, residential

Public Agencies / Transportation Providers

VMT Reduction:

Impact varies based on subsidy amount and populations targeted.

- Municipalities
- Transit agencies
- County transportation authorities
- Regional government/MPOs

Other stakeholders

- Employees
- ETCs
- Students

Benefits →

- Reduces SOV trips, VMT and congestion
- Subsidized travel is a benefit or work retention tool for employers
- Increases transit ridership (if targeted at transit)

Challenges →

- Subsidies provided by transit agencies can result in a decrease of revenue if not recaptured by increased ridership
- Programs can be costly, particularly for small employers

Measurement

Outcomes

- Number of participants registered to receive subsidies

Impacts

- Transit ridership
- VMT reduced

Methods

- Survey results
- Transit ridership data
- Data from first/last mile providers

Congestion impacts

Increased use of non-SOV modes through travel subsidization will reduce congestion.

Implementation tips

Travel subsidies can take place through reimbursements or through formal programs reducing the cost of travel. Many transit agencies and TNCs (often used for first/last mile trips or to provide Guaranteed Rides Home) provide the option for employers to cover all or part of the cost of their service for their employees. Transit agencies often subsidize the cost of trips when provided to particular groups such as older adults or students.

Costs

Costs include cost of the subsidies, as well as the cost of administering subsidy programs on both the employer/property manager/TMA side and the side of the transit provider.

Complementary strategies

- Direct incentives for non-SOV travel
- Marketing campaigns
- Mobility as a Service provision

As seen in the SCAG region

Los Angeles Metro's U-Pass Pilot Program subsidizes the cost of monthly transit passes for university students, and facilitates the process by allowing students to purchase passes through their universities.

Incentives & Facilitation

Guaranteed Ride Home Programs

Guaranteed Ride Home Programs (sometimes referred to as "Emergency Ride Home" or "Guaranteed Return Trip") provide complimentary door-to-door travel to commuters who use non-SOV modes but need to leave early, late or quickly due to unforeseen circumstances. This strategy addresses primarily commute trips for employees.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- TMAs/TMOs
- Property managers - office, residential

VMT Reduction:

Guaranteed Ride Home programs are a staple of any employee commute program. Employers and TMAs can provide up-front payment for employees.

Public Agencies / Transportation Providers

- Municipalities
- County transportation authorities
- Regional government/MPOs

VMT Reduction:

On a larger scale, municipal and regional organizations are more likely to be able to reimburse rides rather than provide up-front payment.

Other stakeholders

Employees

TNCs, taxis and rental car companies

Benefits →

- Increases desirability of non-SOV commute modes
- Rewards those who already use non-SOV modes

Challenges →

- Has the potential to be costly
- Is difficult to enforce on a municipal or regional level
- Employees enrolled in "reimbursement" style programs may not be able to pay up-front costs

Measurement

Outcomes

- Number of enrolled users
- Number of trips taken

Impacts

- Mode split or VMT across those who have access to the program

Methods

- Survey results

Congestion impacts

Guaranteed ride home programs indirectly impact congestion by encouraging non-SOV travel

Implementation tips

Some Guaranteed Ride Home programs provide free rides to participants up front through agreements with taxi, TNC and rental car companies, while others reimburse participants for the cost of their ride after the fact.

Costs

Cost per trip varies by trip length. Cost of program management varies by number of participants enrolled in and actively using the program.

Complementary strategies

- Carpool coordination
- Vanpool coordination
- Subsidization of non-SOV travel

As seen in the SCAG region

Through **Ridematch.info and IE Commuter,** County Transportation Authorities in Los Angeles, Orange, Riverside, San Bernardino and Ventura counties guarantee reimbursed rides home for employees who work with their partner employers throughout their counties.

Some private employers throughout the SCAG Region provide pre-paid rides through TNCs for employees who sign up for programs ahead of time and travel by non-SOV mode at least three days per week.

Incentives & Facilitation

Mobility as a Service Provision (MaaS)

Mobility as a Service describes the process of allowing users to consume multiple aspects of transportation service through a single platform. It facilitates trip planning, payment and multimodal travel, so users can plan, hail or access, and pay for trips all in one place.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- TNCs
- Private transportation providers
- Regional governments/MPOs
- County transportation authorities

VMT Reduction:

MaaS has the potential to be very impactful as it will change the manner in which trips are planned, scheduled and paid for.

Other stakeholders

- Web and app developers
- Micromobility users
- Transit riders
- TNC riders

Benefits →

- Increases visibility of non-SOV modes through inclusion in the trip planning process
- Facilitates multimodal travel, decreasing need for SOV trips

Challenges →

- Public/private partnerships can be difficult to navigate
- Technology is evolving rapidly, and few industry standards have been set

Measurement

Outcomes

- Number of users
- Number of trips planned

Impacts

- Number of non-SOV trips taken
- VMT reduced

Methods

- Data received from MaaS providers

Congestion impacts

Mobility as a Service has the potential to significantly reduce congestion by facilitating easier multimodal and non-SOV travel.

Implementation tips

Mobility as a Service tools are being developed and expanded at a rapid pace. Groups like the MaaS Alliance in Europe are convening public and private agencies to make further advancements in the MaaS field.

MaaS often involves TNC trips, which may reduce VMT if trips are used for a first or last mile connection to transit or used in a shared capacity.

Costs

Costs are difficult to predict as technology is constantly changing.

Complementary strategies

- Dockless/mobility/new mobility programs
- Bicycle transit integration
- Private shared transportation/ shuttles
- Subsidization of non-SOV travel

As seen in the SCAG region

Los Angeles Metro has announced their plan to develop a MaaS platform called "Tap Force," which will be an account-based system allowing users to pay for various travel modes in addition to Metro's current transit services.

Incentives & Facilitation

Carshare Provision

Carshare, or vehicles that are available for shared use, allow users to access a vehicle when it is needed decreasing the necessity for them to own their own vehicles.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- Educational institutions
- Property managers - office, residential, retail

VMT Reduction:

Carshare on a site should be combined with other TDM strategies to be successful.

Public Agencies / Transportation Providers

- Municipalities
- Regional government/MPOs

VMT Reduction:

Easy access to affordable carshare in public spaces may encourage car-free lifestyles.

Other stakeholders

- Students
- Parking lot owners/operators
- Planning and engineering departments
- Employees
- Carshare companies
- Residents
- Developers/ property managers

Benefits →

- Reduces need for car ownership
- May reduce VMT from commuters who use carshare for lunchtime errands
- May reduce emissions if car fuel is alternative fuel source
- May be used as first, last mile strategy

Challenges →

- May still contribute to SOV travel
- May require dedicated curb space/ parking
- Cars need to be fueled for convenience
- May cause security issues, such as theft and vandalism

Measurement

Outcomes

- Number of people registered to use service
- Number of vehicles available

Impacts

- Rate of car ownership
- Mode split across all trips among users

Methods

- Survey results

Congestion impacts

A decrease in car ownership may result in decreased congestion.

Implementation tips

Carshare can be provided by the private sector at specific sites such as office buildings, apartment complexes or retail centers, or on-street for public use by public agencies.

Costs

Carshare companies often have the ability to charge partnering agencies, consumers, or a combination of the two for use of their vehicles. Cost is typically based on the amount of time that vehicles are reserved or in use.

Complementary strategies

- Marketing campaigns
- Educational events
- Guaranteed ride home programs

As seen in the SCAG region

The City of Los Angeles operates the "Blue LA" program, providing low- cost electric carshare vehicles in low-income neighborhoods within the City.

Incentives & Facilitation

Provision of or Proximity to Amenities

If employees have access to amenities on-site or within walking distance, they are less likely to use their vehicles to make a lunchtime trip, which reduces VMT, and may be less likely to need vehicles to make stops on their way to or from work, making non-SOV options more viable.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- Educational institutions
- Property managers - office, retail, residential

VMT Reduction:

Impacts vary based on extent and accessibility of amenities.

Developers

- Developers - office, residential, retail

VMT Reduction:

Impacts vary based on extent and accessibility of amenities.

Other stakeholders

- Students
- Developers
- Employees
- Planning and engineering departments
- Residents

Benefits →

- Reduce need for SOV trips
- Increases attractiveness to potential tenants and employees
- Makes new development more marketable

Challenges →

- Ability to provide amenities subject to municipal regulation and zoning code
- May be expensive, particularly for smaller employers

Measurement

Outcomes

- Number and quality/ usefulness of amenities
- Use of amenities

Impacts

- Rate of car ownership among tenants/ employees
- Mode split across all trips among tenants/ employees

Methods

- Results from walk audits
- Lease information from property managers

Congestion impacts

A decrease in SOV trips for lunchtime and peak hour travel will reduce congestion.

Implementation tips

This strategy can be implemented on many levels at many stages. Developers can build space for multiple uses, large employers can often provide amenities on-site, and small employers can choose to locate where amenities are easily accessible.

Costs

Costs will vary extensively based on the manner in which this strategy is implemented.

Complementary strategies

- Pedestrian infrastructure improvements
- Marketing campaigns
- Direct incentives for non-SOV travel

As seen in the SCAG region

The Warner Center Towers office park in the San Fernando Valley provide on-site amenities for their tenants such as a cafeteria, restaurants, on-site banking, dry cleaning, and a gym. The property manager views these amenities as a tool to attract new tenants.

Riverside County hosts a weekly farmers market outside the County offices with fresh produce and lunch foods.

Incentives & Facilitation

Employee Commute Programs

Employee Commute Programs are operated by employers, who utilize requirements and incentives to discourage SOV travel and encourage the use of alternate modes among their employees.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- Property managers - office, retail
- TMAs/TMOs

VMT Reduction:

Employers can provide impactful programs that are tailored specifically to their worksites.

Public Agencies / Transportation Providers

- Municipalities
- County transportation authorities
- Regional government/MPOs

VMT Reduction:

Employer programs can be difficult for public agencies to support in a large area since programs need to be customized to each individual site.

Other stakeholders

Employees

ETCs

Benefits →

- Encourages non-SOV travel
- Programs operated by municipalities or TMAs reduce administrative burden of ETCs and financial burden of employers

Challenges →

- Requires administrative commitment
- Programs built to support all employers in municipality or region may be less effective than individual programs, and may discourage the development of individualized programs

Measurement

Outcomes

- Number of employers providing programs
- Number of employees participating in programs

Impacts

- Average Vehicle Ridership among employers providing programs
- Commute mode split among employees

Methods

- Survey results
- Data reported to comply with TDM regulations affecting employers (i.e. SCAQMD's Rule 2202)

Congestion impacts

Employee Commute Programs encourage alternative modes and/or trip reduction during peak hours, resulting in decreased congestion.

Implementation tips

The most successful Employee Commute Programs utilize a variety of strategies to encourage non-SOV travel. It is helpful to promote the program heavily to new employees before they have built up a habit of driving alone.

Successful programs also make use of regular monitoring and evaluation to understand which services are successful in shifting behavior and which are not. This minimizes the risk of investing financially in unsuccessful strategies.

Costs

Costs will vary depending on size and scope of the program. Participation in TMA or public agency provided programs can reduce costs for employers.

Complementary strategies

- Marketing campaigns
- Direct incentives for non-SOV travel
- Carpool coordination
- Vanpool coordination
- TMAs/TMOs

As seen in the SCAG region

County Transportation Authorities throughout the SCAG Region assist employers across their respective counties with their commute programs. They provide support to ETCs and directly to employees through tools like their commuter calculator and rideshare platform.

Incentives & Facilitation

TMAs/TMOs

Transportation Management Associations or Organizations (TMAs/TMOs) are entities that promote and advocate for all forms of non-SOV travel. They are localized and provide service to a specific municipality, community, district or corridor.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- Property managers - residential, office, retail

VMT Reduction:

Impact varies based on budget and service offering.

Public Agencies / Transportation Providers

- Municipalities
- Regional Government/MPOs

VMT Reduction:

Impact varies based on budget and service offering.

Developers

- Developers - office, residential, retail

VMT Reduction:

Partnerships between TMAs and developers can further TDM regulation.

Other stakeholders

- Employees
- Developers/ property managers
- Residents

Benefits →

- Facilitates employee commute programs
- Assists with regulation compliance
- Helps to reduce congestion and improve air quality
- Advocates for improved transportation options and access to area

Challenges →

- It can be difficult to show direct impact on congestion and VMT reduction
- May require ongoing investment
- Success relies heavily on TMA/TMO programming

Measurement

Outcomes

- Number of TMAs in the region
- Number of TMA members

Impacts

- Average Vehicle Ridership and mode split among TMA members

Methods

- Survey results

Congestion impacts

TMAs can support congestion reduction through various forms of education and advocacy.

Implementation tips

Traditionally, TMAs and TMOs worked exclusively with employers to reduce SOV commute trips. TMAs can take many forms, however, and now often work closely with residents and visitors in their service areas to promote non-SOV travel and provide information and education.

When developing programming and services for TMAs/TMOs, consideration should be given to current programs offered by employers or county agencies.

Costs

Costs associated with developing a TMA or TMO often include research and data analysis to understand the most successful structure and programmatic offering for the organization. Once the organization has launched, costs vary by structure. Some TMAs are funded strictly through membership dues, and others through public subsidies. Many are funded with a combination of both.

Complementary strategies

- Marketing campaigns
- Educational events

As seen in the SCAG region

The SCAG Region is home to ten TMAs and TMOs, the majority of which are located in Los Angeles County. **Los Angeles Metro** convenes the Los Angeles County TMAs regularly to allow them to share knowledge and provide support to each other.

Incentives & Facilitation

Commuter Tax Benefits

Federal code (Section 132(f) of the Internal Revenue Code) allows employers to provide tax-exempt funds to commuters for parking, transit and vanpool. These are considered to be tax-free benefits rather than employee wages, so employers also save on payroll taxes.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers

VMT Reduction:

Programs are more impactful when combined with other TDM strategies.

Public Agencies / Transportation Providers

- Federal Government

VMT Reduction:

The program is more impactful in localities where employers are required to provide this benefit.

Other stakeholders

Employees

Commuter benefit companies

Benefits →

- Encourages transit and vanpool travel by reducing costs
- Employers save money by removing funds from payroll, employees save money by not paying taxes on those funds.
- Potential reduction in VMT

Challenges →

- Requires small administrative and financial commitment from employer
- Government is not receiving tax on funds used
- If parking benefit is provided, it may encourage SOV behavior
- Employers may not know how to implement programs

Measurement

Outcomes

- Number of employers enrolled in the program

Impacts

- Number of employees receiving the benefit to purchase non-parking expenses

Methods

- Survey results
- Data from employers

Congestion impacts

Reduced cost of using non-SOV modes should reduce congestion.

Implementation tips

The regulation surrounding the Commuter Tax Benefit may change. The Association for Commuter Transportation is a valuable resource for employers who want more information.

Costs

There are minimal costs involved for employers who wish to provide the benefit by partnering with a vendor.

Complementary strategies

- Transit improvements
- Vanpool coordination

As seen in the SCAG region

Los Angeles Metro sponsored state Assembly Bill 2548 which requires Los Angeles County employers with 50-249 employees to provide a commuter benefit to their employees. This bill will likely increase the use of the Commuter Tax Benefit among employers in Los Angeles County.

Pedestrian Infrastructure Improvements

Pedestrian Infrastructure Improvements include developing pedestrian facilities to reduce motorized vehicle use for short (<1/2 mile) all–purpose trips, as well as connections to transit

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Regional government/MPOs

VMT Reduction:

It can be difficult to measure direct impact on VMT from pedestrian improvements, but SOV trips replaced will reduce VMT.

Developers

- Developers - office, retail, residential

VMT Reduction:

It can be difficult to measure direct impact on VMT from pedestrian improvements, but SOV trips replaced will reduce VMT.

Other stakeholders

- Residents
- Public Health Departments
- Planning and engineering departments
- Local pedestrian advocates

Benefits →

- Improves public health for area
- Improves air quality for area
- Reduces congestion
- Improves access to development
- Contributes to neighborhood attractiveness

Challenges →

- May not be effective for some communities
- Requires investment by developers or municipalities

Measurement

Outcomes

- Decrease in accidents involving pedestrians
- Number of improvements made
- Dollars spent on improvements

Impacts

- Mode split: number of pedestrians

Methods

- Results from walk audits
- Community feedback
- Volume counts

Congestion impacts

An increased number of pedestrians can decrease congestion.

Implementation tips

Pedestrian improvements should aim to make walking safer and more pleasant. They can take many forms, including:

- Sidewalk widening
- Traffic signal adjustments
- Pedestrian scrambles
- Leading Pedestrian Intervals (LPIs)
- Planting of street trees and lights
- Inclusion of ground level retail

Costs

Costs vary by project, but include projects as extensive as sidewalk widening or ADA compliance, as well as smaller ones such as installation of amenities such as benches, lighting and foliage.

Complementary strategies

- Safe Routes to School programs
- Bicycle improvements

As seen in the SCAG region

In an effort to improve safety for pedestrians, many cities in the SCAG region, including the **City of Long Beach** and the **City of Riverside**, have instituted pedestrian scrambles at heavily trafficked intersections.

Infrastructure & System Upgrades

Bicycle Infrastructure Improvements

Bicycle Infrastructure Improvements include developing facilities that support trips by bicycle and personal mobility devices such as electric scooters to reduce motorized vehicle use for short (< 3 mile) and medium trips (<5 miles).

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Regional government/MPOs

VMT Reduction:

It can be difficult to measure direct impact on VMT from bicycle improvements, but SOV trips replaced will reduce VMT.

Developers

- Developers - office, retail, residential

VMT Reduction:

It can be difficult to measure direct impact on VMT from bicycle improvements, but SOV trips replaced will reduce VMT.

Other stakeholders

- Residents
- Public Health Departments
- Planning and engineering departments
- Bicycle education organizations

Benefits →

- Improves public health for area
- Improves air quality for area
- Reduces congestion
- Improves access to development projects
- Contributes to neighborhood attractiveness
- Improves safety of bicycle riders

Challenges →

- Some roadways may require widening or innovative solutions to be effective
- May involve utility relocation
- Requries investment by developers or municipalities

Measurement

Outcomes

- Number of improvements made
- Dollars spent on improvement
- Miles of bike lanes

Impacts

- Mode split: number of bicyclists

Methods

- Bicycle count data

Congestion impacts

Road diets can improve traffic flow, reduce collisions and reduce congestion.

Implementation tips

Bicyclist safety should be considered when implementing bicycle infrastructure improvements. For example, bike lanes should be wider if they are located next to parking to avoid collisions between bicyclists and doors of parked cars.

Costs

Cost may include road striping for bicycle lanes or more involved infrastructure changes such as separated bike lanes or bike paths.

Complementary strategies

- Wayfinding upgrades
- Safe Routes to School programs
- Pedestrian infrastructure improvements
- Bicycle transit integration

As seen in the SCAG region

The **MyFigueroa** project in Los Angeles has been designed to make a busy thoroughfare safer for bicyclists, pedestrians, transit riders and drivers. It includes a three-mile bikeway, as well as protected bicycle lanes in some areas.

In the Coachella Valley, the **CV Link** corridor provides a safe alternative to the 111 corridorfor pedestrians, cyclists and low-speed electric vehicles.

Infrastructure & System Upgrades

Motor Vehicle Restriction Zones

Motor vehicle restriction zones limit motor vehicles in a certain place, either temporarily or permanently.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- Regional government/MPOs

VMT Reduction:

Impact varies by size, location and temporal extent of restriction zone but can be very effective in the long term.

Other stakeholders

- Pedestrians
- Planning and engineering departments
- Bicyclists
- Local businesses

Benefits →

- Enables other modes of transportation in the affected areas
- Defers vehicle trips
- Reduces local emissions
- Can increase safety

Challenges →

- Potential motorist and business opposition
- Can temporarily increase congestion until confusion is resolved
- Can have a negative impact on area vitality if overall access is limited
- May incur political opposition

Measurement

Outcomes

- Number of restricted zones
- Length of restricted roadways
- Number of businesses affected

Impacts

- VMT reduced
- Business earnings/ success

Methods

- Survey results
- Traffic data
- Reports from local businesses

Congestion impacts

When effective, Motor Vehicle Restriction Zones can reduce traffic congestion, road and parking facility costs, crash risk, pollution emissions and local environmental impacts.

Implementation tips

Most vehicle restrictions are implemented by local or regional governments, often as part of a downtown revitalization program or neighborhood traffic management plan, or during a period of exceptional traffic congestion or pollution.

Costs

Costs for temporary events include set up and tear down, as well as security. Costs for permanent restriction zones include the cost of bollards or barriers.

Complementary strategies

- Pedestrian infrastructure improvements
- Safe Routes to School programs
- Transit improvements

As seen in the SCAG region

CicLAvia and **Open Streets** events are examples of temporary Motor Vehicle Restriction Zones, where major streets are closed down on the weekend for active transportation.

Permanent examples include the **3rd Street Promenade** in Santa Monica and **Main Street** in Riverside.

Infrastructure & System Upgrades

Bicycle Transit Integration

Bicycle Transit Integration includes bicycle infrastructure (e.g. bike racks, bike share options) at transit stations, as well as the ability to bring bicycles on transit through bus bike racks or bicycle areas on rail lines.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- Regional government/MPOs

VMT Reduction:

Impacts of bicycle transit integration can be difficult to measure.

Other stakeholders

- Bicycle education organizations
- Planning and engineering departments
- Bicyclists
- Residents / businesses

Benefits →

- Increases first/last mile connectivity within 3 miles
- Relatively low cost transportation enhancement to deploy

Challenges →

- More effective for longer distances that normally wouldn't be traveled by bicycle alone
- Difficult to ride on rail with bicycles during peak hour transit

Measurement

Outcomes

- Number of integration projects
- Number of transit stations with bicycle infrastructure

Impacts

- Usage (bike hub parking, bicycle ridership)
- Mode split

Methods

- Survey results
- Bicycle traffic data

Congestion impacts

Bicycle Transit Integration should reduce vehicles on roadways, particularly during peak periods, as well as increase transit ridership.

Implementation tips

Bicycling, combined with transit, increases the effective range of transit users. Bicycle Transit Integration involves providing transit infrastructure (both aboard vehicles and at station areas) that support bicycling.

Costs

Bus racks cost between $500–$1,000 to install. Dedicated spaces on rail cost between $500–$5,000.

Complementary strategies

- Bicycle infrastructure improvements
- Transit improvements
- Dockless/micromobility/new mobility programs

As seen in the SCAG region

Los Angeles Metro provides Bike Hubs at five of their rail stations. Hubs provide secure bike parking and repair stations for bicyclists who want to ride their bikes to and from Metro rail.

Metrolink also provides integration for bicyclists by allowing bicycles on board their trains. Their regular cars can hold up to three bicycles, but most have one car that can hold up to nine.

Infrastructure & System Upgrades

Dockless/Micromobility/ New Mobility Programs

"Micromobility" and "New Mobility" are blanket terms used to describe shared bike and scooter programs, including both docked and dockless and electric and traditional options.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Regional governments/MPOs
- Transit agencies
- TNCs
- Private transportation companies

VMT Reduction:

Given accurate data collection and careful implementation, this strategy can be an impactful first/last mile solution.

Other stakeholders

Transit riders

MaaS users

Residents

Benefits →

- Expands the reach of first/last mile

Challenges →

- Dockless bikes and scooters can be hazardous if left in places where they block the sidewalk
- Some options require use of a smart phone, creating barriers to use for some

Measurement

Outcomes

- Number of rides taken
- Number of riders using system

Impacts

- Number of rides taken to/ from transit hubs
- Number of riders who would otherwise have driven alone

Methods

- Survey results
- Data collected from micromobility companies

Congestion impacts

The congestion impacts of these services are still yet to be determined. In Portland, OR , a study found that 34% of electric scooter trips would have been taken by car or individual TNC rides. The rest may have switched from other modes such as walking, bicycling and transit.

Implementation tips

Micromobility companies often enter into contracts with individual municipalities in order to operate their bicycles or scooters there. It is important to consider the use of these modes in the context of the broader transportation network for users who travel between municipalities. Similarily, usage data collected by municipalities can be used to influence the planning process regionally and locally.

Costs

As deployment of micromobiity options is currently in pilot phase in most locations, it is difficult to understand cost of operations on either the public or private side.

Complementary strategies

- Bicycle transit integration
- Mobility as a Service provision
- Bicycle infrastructure improvements

As seen in the SCAG region

Cities within the SCAG Region have contracts with micromobility companies to deploy dockless options. The **City of Santa Monica** has begun to build infrastructure for these options, providing dedicated space for dockless scooter parking.

Infrastructure & System Upgrades

Private Shared Transportation/Shuttles

Private transportation, such as employee or TMA operated shuttles, provide first/last mile solutions and fill in transit system gaps.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- TMAs/TMOs
- Property managers - office, retail, residential

VMT Reduction:

Depending on the potential pool of employees, shuttles can be a very direct solution to first/last mile challenges and reduce the need for on-site parking.

Public Agencies / Transportation Providers

- Municipalities

Developers

- Developers - office, retail, residential

VMT Reduction:

Larger groups of employers can pool resources to create a shared shuttle, however they should be careful of duplicating exitsing transit sercvice.

Other stakeholders

Tenants

Employees

Residents

Benefits →

- Improves site access
- Pooled services, such as those run by TMAs, are cheaper than a private employer shuttle

Challenges →

- Can be costly for employers
- If not developed correctly, can duplicate transit service

Measurement

Outcomes

- Shuttle ridership

Impacts

- Mode split among those who have access to the service

Methods

- Survey results
- Transit ridership data

Congestion impacts

Shuttle service contributes to non-SOV travel and directly reduces congestion.

Implementation tips

Privately operated shuttles are typically managed by employers (connecting employees to their worksite) or by TMAs (connecting employees to multiple worksites in close proximity to each other). These options can be preferable to transit for some because they will provide service directly to a worksite, when the transit system may not. Sometimes, public agencies will also form partnerships with private operators to provide shuttle service.

Costs

Cost of operating shuttle systems vary by size of the system.

Complementary strategies

- Transit Improvements
- Mobility as a Service Provision

As seen in the SCAG region

Worthe Properties in Burbank operates a morning and evening shuttle between the Downtown Burbank Metrolink station and their office campus. The shuttle is free for tenants and their employees and facilitates their use of non-SOV travel through Metrolink.

Infrastructure & System Upgrades

Transit Improvements

Improvements to the transit system such as service expansion and capital infrastructure improvements encourage ridership growth.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- Regional government/MPOs

VMT Reduction:

Depending on the magnitude of improvements, from increased frequency to new rail lines, impact can be very high on transit ridership.

Other stakeholders

- Transit riders
- Transit agencies
- Developers/ property managers
- Employees
- Residents/ businesses

Benefits →

- Increases transit ridership
- Improves overall network accessibility

Challenges →

- It may be difficult to guage the extent to which improvements will increase ridership
- Improvements may be costly and even with ridership increases, farebox recovery may not offset cost

Measurement

Outcomes

- Number of improvements

Impacts

- Transit ridership
- Mode split

Methods

- Survey results
- Transit ridership data

Congestion impacts

Transit Improvements should reduce vehicles on roadways, particularly during peak periods, as well as increase transit ridership.

Implementation tips

Improvements to the transit system may include:

- optimized routing and increased coverage
- vehicle upgrades to improve comfort and safety
- improvements that contribute to ease of use such as electronic fare payment capabilities
- transit station upgrades, including provision of first/last mile options (e.g. Mobility Hubs)

Costs

Costs will vary depending on the type and scale of system upgrades.

Complementary strategies

- Bicycle Transit Integration
- Subsidization of Non-SOV Travel
- Mobility as a Service Provision
- Dockless/Micromobility/ New Mobility Programs

As seen in the SCAG region

Los Angeles Metro is reviewing its entire bus network through their **Next Generation Bus Study**. The study will help their bus system better fit the needs of potential Metro riders.

Parking Pricing

The price of parking can impact decisions about whether to drive. This strategy can be successful in decreasing congestion in areas with sufficient alternative options, but may decrease access for everyone if alternative options do not exist.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- Property managers - office, retail, residential
- Parking lot owners/operators

VMT Reduction:

Parking pricing is one of the most efficient and effective methods to alter trip choice to non-SOV modes in areas where parking is constrained.

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies

VMT Reduction:

Impact varies based on surrounding context, areas with large amounts of free parking may not find this stragegy as effective.

Other stakeholders

- Employees
- Visitors
- Tenants

Benefits →

- Encourages non-SOV travel
- Reduced congestion from circling

Challenges →

- Increase in cost of public parking may be unpopular politically
- Payment systems must be reliable and easy to use
- Enforement can be challenging or costly

Measurement

Outcomes

- Parking availability

Impacts

- Mode split among travelers by site
- Congestion

Methods

- Survey results
- Traffic data

Congestion impacts

Pricing can directly impact local congestion through removal of circling trips, and overall congestion through shift in travel mode.

Implementation tips

Parking pricing can be used to curb congestion derived from circling and looking for parking spaces. "Dynamic" parking pricing involves raising the cost of parking based on demand, decreasing the likelihood that drivers will circle blocks waiting for the most in-demand spots, and instead encouraging them to travel further away to park for a smaller cost.

Costs

Costs of parking pricing include cost of parking infrastructure and administration involved in determining parking pricing and encorcing parking policies.

Complementary strategies

- Transit improvements
- Mobility as a Service provision
- Parking cash out
- Parking unbundling

As seen in the SCAG region

LA Express Park in Downtown Los Angeles and Hollywood uses demand-based pricing to better match the availability of parking spaces with their demand.

Parking Unbundling

Parking Unbundling describes the process of charging for parking separately from a regular lease for office or residential tenants.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- Property managers - office, retail, residential
- Parking lot owners/operators

VMT Reduction:

Similar to Parking Pricing, this strategy can be very impactful depending on the number of people affected by the unbundling policy.

Developers

- Developers - office, retail, residential

VMT Reduction:

Similar to Parking Pricing, this strategy can be very impactful depending on the number of people affected by the unbundling policy.

Other stakeholders

Employees

Tenants

Benefits →

- Can discourage car ownership and car trips
- Reduces employer costs
- For developers, may reduce need to build large amounts of parking

Challenges →

- Developers may need to purchase payment systems
- Requires additional administrative effort for property managers

Measurement

Outcomes

- Reduction in parking spaces leased

Impacts

- Rate of car ownership among residential tenants
- Mode split among employees

Methods

- Survey results from tenants

Congestion impacts

Unbundling can discourage car ownership, reducing vehicle trips and congestion.

Implementation tips

Parking is expensive to build and maintain, and the cost of that is often translated to those who use buildings indirectly through leases or cost of goods and services. Unbundling parking requires that users consider the cost involved and decide for themselves whether or not to take advantage of it. This encourages residents not to own cars, and employers to charge their employees to park.

Costs

Developers and property managers should not incur costs for parking unbundling.

Complementary strategies

- Parking pricing
- Parking cash out
- Direct incentives for non-SOV travel

As seen in the SCAG region

A study from UCLA determined that the provision of unbundled parking in **Downtown Los Angeles** allowed buildings to target individuals without access to cars, and provide housing for a lower cost.

Source: https://www.jtlu.org/index.php/jtlu/article/view/730

Parking Cash Out

Employer-paid parking subsidizes the cost of driving. By separating the cost of parking from a business, people have incentives to use other modes. Parking Cash Out involves subsidizing non-SOV modes for employees in lieu of providing them access to a parking space.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Small employers
- Educational institutions
- Property managers - office, retail, residential

VMT Reduction:

Parking Cash Out can be successful if marketed and implemented correctly. The state policy in California surrounding Parking Cash Out is not effective due to existence of loopholes and lack of enforcement.

Other stakeholders

- Employees
- Developers/ property managers
- Residents / businesses
- Students

Benefits →

- Encourages non-SOV travel through provision of "extra" money for employees
- Can provide more area for development/business use if business owns parking lot/structure

Challenges →

- Other modes of transportation must be available in order for it to be effective
- Works best when employer leases parking spaces (vs. owning lot)
- Enforcement of policies is challenging
- Employees may park elsewhere

Measurement

Outcomes

- Cash outs provided (number of employees not using parking spaces)

Impacts

- Mode split among employees

Methods

- Survey results
- Parking Data

Congestion impacts

Parking Cash Out can encourage non-SOV travel. A 2017 study by the Virginia Transport Policy Institute states that parking cash out affects employees' automobile commuting by 10-30%.

Implementation tips

Parking cash out rewards employees who choose non-SOV modes, and encourages others to do so. For employers who lease parking spaces individually, this program is essentially free.

Costs

Employers who lease individual parking spaces incur no cost from Parking Cash Out programs. Those who lease spaces in bulk may save money by not being required to purchase additional parking, or may incur the cost of paying out employees who would otherwise have spaces available.

Complementary strategies

- Parking pricing
- Parking unbundling
- Direct incentives for non-SOV travel

As seen in the SCAG region

Parking Cash Out is required of all employers in the SCAG Region with the following attributes:

- Over 50 employees
- Have worksites in a nonattainment air basin for any state air quality standard
- Subsidizes employee parking that they don't own
- Can calculate out-of-pocket expense of parking subsidies provided
- Can reduce number of parking spaces without penalty in lease agreements

Parking Facility Design and Curbside Management

The design of parking facilities and management of curb space can influence travel behavior through designating space to non-SOV travel modes rather than personal vehicles.

Implementors

Employers / Property Managers / TMAs

- Large employers
- Property managers - office, retail, residential

VMT Reduction:

Impact depends on travel patterns and available parking/ curb space on site.

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies

VMT Reduction:

Impact depends on travel patterns and availablity of destinations to non-SOV Modes.

Other stakeholders

- Visitors
- Parking lot owners/ operators
- Residents / businesses
- Employees

Benefits →

- Encourages non-SOV Travel

Challenges →

- May decrease ease of access for drivers
- Decrease of individual parking spaces may be unpopular politically

Measurement

Outcomes

- Parking availability
- Use of designated spaces by non-SOV modes

Impacts

- Mode split among travelers by site

Methods

- Survey results
- Traffic Data

Congestion impacts

On private property, facility design to encourage non-SOV modes can reduce overall congestion. In the public realm, curbside management and designated space for non-SOV modes may reduce congestion caused by driver confusion, though may increase congestion slightly due to circling if parking options for drivers are eliminated.

Implementation tips

Employers, property managers, developers and public agencies can encourage non-SOV travel by designating spaces for carpools, vanpools or carshare vehicles and providing curb space for first/ last mile modes such as TNCs and micromobility options.

Monitoring and enforcement of curbside management strategies is key in making sure they are impactful.

Costs

Costs of facility design and curbside management can include signage and painting of parking spaces. Some curbside management may require cutouts or other sidewalk infrastructure improvements. There is also cost involved in enforcing policies.

Complementary strategies

- Transit improvements
- Mobility as a Service provision
- Parking pricing
- Parking unbundling

As seen in the SCAG region

Many employers throughout the SCAG Region provide designated spaces in their parking lots for employees who carpool. Usually, these spaces are in desirable locations, and are monitored and enforced the use of spaces through the use of hang tags for registered carpool riders.

TDM-Supportive Policy

Congestion Pricing

Congestion Pricing is the charging of fees for a vehicle to access certain high congestion areas, either during peak periods or other periods.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Transit agencies
- County transportation authorities
- Regional government/MPOs
- Caltrans

VMT Reduction:

Congestion Pricing has a proven record of reducing traffic and congestion in urban areas. Implementation of the strategy is important given the untested nature of this strategy in the U.S.

Other stakeholders

- Transit riders
- Planning and engineering departments
- TNCs, taxis and rental car companies
- Transit agencies

Benefits →

- Reduces congestion
- Pricing revenue can be used to fund transportation improvements in local area
- Increases reliaility for express bus routes

Challenges →

- Requires strong political leadership, extensive public outreach and education

Measurement

Outcomes

- Vehicles traveling during peak periods or in congested areas

Impacts

- Revenue collected
- VMT reduction
- Passenger throughput

Methods

- Data from tolls or other pricing hardware

Congestion impacts

Congestion pricing will result in targeted reduction in congestion.

Implementation tips

Congestion pricing reduces congestion along a corridor or in an area by discouraging SOV travel though a charge for drivers. Revenue from programs can be put back into a region, municipality or transit agency's transportation system. Investment into public transit or TDM measures in low-income areas can help to offset equity concerns.

Costs

Costs include ITS infrastructure to monitor, charge fees, and enforce violations.

Complementary strategies

- Transit improvements
- Private shared transportation/ Shuttles
- Bicycle infrastructure improvements
- Mobility as a Service Provision

As seen in the SCAG region

SCAG is in the process of developing a plan for a regional **Express Lanes** network and system.

TDM-Supportive Policy

Transit Oriented Development and Non-SOV Supportive Land Use

Land use such as Transit Oriented Development (TOD) can support non-SOV trips by placing travelers in close proximity to the locations they frequent, or to non-SOV modes that take them there easily, such as rail or bus rapid transit lines.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Regional government/MPOs

VMT Reduction:

Implementation of this strategy can greatly increase attractiveness of non-SOV modes to residents and visitors alike

Developers

- Developers - office, retail, residential

VMT Reduction:

Poor implementation of this strategy can displace transit riders for residents that primarily drive.

Other stakeholders

Developers/ property managers

Employees

Residents

Benefits →

- Reduces need for SOV trips
- Reduces need for car ownership
- Reduces parking demand

Challenges →

- TOD supportive policies can be politically unpopular if they allow increases in density
- Impacts on congestion may be difficult to measure
- Development pressure near transit infrastructure can lead to gentrification and displacement of existing, transit dependent users

Measurement

Outcomes

- Number of policies in place
- Number of developments

Impacts

- Number of housing units within 0.5 miles to amenities
- Rate of car ownership among residents

Methods

- Census data

Congestion impacts

Land use policies that support non-SOV trips can reduce congestion, but density can also increase auto congestion.

Implementation tips

Land use strategies that support non-SOV travel include:

- Transit Oriented Development and supportive zoning/regulation
- Mixed-use and denser development form based zoning or design guidelines supportive of pedestrian travel
- Reduction or elimination of parking minimums; and
- Anti-displacement policies.

Costs

Costs include planning and infrastructure investments at transit stations.

Complementary strategies

- Transit improvements
- Private shared transportation/ Shuttles
- Bicycle infrastructure improvements

As seen in the SCAG region

Culver City developed a TOD Visioning Study for the Culver City Station on the Expo Line. They worked with community members to identify walkability constraints in order to ensure the station and its nearby development will be accessible.

TDM-Supportive Policy

TDM Ordinance and Policy Development

TDM ordinances typically require developers or employers to provide TDM strategies at their site or workplace to mitigate the congestion caused by trips to and from their sites.

Implementors

Public Agencies / Transportation Providers

- Municipalities
- Regional government/MPOs

VMT Reduction:

TDM Ordinance impacts can very depending on how the policies are written, implemented and enforced. Availability and quality of non-SOV modes can also effect ultimate impact.

Other stakeholders

Developers/ property managers

Employees

Residents

Benefits →

- Reduces need for SOV trips
- Reduces need for car ownership
- Informs developers and employers of TDM options

Challenges →

- TDM policies can be politically unpopular
- Impacts on congestion may be difficult to measure

Measurement

Outcomes

- Number of municipalities with active policies in place
- Number of developments or employers subject to policies

Impacts

- Mode split, VMT, or AVR among those sites affected by policies

Methods

- Survey results

Congestion impacts

TDM policy encourages non-SOV travel, which reduces congestion.

Implementation tips

While TDM requirements are often included for developers during a project's initial stages, these requirements are difficult to enforce after projects have been sold. Polices aimed at users of sites, such as employers or property managers, are often more successful in influencing the implementation of TDM strategies. Some policies require the surveying of employees or tenants annually, which provides data on travel habits.

Costs

Initial costs include planning for and development of policies. Ongoing costs include administrative staff time necessary to enforce the policy.

Complementary strategies

- Employee commute programs
- Marketing campaigns
- Educational events

As seen in the SCAG region

The **South Coast Air Quality Management District's Rule 2202** affects employers of four counties in the SCAG Region. The rule requires employers with 250 or more employees to mitigate the emissions produced from their employees' commutes by paying into a fund, purchasing emission reduction credits, or providing TDM programs on site.

SCAG™
INNOVATING FOR A BETTER TOMORROW

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CONNECT SoCal

TECHNICAL REPORT

CONGESTION MANAGEMENT APPENDIX
AS ADOPTED ON MAY 7, 2020

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