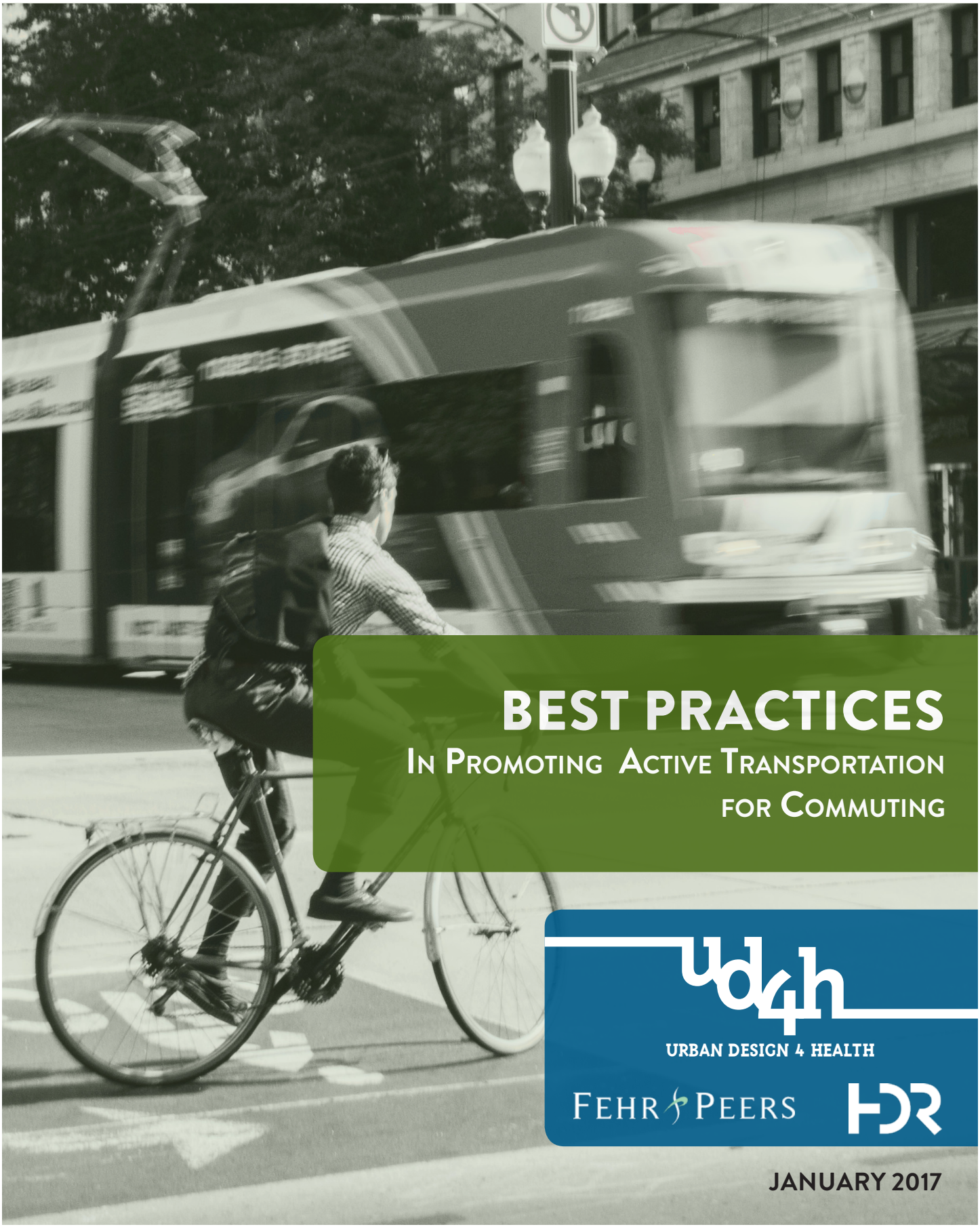

BEST PRACTICES

In Promoting Active Transportation for Commuting

UD4H

URBAN DESIGN 4 HEALTH

FEHR & PEERS

HDR

JANUARY 2017

Utah Active Transportation Benefits Study
Contract Number 15-1412TP

Best Practices in Promoting Active Transportation for Commuting

Task 3.2 Final Report

Prepared for: Utah Transit Authority (UTA)
Salt Lake City, Utah

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In Partnership with: Urban Design 4 Health, Inc.

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1 Executive Summary

Shifting people from automobiles to active transportation modes is a goal for many agencies and activist groups both nationally and in the state of Utah. There is a host of benefits in doing so, including air pollution reduction, reduced congestion, and increased physical activity and improved health. However, getting people out of their cars and on a bike or walking requires infrastructure and approaches that are unfamiliar and challenging to many jurisdictions. Often there are multiple factors that contribute to this challenge, such as:

- The use of automobiles is perceived as faster, safer and easier than bicycling or walking.
- The majority of roadways in the US have been designed primarily for automobiles over the past century, which has frequently led to undesirable bicycling or walking conditions.
- Active transportation networks are often disconnected, circuitous, or non-existent. Many people are apprehensive to use existing networks because they are difficult or confusing to use.

This document describes engineering, education and encouragement best practices to address these issues, with a focus on increasing the number of commute trips made by bicycling or walking. It is important to note that many of the concepts and strategies suggested are also useful in promoting bicycling and walking for other purposes, including recreation and fitness. Table 1 lists the three elements to be described in this document, as well as their sub-elements.

Table 1: Executive Summary of Best Practice Strategies

Engineering Best Practices
Fill Gaps to Employment Centers
Identification of Bicycle Routes for Different Users
Investment in Low Stress Facilities
Provide End of Trip Facilities
Invest in Bike Share Systems
Combine Active Transportation with Transit
Become a Vision Zero City
Education Best Practices
Get Employers to Promote Active Transportation
Develop a Bicycle Ambassador Program
Provide Bike Commute Websites
Hold Bike to Work Events
Encouragement Best Practices
Offer Tax Incentives
Make it Part of a Larger TDM Program
Discourage the Use of Automobiles

As a general approach to presenting best practice strategies, areas well known for their active transportation mode share were researched. The League of American Bicyclists' *Where We Ride: Analysis of Bicycle Commuting in American Cities* provides a comprehensive look at bicycle commuting nationwide at various geographic levels. Oregon and Colorado top the list of states with the highest bike mode share, while Portland, Minneapolis, and San Francisco represent the top three largest cities on the list with highest share of bike commuters (The League of American Bicyclists, 2015). Vancouver Canada is also aggressively seeking to shift mode share and has tracked good progress in reaching these goals. Survey data suggests that 31% of non-recreation trips are walk or bike trips (CH2MHILL, 2015).

A review of what these cities and states are doing to support active transportation for commute trips formed the basis for case studies provided in this document.

2 Introduction

There are many different types of trips. Commute trips, those that go to and from work or school, are actually a small portion of the travel that occurs. Utilitarian trips, like shopping trips and other errands, as well as social and recreation trips make up the bulk of the remaining trips.

Even so, the commute type is often a focal point for changing behavior because they are relatively predictable – people do them every day and start and end in the same location. There are also some unique tools that can be leveraged like tax incentives and employee benefits that are not available for non-commute focused trips.

Getting people to shift their mode of travel for commute trips is uniquely challenging in that it is often the longest and least flexible trip of the day. For example the average trip distance along the Wasatch Front for home-based work trips is 17.7 miles, while home-based other trips only average of 9.2 miles (Resource Systems Group, Inc., 2013). About 20% of home-based work trips in the state are within 3 miles, or what would be considered a reasonable bicycling distance1. Things like dropping kids off at daycare or school may also make taking active transportation difficult for many commuters. However, there are many strategies that can be effective for changing commute trip behavior.

2.1 Active Transportation Considerations in Utah

The 2012 Utah Household Travel Survey provides an excellent recent analysis of walking and bicycling behavior in Utah. Depending on the location trips made by walking and bicycling ranged from 0.5% to 3.8% and 1.8% to 4.3% respectively.

Table 2: 2012 Home-Based Work Trip Mode Shares (Utah Household Travel Survey)

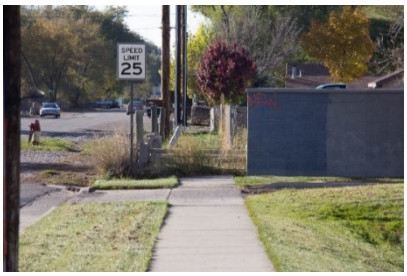
Region/Geography	Drive Alone	Shared Ride 2	Shared Ride 3	Transit	Walk	Bike	Other	School Bus
Wasatch Front	78.5%	7.5%	4.2%	4.5%	3.1%	1.9%	0.3%	0.0%
Cache	74.5%	7.5%	7.1%	2.1%	3.8%	4.3%	0.6%	0.0%
Dixie	80.9%	9.7%	6.1%	0.1%	0.5%	2.4%	0.2%	0.0%
UDOT (non-MPO)	76.7%	9.6%	7.5%	1.1%	2.6%	1.8%	0.8%	0.0%

[1] Based on analysis of raw data sets from 2012 Household Travel Survey

A survey of barriers to walking and bicycling was also conducted as part of the survey effort. While those who took the survey self-selected to participate, suggesting at least some bias, the information is useful in understanding what users view as the most consistent barriers to walking and biking. The preferences and barriers determined from this effort are important to keep in mind in determining appropriate best practices in Utah.

Key Points from the 2012 Household Travel Survey and Possible Best Practice Responses

- Time is a key issue for Utahans
  - Possible Response: Provide direct bike and pedestrian connections to employment centers.
- Bicycling is more frequently used more than walking for commute trips
  - Possible Response: Focus on providing safe and convenient bike networks and filling bike infrastructure gaps.
- Saving money and improving the environment are key motivations for choosing to bicycle
  - Possible Response: Make these key components of outreach, education, and advocacy efforts
- Missing or incomplete infrastructure is considered a major barrier
  - Possible Response: Prioritize projects that fill gaps and provide connections to key destinations
- The need to carry other passengers or items is a barrier for both walking and bicycling
  - Possible Response: Don't focus solely on active transportation. Include efforts to integrate transit and other transportation demand management strategies
- Traffic concerns is an issue a concern for both modes, but a bigger concern for bicycling
  - Possible Response: Invest in low stress facilities that are safe and comfortable for users



Incomplete Sidewalk, West Valley City

Missing Sidewalk, South Jordan

2.2 Document Approach

Looking at current local conditions and trends can be helpful in framing how to encourage active transportation modes of commuting. However, a great deal of inspiration can be gained by looking at success stories from other regions. As a general approach to presenting best practice strategies, areas well known for their active transportation mode share were researched. *Where We Ride: Analysis of Bicycle Commuting in American Cities* by the League of American Bicyclists provides a comprehensive look at bicycle commuting nationwide at various geographic levels. Oregon and Colorado top the list of states with the highest bike mode share for all trips, while Portland, Minneapolis, and San Francisco represent the top three largest cities with highest share of bike

commuters (The League of American Bicyclists, 2015). Vancouver Canada is also aggressively seeking to shift mode share and has made good progress in reaching these goals. Survey data suggests that 31% of non-recreation trips are walk or bike trips (CH2MHILL, 2015).

Photo Credit: Adam Coppola Photography

A review of what these cities and states are doing to support active transportation for commute trips formed the basis for case studies provided in this document. In this document, best practices strategies are grouped together based on three of the Essential Elements of a Bicycle Friendly America 5 E's (The League of American Bicyclists, 2016). Table 3 lists the three elements, as well as the sub-elements described in the sections below.

Table 3: Summary of Best Practice Strategies

Engineering Best Practices
Fill Gaps to Employment Centers
Identification of Bicycle Routes for Different Users
Investment in Low Stress Facilities
Provide End of Trip Facilities
Invest in Bike Share Systems
Combine Active Transportation with Transit
Become a Vision Zero City
Education Best Practices
Get Employers to Promote Active Transportation
Develop a Bicycle Ambassador Program
Provide Bike Commute Websites
Hold Bike to Work Events
Encouragement Best Practices
Offer Tax Incentives
Make it Part of a Larger TDM Program
Discourage the Use of Automobiles

While enforcement and evaluation/planning – the other E's – are important, best practice implementation strategies for commute trips fit primarily in the first three.

For each best practice strategy described below, the roles of the public sector, employers, and advocates are also provided.

3 Engineering – Infrastructure

3.1 Fill in Gaps to Employment Centers

Matching active transportation infrastructure connections to employment centers is a critical step to foster more active transportation commute trips. Areas with high employment densities should be considered high-priority areas for investments to create or complete active transportation networks. Direct commuter focused routes should be implemented. Communities should not assume that recreational facilities meet the needs of cycling commuters. Commuters seek a direct route to and from their work place.

Example:

Sacramento's Grid 2.0 is an on-going transportation project to provide the region with an excellent multi-modal transportation network. One of the primary goals of this project is to improve connections between neighborhoods and the downtown core. Bicycling in Sacramento is well served by two multi-use, off road trails -- the American River Parkway and Sacramento River Parkway. These parkways provide separated facilities to the edge of Sacramento's urban center. However, while there are significant bike lanes and routes in Sacramento's center, the connection between the Parkways and the core are lacking. Grid 2.0 expands the bicycle lanes to connect the parkways to the existing bike facilities.

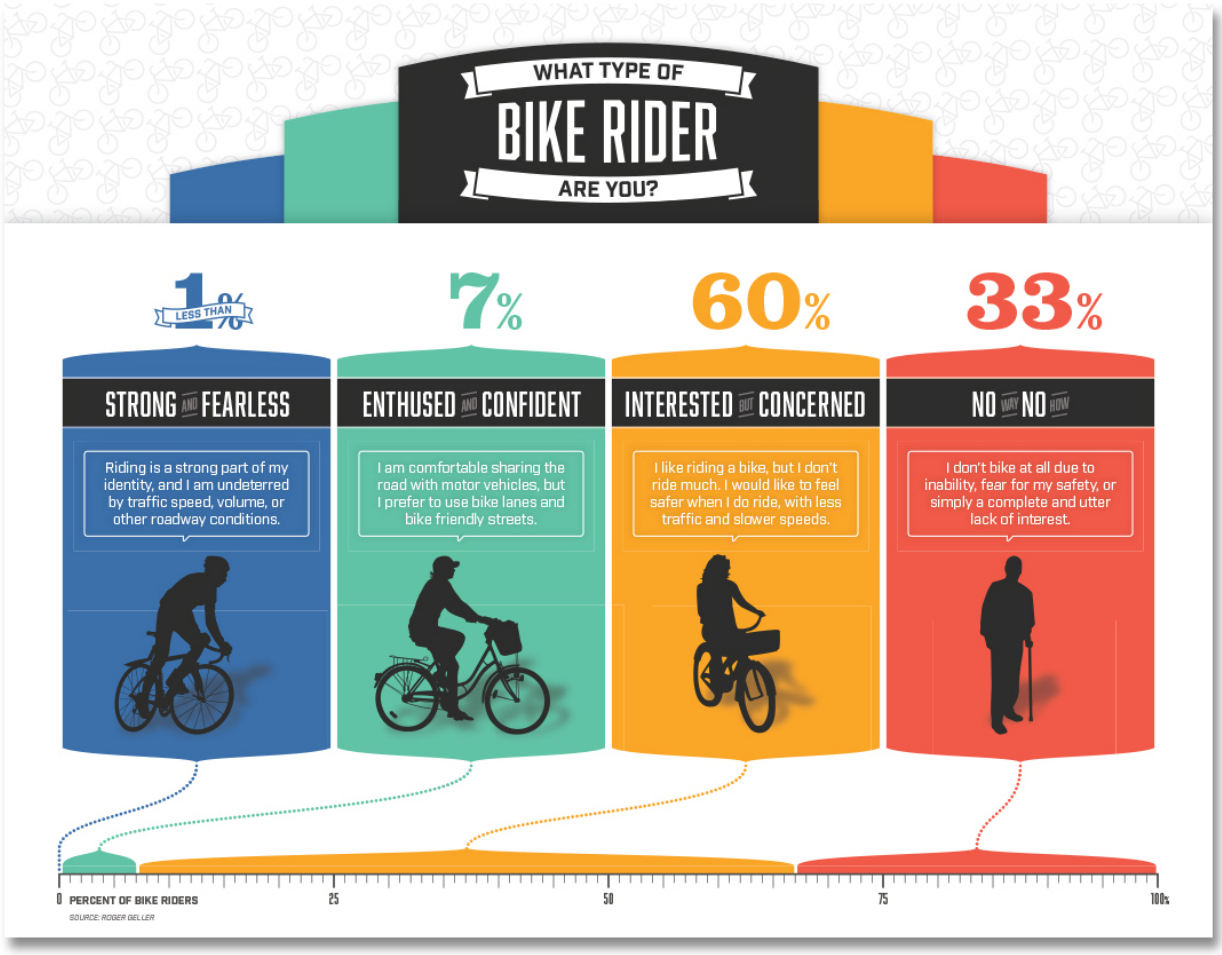
Role of the Public Sector: Analyze and plan active transportation networks to major employment centers, prioritize projects and funding to build and complete these networks

Role of Employers: Support active transportation projects and partner with the public sector to plan and construct facilities

Role of Advocate Groups: Voice support and advocate for active transportation projects at city/community meetings and events

3.2 Identification of Bicycle Routes for Different Users

There are many different types of cyclists, from the racer in training to the family on a casual outing. The most well-known of these typologies is a Portland study that identifies four classifications of cyclists (% of total population): The Strong and the Fearless (1%), The Enthused and the Confident (7%), The Interested but Concerned (60%), and No Way No How (33%) (Geller, 2009). Recently, cities have recognized that bicycle facilities are not a one-size fits all designation and have started designing facilities that appeal to bicyclists in the Interested but Concerned classification.



Source: Graphic Developed by Fehr & Peers based on classifications from Roger Geller, Portland Bureau of Transportation

While there has been an increased focus of designing for various user classes, communicating this information to the public has been minimal to this point. Additionally, while a route might be safe, it might also be steep and extremely difficult for beginning cyclists to ride. This is especially significant in areas with steep/long hills like Salt Lake City.

Examples:

Portland, Oregon has introduced a number of tools (maps) for riders to select the route that fits their needs and comfort level.

1. The TriMet trip planner allows for transit/bicycle and bicycle only trips. From the bicycle only selection the bicyclist can choose a quick trip, bicycle friendly trip, or a custom trip that is an equal combination of quick, flat, and bicycle friendly. Once the trip is selected, a route map, directions, and vertical gains are presented to the cyclist.
   http://ride.trimet.org/#/

2. Portland Bureau of Transportation has published a list of the best bicycle rides around Portland. These rides also inform the rider if they are hilly or flat.
   http://www.portlandoregon.gov/transportation/article/339920

3. Bicycle lanes and routes are great if they go directly where the rider wants to travel, but often there are areas that do not have bicycle infrastructure. Sometimes these areas are fine for bicyclists and sometimes they are dangerous. Beyond the identifications of bicycle facilities, Portland's public bicycle maps identify difficult connections and dangerous intersections. This allows bicyclists to determine if they should take that route even if there is no bicycle infrastructure on that roadway.
   http://www.portlandoregon.gov/transportation/article/411759

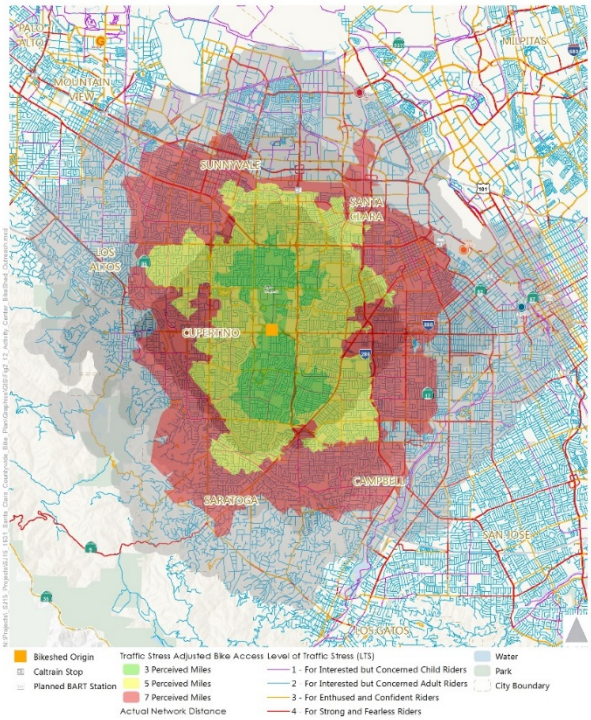
Role of the Public Sector: Create maps and applications that classify routes for different users

Role of Employers: Provide employees with commute routes to your building

Role of Advocate Groups: Create and distribute maps and applications that classify routes for different users at bike events. Organize and/or advertise group rides that highlight commuter friendly routes

3.3 Investment in Low Stress Facilities

Bicycle facilities are not all created equally in appealing to different cyclist classifications. Adding on-street bicycle facilities to a 7 lane road may make it attractive to confident cyclists, but it would likely not be as attractive to a family or new cyclists. A road that has low vehicle volumes and low speeds can be a very enjoyable and safe route, even if there are no identified bicycling features or pavement markings. This concept of street classification based on factors that enhance the comfort of cyclists is called Level of Traffic Stress (LTS). Recently City Bike Master Plans have started using LTS analysis to identify gaps in existing low LTS streets and provide greater connectivity citywide.



Level of Traffic Stress Analysis, Apple Campus in Cupertino, CA

Examples:

Stockton, CA performed a Citywide LTS Analysis on all streets for to identify gaps in the network and identify trends. Stockton identified that the major arterials are very stressful, but it is quite pleasant to get around within a neighborhood on lower stress roadways. However, low stress facilities are very limited between neighborhoods. This has allowed Stockton to identify gaps and recommend projects that improve neighborhood connections.

Of the four classifications of cyclists, the Interested but Concerned make up the majority of population (60%). Cities have found that while more assertive and experienced riders are confident to mix with traffic and higher speeds, the Interested but Concerned group prefers facilities that do not frequently interact with traffic or high speeds. Bicycle facilities of this type include protected bicycle lanes (cycle tracks), side paths, and multi-use trails.

Photo Credit: Adam Coppola Photography

Minneapolis, MN has been a leader in providing low stress facilities. While

Minneapolis' 97 miles of off-street paths would be impressive for any city, the crown-jewel of Minneapolis' bicycle network is the Midtown Greenway.

The Midtown Greenway is a 5.5-mile path running east/west south of downtown Minneapolis. It is located along a former railroad corridor and is primarily grade separated. The Greenway serves as the main bicycle artery for the region and connects to bicycle paths along the Mississippi River and the Minneapolis Chain of Lakes. Over 4,000 riders use the Greenway during good weather and hundreds use it year round. The Greenway is lighted, plowed frequently, and open 24hours per day, 7 days a week.

Dubbed a bicycle superhighway, the Greenway connects to multiple bicycle facilities, parks, businesses, and bicycle shops. The Freewheel Midtown Bike Center, located along the Greenway, offers numerous bicycle amenities and services including: bicycle and accessory sales, classes, showers, café, secure indoor parking, rentals, and a repair shop. The most visibly stunning element of the Greenway is the Martin Olav Sabo Bridge, a bicycle and pedestrian bridge that allows trail users to cross Hiawatha Avenue (a six-lane road).

Role of the Public Sector: Conduct level of traffic stress analysis on bicycle networks, plan low-stress facility networks

Role of Employers: Encourage facility improvements which result in low stress networks, radiating out from the employment locations, connecting with transit stops/stations and residential locations

Role of Advocate Groups: Inform bicycle and pedestrian master planning efforts, via stakeholder groups or open houses, to which low stress network facility improvements are the most vital to create a bicycle and pedestrian friendly network

3.4 Provide End-of-Trip Facilities

Bicycle routes that are complete, safe, and accessible are essential to promoting increased commuting by bicycle. But, what happens when commuters reach their destination? This is often an overlooked component of the commute trip. To encourage commuters to use active transportation modes, specifically bicycling, the following end-of-trip facilities are important.

Long-term Bike Parking, Facebook Campus

- **Secure and conveniently located bicycle parking**

  Both short-term and long-term facilities should be provided. Short-term facilities, like bicycle racks, can serve visitors. These short-term facilities should be provided in well-lit areas that are easily visible. These should also be located under some type of shelter when possible. Long-term facilities that are more secure, like bicycle lockers or bicycle rooms, should serve employees. This eliminates concerns of theft and also keeps bicycles out of adverse weather conditions.

- **Changing areas**

  Using a bicycle, or even walking, can work up a sweat, especially during summer months and in areas with challenging topography. Adverse weather can also prompt commuters to wear styles of clothing that would not be considered appropriate for the workplace. Providing a space for people to make a quick change from their active commuting gear helps remove an anxiety in choosing to bicycle or walk to work. Changing areas should be conveniently located near long-term bicycle parking.

- **Showers or washing basins**

  Most commuters will not feel comfortable going to work if they have perspired during their commute. Even a change of clothes may not be enough, especially for those traveling longer distances or using more challenging routes. A place to quickly wash off also helps reduce anxiety in choosing to bicycle or walk to work. Showers or washing basins should be located near long-term bicycle parking and changing areas.

- **Repair stands or shops**

  A common concern for using a bicycle is routine repairs like fixing a flat tire. Providing repair stands or even small bicycle shops that allow for do-it-yourself repairs is a simple way to address these concerns.

  There are a variety of methods to provide these kinds of end-of-trip facilities. It is best if these facilities are located on-site. However, some can be located in public facilities, like a bicycle center in areas with higher employment densities. In some cases, employers can even partner with nearby fitness centers to offer these facilities.

Public Bike Repair Stand and Bike Pump at UTA Station

Examples:

Many communities are now starting to require these facilities. There are a growing number of bicycle parking requirements for new development. The Portland development code, for example, sets minimum bicycle parking requirements, both short and long-term, for most land uses including residential and commercial developments. 50% of required long-term parking spaces are required to be covered and meet one of six configurations to ensure security.

1. In a locked room
2. In an area that is enclosed by a fence with a locker gate. The fence must be 8 feet high, or be floor-to-ceiling
3. Within view of an attendent or security guard
4. In an area that is monitored by a security camera, or
5. In an area that is visible from employee work areas

Table 4: Examples of Short & Long-term Bicycle Parking Requirements in Portland

Use Categories	Specific Uses	Long-term spaces	Short-term spaces
Commercial Categories			
Retail Sales and Services		2, or 1 per 12,000 sq. ft. of net building area	2 or 1 per 5,000 sq. ft. of net building area
	Temporary Lodging	2 or 1 per rentable rooms	2 or 1 per 20 rentable rooms
Office		2 or 1 per 10,000 sq. ft. of net building area	2, or 1 per 40,000 sq. ft. of net building area
Industrial Categories			
Manufacturing and Production		2, or 1 per 15,000 sq. ft. of net building area	None
Warehouse and Freight Movement		2, or 1 per 40,000 sq. ft. of net building area	None
Institutional Categories			
Community Service		2, or 1 per 10,000 sq. ft. of net building area	2, or 1 per 10,000 sq. ft. of net building area
Colleges		2, or 1 per 20,000 sq. ft. of net building area, or per CU or IMP review	2 or 1 per 10,000 sq. ft. of net building area, or per CU or IMP review

Source: Portland Planning & zoning Code Chapter 33.226

San Francisco has also adopted bicycle parking standards, and recently enhanced these requirements (City & County of San Francisco, 2016). The code now:

- Identifies separate requirements for two types of bicycle parking: long-term parking for residents and employees (Class One), and short-term parking for visitors (Class Two);
- Defines requirements for multiple use categories based on anticipated generated bicycle trips for each use;
- Prioritizes easy and direct access to bicycle parking facilities through location and placement requirements;
- Allows conversion of required car parking to bicycle parking;
- Prohibits obtaining a variance for quantity of bicycle parking;
- Establishes new, increased requirements for the provision of showers and lockers based upon use type and occupied floor area;
- Allows payment of in-lieu fee to satisfy portions of Class two bicycle parking requirements;
- Establishes a bicycle parking fund administered by San Francisco Municipal Transportation Agency (SFMTA) for the provision of short-term bicycle parking;
- Requires existing City-owned buildings and garages to generally conform to the new requirements within a one year period.

- Offices with an occupied floor area of over 10,000 square feet are required to have one shower and six clothes lockers. Those that exceed 20,000 square feet are required to have two showers and 12 clothes lockers.

Table 5: Example of Shower and Locker Requirements in San Francisco

Uses	Minimum Shower Facility and Lockers Required
Offices; Post-Secondary educational institution, including trade school; Elementary and Secondary School; Child Care; Hospitals and In-Patient Clinic; Medical Offices or Out-Patient Clinic; Public Uses including Museum, Library, Community Center, and Art Services; Light Manufacturing Wholesale sales; Trade Shop; Catering Services; Business Service; Laboratory; Integrated PDR; Small Enterprise Workspace	• One shower and six clothes lockers where the occupied floor area exceeds 10,000 sq. ft. but is no greater than 20,000 sq. ft. • Two showers and 12 clothes lockers where the occupied floor area exceeds 20,000 sq. ft. but is no greater than 50,000 sq. ft. • Four showers and 24 clothes lockers where the occupied floor area exceeds 50,000 sq. ft.
Retail Sales; Restaurant; Limited Restaurant; Bars; Personal Services	• One shower/six clothes lockers where the occupied floor area exceeds 25,000 sq. ft. but is no greater than 50,000 sq. ft. • Two showers/12 clothes lockers where the occupied floor area exceeds 50,000 sq. ft.

Source: San Francisco Ordinance No. 0183-13

Vancouver also has set requirements for short and long-term bicycle parking as well as showers, water closets, and wash basins.

Table 6: Example of Bicycle Parking Requirements in Vancouver, B.C.

Building Classification	Required Class A Bicycle Spaces	Required Class B Bicycle Spaces
Office Uses	A minimum of 1 space for each 500 square metres of gross floor area.	A minimum of 6 spaces for any development containing a mumimum of 2,000 square metres of gross floor area.
Retail & Service Uses	A minimum of 1 space for each 500 metres of gross floor area.	A minimum of 6 spaces for any development containing a mumimum of 1,000 square metres of gross floor area.

Source: City of Vancouver, Parking Bylaw 6059 Section 6, Off-Street Bicycle Space Regulations

Table 7: Example of Shower and Washing Facility Requirements in Vancouver, B.C.

Required Number of Class A Bicycle Spaces	Water Closets	Wash Basins	Showers
0 -3	0	0	0
4-29	1	1	1
30-64	2	1	2
65-94	3	2	3
95-120	4	2	4
130-159	5	3	5
160-194	6	3	6
Over 194	6 plus 1 for each additional 30 bicycle spaces or part thereof	3 plus 1 for each additional 30 bicycle spaces or part thereof	6 plus 1 for each additional 30 bicycle spaces or part thereof

Source: City of Vancouver, By-lay No. 7481, Shower/Change Rooms Building By-law

Role of the Public Sector: Require bicycle parking in zoning codes and consider requiring other end-of-trip facilities like showers, lockers and bicycle maintenance stations, invest public facilities that cater to the needs of active transportation commuters

Role of Employers: Provide bicycle parking for employees and consider providing other end-of-trip facilities like showers, lockers and bicycle maintenance stations

Role of Advocate Groups: Advocate for municipalities to change zoning codes. Encourage employers to provide end-of-trip facilities and inform them which end-of-trip facilities are the most beneficial for users

3.5 Invest in Bike Share Systems

Public bike share systems offer a fleet of bicycles at multiple locations typically for short trips. The majority of bike share operators charge for use, either through memberships or a pay-per-use fee. Bike share systems typically permit both one-way trips and round-trips, as well as instant access via a network of docking stations for retrieving and parking bikes.

Photo Credit: Adam Coppola Photography

Bike share systems can play an important role in more densely developed areas by providing a bike to people who do not own one. Linked with transit systems, they can also help commuters make the first/last mile connection from bus or rail stations. This allows users to use a bike for a portion of their trip, and also the ability to use other transportation methods as well. This is especially important for those traveling longer distances or who are not comfortable during inclement weather. Bike share near employment locations also allow workers to use a bike during the lunch hour, for example, even if they did not ride one to work. Bike share bikes are also typically designed with commuters in mind, offering baskets to carry items, covers over chains and gears, and an easy to use walk-through design.

Examples:

The GREENbike program in Salt Lake City serves as a tremendous success story. Not only has the program successfully grown both in users and in the number of stations since opening in 2013, but data suggests that it is clearly helping with commute trips. The second and seventh most popular trips in the GREENbike network are transit stations to employment centers and then the reverse pattern (GREENbike, 2016).

GREENbike Station in Salt Lake City

This success could be expanded to other communities in the more urban portions of the state, especially areas with a high concentration of employers and safe and convenient bicycle networks. However, other, more recreational focused systems should also be considered in smaller more rural settings. As an example, Aspen Colorado launched the WE-cycle system in 2010 (WE-cycle, 2016). While it serves visitors and tourists, 63% of the trips were taken by season pass holders, suggesting that locals are using the system to commute (Szewczyk, 2015).

Universities and employers can also play a role in developing bicycle share systems to serve smaller areas. Large employer campus programs are growing in in the San Francisco bay area. Both Google and Facebook for example offer free bicycles for their employees to get around large corporate campuses. On the Menlo Park Campus, Facebook has approximately 500 bicycles for employees to

use and plan to nearly double the size of their campus fleet by adding another 400. In addition to this program they've also instituted a bicycle loaner program that allows employees to rent a bicycle for a week to test out commuting to work before investing their own money into a commuter bike.

Role of the Public Sector: Study feasibility of public bike share systems or expand existing systems.

Role of Employers: Sponsor bike share stations, provide memberships to employees

Role of Advocate Groups: Advocate for bike share systems, encourage members to support bike share systems, lead educational rides for members demonstrating bike share system use and benefits

3.6 Combine Active Transportation with Transit

Transit and active transportation can work hand-in-hand to help people make commute trips. Transit can often serve as the "long-haul" transportation mode for those traveling further than a few miles to work. Bicycling and walking can then be used for the first and/or last mile of these trips. Focusing on first/last mile gaps and barriers to and from transit stops can be an effective way of extending the transit system and making active transportation more feasible for those who live farther from their workplace.

Making the transition from transit to bicycling and walking seamless and convenient is critical. This includes providing secure long and short-term bicycle parking at transit stations, adequate bicycle storage on transit vehicles, and safe and convenient routes to and from transit stations for both bicyclists and pedestrians.

Example:

Bike Lockers at UTA Station

The Utah Transit Authority (UTA) is making first/last mile strategies a key focus for their organization. In 2014, the UTA Board of Trustees set a goal of developing a comprehensive first/last mile strategy to improve access to transit stations throughout the agency's service area. UTA and the Utah Department of Transportation, with support from the Wasatch Front Regional Council and the Mountainland Association of Governments, initiated and developed a First/Last Mile Strategies Study.

As part of the study, a list of strategies to address first/last mile connections was developed. UTA Stations were broken out into the following station typologies based on built-environment, residential and employment statistics, and ridership characteristics:

- Urban
- Multi-modal
- Institutional
- Non-residential
- Suburban
- Auto-dependent

Final recommendations were made for each station typology for strategies with the highest priority.

Table 8: First/Last Mile Station Typology, UTA First Las Mile Study

Station Typology	Stations	Recommended Strategies
Urban	Planetarium, Arena, Temple Square, City Center, Gallivan Plaza, Courthouse, 900 South, Library, Trolley, 900 East	Wayfinding and information, bicycle network improvements, bike sharing, car sharing
Multi-modal	1940 W North Temple, Power, Fairpark, Jackson/Euclid, North Temple Bridge/Guadalupe, North Temple, Redwood Junction, West Valley Central, Salt Lake Central, Old Greektown, Ball Park, Central Pointe, Millcreek, Sandy Expo	Wayfinding and information, bicycle network improvements, access connections, pedestrian network improvements, crossing treatments, rail and bus stop enhancements
Institutional	Orem, Stadium, University South Campus, Fort Douglas, University Medical Center	Bicycle network improvements, bike sharing
Suburban Non-residential	Ogden, Lehi, Meadowbrook, Murray North, Murray Central, Fashion Place West, Sandy Civic Center, River Trail, Decker Lake, Draper	Wayfinding and information, bicycle network improvements, bike sharing, rail and bus stop enhancements
Suburban	Midvale Fort Union, Midvale Center, Historic Sandy, Crescent View, Kimballs Lane, Draper Town Center, Bingham Junction, Historic Gardner, West Jordan City Center, Jordan Valley, 4800 W Old Bingham Hwy., Provo	Wayfinding and information, bicycle network improvements, pedestrian network improvements, crossing treatments
Auto-dependent	Pleasant View, Roy, Clearfield, Layton, Farmington, Woods Cross, South Jordan, American Fork, 2700 W Sugar Factory Road, 5600 W Old Bingham Hwy., South Jordan Parkway, Daybreak Parkway	Wayfinding and information, bicycle network improvements, access connections, pedestrian network improvements, crossing treatments

Since the initial study, UTA has conducted audits of over 60 fixed-rail stations to provide specific recommendations for each, and is looking to partner with local municipalities to fund improvements to bicycle and pedestrian infrastructure.

While the UTA example is focused on access improvements to fixed rail stations, similar analysis could be done for bus stations, and by smaller agencies throughout the state of Utah.

Role of the Public Sector: Provide bicycle parking at transit stops, provide bicycle storage on transit vehicles, conduct first/last mile analyses, and invest in first/last mile connections

Role of Employers: Encourage first/last mile connections, help employees understand the benefit of using active transportation and transit systems together

Role of Advocate Groups: Advocate for first/last mile connections, identify and inform public officials to missing first/last mile connections

3.7 Become a Vision Zero City

Vision Zero is a Swedish approach to road safety that has transformed into a global movement, with many American cities joining in. American cities that have started Vision Zero programs include Los Angeles, New York, San Francisco, Chicago, and San Diego. Vision Zero challenges the existing approach to traffic safety in two ways. First, it acknowledges that traffic deaths and severe injuries are preventable. Second, it takes a multidisciplinary approach to tackle this complex problem. It's no longer just the engineers working to build safer roads, but now also the public health professionals, transit agencies, urban designers, policymakers and police forces working together to make the roads safer. The Vision Zero Network (http://visionzeronetwork.org) describes nine components of a strong vision zero commitment.

1. Political Commitment - The highest-ranking local officials (Mayor, City Council, City Manager) make an official and public commitment to a Vision Zero goal to achieve zero traffic fatalities and severe injuries among all road users (including people walking, bicycling, using transit, and driving) within a set timeframe

2. Multi-disciplinary leadership - An official city Vision Zero Taskforce (or Leadership Committee) is created and charged with leading the planning effort for Vision Zero.

3. Action Plan - Vision Zero Action Plan (or Strategy) is created within 1 year of initial commitment and is implemented with clear strategies, owners of each strategy, interim targets, timelines, & performance measures.

4. Equity -City stakeholders commit to both an equitable approach to Vision Zero by establishing inclusive and representative processes, as well as equitable outcomes by ensuring measurable benchmarks to provide safe transportation options for all road users in all parts of the city.

5. Cooperation & Collaboration -A commitment is made to encourage meaningful cooperation and collaboration among relevant governmental agencies & community stakeholders to establish a framework for multiple stakeholders to set shared goals and focus on coordination and accountability

6. Systems-based approach - City leaders commit to and prioritize a systems-based approach to Vision Zero — focusing on the built environment, systems, and policies that influence behavior — as well as adopting messaging that emphasizes that these traffic losses are preventable.

7. Data-driven - City stakeholders commit to gather, analyze, utilize, and share reliable data to understand traffic safety issues and prioritize resources based on evidence of the greatest needs and impact.

8. Community Engagement - Opportunities are created to invite meaningful community engagement, such as select community representation on the Taskforce, broader community input through public meetings or workshops, online surveys, and other feedback opportunities.

9. Transparency - The city's process is transparent to city stakeholders and the community, including regular updates on the progress on the Action Plan and performance measures, and a yearly report (at minimum) to the local governing board (e.g., City Council). (Vision Zero Network, 2016)

Example:

New York City has made it their priority to use every available means to eliminate serious traffic injuries and deaths. In the past year the City has added 100 speed cameras in school zones, issued 134,426 speeding tickets, added 417 pedestrian friendly traffic signals, educated 580 schools on roadway safety, and distributed 820,000 Vision Zero flyers. These efforts led to the historic low in both fatalities and severe injuries on New York's roadway. Now in its third year, New York has identified a robust set of initiatives to continue the downward trend of traffic crashes and fatalities.

Role of the Public Sector: Develop initiatives and implementation targets for multiple city departments, including City Hall, Police and Fire Departments, Department of Transportation, and Transit Agencies.

Role of Employers: Coordinate safety education sessions with Vision Zero representatives and identify a safety office ambassador.

Role of Advocate Groups: Advocate for Vision Zero projects and inform Agency and City officials about dangerous roadways and intersections

4 Education

4.1 Employers Promotion of Active Transportation

An important ally in promoting active transportation for commute trips is employers. Helping them understand the benefits of active transportation will allow them to make the case to their employees directly. Developing messaging and education that employers care about is key. Messages that focus on employee retention, productivity, and health will help employers become advocates themselves.

Example:

The Silicon Valley Bike Coalition, an advocacy group active in the San Mateo and Santa Clara Counties of California provides resources and messaging for employers.

- Cycling raises productivity: Exercising before work raises an employee's productivity by an average of 15%.
- Cycling will reduce health care costs: Cyclists on average live two years longer than non-cyclists and take 15% fewer days off work through illness.
- Cycling helps attract and retain your workforce: In a survey of visitors to Portland, OR, 78% said that the city's bike-friendliness was a factor in their decision to visit there. (Silicon Valley Bike Coalition, 2016)

The group has also partnered with the Silicon Valley Leadership Group to conduct outreach to their member companies and encourage more bicycling to work.

Role of the Public Sector: Create education materials specific to employers

Role of Employers: Share benefits of active transportation use with peers

Role of Advocate Groups: Encourage members to vocalize to their employers their support of active transportation education, distribute education materials specific to employer

4.2 Develop a Bicycle Ambassador Program

Bicycling Ambassadors are a team of bicycle outreach specialists focused on helping bicyclists, pedestrians, and motorists to share space and ride safely.

Example:

Beginning in 2001, Chicago has encouraged safe bicycle riding and commuting through an Ambassador Program. Chicago hosts two distinct types of Ambassadors: Safe Routes and Bicycling.

Safe Routes Ambassadors (SRAs) focus on providing pedestrian and bicycle safety education to elementary age children. Consisting of 2nd and 5th graders, the SRAs conduct in-class presentations at schools and follow up with outdoor lessons reinforcing what was taught in the class. Additionally, SRAs engage with school officials, teachers, and parents to develop Safe Route Plans for individual schools. Safe Routes Ambassadors also represent active transportation interests at school fairs, parent teacher meetings, and other school and community events.

Bicycling Ambassadors are a critical component in improving the education and outreach goals of Chicago's Bike 2015 Plan. Their primary goal is to help all modes (bicyclists, pedestrians, and motorists) learn to safely share space and interact with each other. Through these means they aim to increase the bicycle mode share and decrease crashes. One example of this is co-hosting enforcement events with the police. At these events, ambassadors and police officers educate motorists and riders about dangerous behavior. Instead of tickets, warnings are issued. If the infraction is fixable – for example, needing a helmet or lack of a rear bike light after dark – equipment is provided to improve safety.

Salt Lake County has also invested in a Bicycle Ambassador Program. They travel by bicycle, promote bicycle use, serve as positive examples of responsible bicycling, and are a community resource for bicycle commuting support and guidance. Services include:

- Bicycle Mentorship – County residents can receive individual support for everything from equipment recommendations and route planning to first-time commuter escorts.
- Convention and Festival Attendance – Ambassadors distribute educational resources and get feedback from the community
- Community Cycling Workshops – Ambassadors train attendees in basic bicycle maintenance and bicycle commuting skills and knowledge
- Safe Cycling Reward – Ambassadors provide prizes and incentives for safe bicyclists they encounter on the street
- Commuter Pit Stops – Ambassadors host pit stops with snacks, drinks, and educational resources during popular bicycle commute days

- Bike Lane Stewardship – Ambassadors help maintain bicycle lanes by reporting or clearing debris and obstructions (Salt Lake County, 2016)

Role of the Public Sector: Create and fund bicycle ambassador programs

Role of Employers: Promote bicycle ambassador programs to employees, assist with funding programs

Role of Advocate Groups: Encourage members and interested participants to serve as bicycle ambassadors or volunteer for associated programs

4.3 Provide Bike Commute Websites

Fostering encouragement of bicycle and pedestrian commuting requires commitment from multiple entities, including the government, riders and activist groups, and private businesses/employers. Because many governmental improvements are very visible (bicycle lanes, intersection improvements, etc.) they often get the most attention. Beyond physical improvements, cities can improve the cycling environment by encouraging business/employers to support bicycle friendly commuting practices.

Examples:

SmartTrips Business is workplace specific bicycling program developed by Portland, Oregon. Information on this program is on the Portland Bureau of Transportation (PBOT) website (https://www.portlandoregon.gov/transportation/54616). This program is designed to provide free or low-cost services and materials for both Portland businesses/employers. From the PBOT website businesses can order a free citywide bicycle map poster that identifies the business location ("You are here"), request free bicycle rack installation information, and free city bicycle maps to provide to employees/customers.

Photo Credit: Adam Coppola Photography

Employers can also learn more about how employee commuting can improve the company's bottom line, download a "transportation tool kit", and learn strategies for promoting workplace bicycle commuting. The SmartTrips Business program also works with the Portland Sustainability at Work program that matches businesses with sustainability advisors and provided additional ways to improve green businesses.

4.4 Hold Bike to Work Events

Bike to work days are a popular way to increase the visibility of bicycle commuting. These events are designed so that people who are not frequent commuters can start to see bicycling as an attractive alternative transportation option.

Examples:

The League of America Bicyclists shows that in 2010 over 80% of the most populated cities in the United States hosted Bike to Work Days. These events usually consist of a day (but can be longer) during cities or county's official bike week. Bike to work day typically takes place in May which in national bike month. A number of different events are sponsored by agencies to promote bicycle commuting. These include:

Commuter Pit Stops with refreshments, giveaways, and maintenance /tools (DC 83 pit stops, 25 SF)

Business and Rider Awards

Team bicycle challenges (businesses with the most riders)

Commuter Bicycle Convoys lead by experienced commuters (DC below)

Free or discounted transit passes (LA)

Find Ride Buddy (D.C.)

Classes that teach bicycling skills

Photo Booth (Portland, Maine)

Role of the Public Sector: Support and promote bike to work days

Role of Employers: Hold bike to work days throughout the year

Role of Advocate Groups: Advocate for bike to work days, host bike to work days, encourage members to volunteer for public sector bike to work days

5 Encouragement

5.1 Offer Tax Incentives

Photo Credit: Adam Coppola Photography

Employers can leverage a tax incentive program for employers who bicycle to work. The Bicycle Commuter Act, passed in 2009, provides a tax-benefit reimbursement for bicycle commuting. Any employer can provide a reimbursement of up to $20 per month to employees to help with bicycle commuting costs. Employees must regularly use a bicycle to commute from their home to work to be eligible. Employees are not allowed to receive this benefit if they receive another qualified transportation benefit like a free transit pass or qualified parking benefit in the same month. The reimbursement is a fringe benefit paid by the employer and the employee does not get taxed on the amount of the reimbursement.

It is up to employers to make this benefit available to their employees. While employers can coordinate the benefit in-house, many employers contract with a commuter benefit provider to coordinate their commuter programs (The League of American Bicyclists, 2016). While the reimbursement amount is relatively small and the program is fairly restrictive, it does provide financial encouragement for using a bike for commuting.

Role of the Public Sector: Educate employers about tax incentive program, offer tax incentives to employees

Role of Employers: Offer tax incentives to employees

Role of Advocate Groups: Inform employers and members about tax incentive program

5.2 Make It Part of a Larger TDM Program

Active transportation modes will not work for every commuter 100% of the time. Taking a bigger picture look at transportation needs of employees and developing comprehensive transportation demand management programs will lead to greater success. It can also provide additional incentives for active transportation use and remove concerns of having to rely on bicycling and walking throughout the day. Transportation Demand Management (TDM) programs include groups of strategies focused on shifting travel behavior from single occupancy automobile use. Active transportation represents just one set of strategies to achieve this goal. Other strategies include things like:

Car Share on University of Utah Campus

- Carpooling/vanpooling
- Transit improvements (example: more frequent service)
- Telecommuting
- Guaranteed Ride Home Program
- Subsidizing transit passes
- Carshare
- Parking demand management
- Affordable housing

TMA Meeting, Park City, UT

TDM can come in a variety of forms. UDOT's TravelWise program (http://www.travelwise.utah.gov/), which encourages alternative transportation choice, is one example. However, this program is purely voluntary and is more of an education and encouragement program.

Often TDM efforts include the development of Transportation Management Associations (TMAs). TMAs are non-profit, member controlled organizations that provide transportation services or funding in a particular area, like an office center. They are typically a public-private partnership between area businesses and local governments (Victoria Transport Policy Institute, 2015). TMAs allow businesses and public agencies to pool resources to provide programs and resources to an entire area instead of putting the burden on each individual business. It also allows businesses to have an equal seat at the table in determining programs and strategies appropriate for the area.

Example:

TDM programs and the formation of TMAs in other parts of the county are growing, especially the Bay Area, to meet specific goals or trip caps. For example, the City of Mountain View placed a trip

cap on vehicle trips entering three gateways into the North Bayshore area to address congestion issues. LinkedIn, one of the companies located in the area, developed a TDM program to change employee behavior and stay under the cap. Their program includes the following elements:

- Priority parking for shared ride vehicles
- On-site transportation coordinator responsible for developing, marketing, implementing, and evaluating TDM measures
- Bicycle Parking, Shower, and Lockers, with secure bicycle storage in each building for 10% of the buildings occupants
- Bicycle sharing
    - Public bike share program
    - Campus bike program
    - Loaner bike program
    - Fitness bike program
- Telecommuting/Flexible Work Schedule Program
- Guaranteed Ride Home Program
- Membership in the Transportation Management Association – this is used to help fund programs like the public bike share program
- Ridershare match services
- Transit shuttle services
- Marketing and information, including information packets for new employees and real-time information screens in lobbies and on-site transit stops
- Parking Cash-Out for those who avoid driving alone. Employees who choose this option do not have a parking space at work.
- Parking pricing through permits
- Lower parking supply than the maximum amount allowed under zoning
- Pre-tax commuter benefits
- Subsidized or free vanpools or carpools
- Subsidized transit passes
- Biking financial incentives. In this case, LinkedIn will offer direct taxable incentives for either walking or biking to work at ½ and ¼ the average cost for supporting commuting per employee per day respectively. In addition, walking and biking to work will reward employees with additional commuter credits that can be used for other transportation related benefits such as free use of car share vehicles, discounts on event bus rentals, or cash exchange.
- On-site bicycle repair facilities
- Bike Buddy program
- Bicycle giveaway program
- Commuter Bus Services
- Car Sharing

- On-site amenities and services like snack and meal services as well as medical, dental, and dry-cleaning services
- Funding for infrastructure investments like sidewalks, cycle tracks, bicycle lanes, and trails through TMA support and participation

Combining these strategies together rather than focusing on just one is a key component of the TDM plan.

Role of the Public Sector: Foster and support TDM programs and TMAs

Role of Employers: Develop TDM programs and TMAs

Role of Advocate Groups: Educate employers and employees about TDM programs and TMAs

5.3 Discourage the Use of Automobiles

Encouraging active transportation is one method that can be used to shift people from taking their cars. However, discouraging driving is also an effective strategy – although more controversial to implement.

Limiting the amount of parking or charging for parking is often considered unacceptable for employers. Yet, research suggests that this can be a powerful way to reduce vehicle miles traveled and encourage other modes of transportation. A California Air Pollution Control Offices Association (CAPCOA) report suggests that limiting parking supplies can reduce vehicle miles traveled (VMT) between 5%-12.5% (CAPCOA, 2010).

Examples:

While charging for parking may not be feasible, offering an incentive not to drive may be. As an example, California State law requires some employers who provide subsidized parking to offer a cash allowance in lieu of a parking space. This law is called the parking cash-out program. The intent of the law is to reduce vehicle commute trips and emissions by offering employees the option of "cashing out" their subsidized parking space and taking transit, bicycling, walking or carpooling to work (Califonia Environmental Protection Agency, 2011).

Another options for discouraging the use of automobiles is congestion pricing. Congestion pricing require users to pay a fee to drive on a particular roadway or a designated zone. London's system is perhaps the most well-known example of this practice, where users pay a £11.50 (about $13) daily charge for driving within a charging zone between 7am and 6pm Monday through Friday (Transport for London, 2016).

Role of the Public Sector: Consider congestion pricing during peak periods and instituting on-street parking pricing. Reduce parking requirements in development codes or institute parking maximums

Role of Employers: Charge employees for parking or instituting a parking cash out program

Role of Advocate Groups: Support reduced parking, charging for parking, and congestion pricing

6 Conclusion

Utah has made significant strides in improving the bicycle and pedestrian infrastructure and culture over the past few years. In 2013 the League of American bicyclists ranked Utah as the 14th most bicycle friendly state. By 2016, Utah climbed into the top 10, ranking 5th and passing well known bicycle friendly states Oregon and Colorado. While Utah is rapidly improving the bicycle and pedestrian environment, shifting people away from using automobiles to active transportation modes will be a long process. These types of behavioral changes do not happen overnight, especially if there are few disincentives for driving and active transportation networks are lacking. However, sustained and collaborative efforts using the strategies identified in this document will help.

The best practices described in the sections above provide examples to be considered, and modified as needed, for the Utah context.

It is strongly recommended that public sector agencies come together with advocate groups to identify a mode share goal. This could be done at a jurisdictional level or statewide. Setting a goal and measuring performance towards that goal will not only get partners on the same page, but can show the public that investments and strategies are having a measureable impact, or perhaps identify strategies that aren't working. Approximately 3.3% of workers walk or bicycle to work in Utah[2]. What should that number be in 2020, 2030, and 2040?

[2] Based on 2010-2014 5-year ACS data

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