

## Chapter 5—Education and Encouragement

### 5.8 Transportation Demand Management



Transportation Demand Management (TDM) is often defined as “various strategies that change travel behavior (how, when and where people travel) in order to increase transport system efficiency and achieve specific planning objectives” (TDM Encyclopedia <http://www.vtpi.org/tdm/tdm12.htm>).

MORPC has its own TDM program with the vision to “guide people toward healthy travel options that support environmentally sustainable, economically thriving, and equitable communities.” MORPC’s TDM program includes its ridematching program, RideSolutions; its bicycle and pedestrian programs; its Safe Routes to School program; its Complete Streets policy; and its encouragement of people to use transit.

In 2010 MORPC worked with Cambridge Systematics to create a TDM Strategic Plan, which establishes a five-year vision for TDM programs in MORPC’s region. According to that plan, “it was developed through a strategic planning process that included MORPC and its mobility partners. The process included outreach to the region’s residents and businesses, through surveys and interviews, to determine their needs for transportation services.” The plan outlines key goals and objectives for regional TDM, and lists actions to take to reach these goals in six different areas: the structure and management of the program; outreach and marketing; employer/worksites programs and services; neighborhood/community programs and services; regional programs and services; and research and evaluation. MORPC staff is currently working on implementing the plan.

#### Some of MORPC’s partners in TDM:

- Central Ohio Transit Authority (COTA): [www.cota.com](http://www.cota.com)
- Delaware County Transit Authority (DATA): [www.ridedata.com](http://www.ridedata.com)
- Lancaster Public Transit: [www.ci.lancaster.oh.us/dept/transit](http://www.ci.lancaster.oh.us/dept/transit)
- Licking County Transit: [www.lcounty.com/lctb](http://www.lcounty.com/lctb)
- Ohio State University Transportation and Parking: [www.tp.ohio-state.edu](http://www.tp.ohio-state.edu)
- Consider Biking: [considerbiking.org](http://considerbiking.org)
- Yay Bikes!: [yaybikes.com](http://yaybikes.com)

Following are several examples of local, regional, and national TDM programs or measures.

#### Increase Employee Commute Options

Initiated by the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA), the goal of the Commuter Choice Initiative is to expand the availability of commute options (Commuter Choice Primer).

- “Commuter Choice is a nationwide initiative encouraging employers to offer a broad range of commuting options to their employees. This means expanding the choices available for employees to get to and accomplish their work.”
- This includes ... “transportation options such as public transportation, bicycles, carpools, modified work schedules, or technology options such as telecommuting that change how work is done.”
- The [Commuter Choice Primer](#) includes more information on how employers can develop effective programs.

For another resource, see the report “Strategies for Increasing the Effectiveness of Commuter Benefits Programs.” [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_rpt\\_87.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_87.pdf).

# Chapter 5—Education and Encouragement

## 5.8 Transportation Demand Management



### RideSolutions

MORPC's RideSolutions program promotes alternatives to driving alone, including vanpools, carpools, public transit, walking and bicycling.

RideSolutions' goals are to reduce congestion in central Ohio, reduce fuel costs for commuters, and improve the environment. The program is principally concerned with promoting alternative ways for people to get to their workplaces (as opposed to other destinations).

The main RideSolutions web page is at the following link: <http://www.morpc.org/transportation/ridesolutions/ridesolutions.asp>.



▲ RideSolutions Vanpool van (Photo: MORPC)

### RideSolutions offers the following services:

Guaranteed Ride Home program, which reimburses 90% of cab fare to commuters who carpool, vanpool, ride public transportation, bike, or walk if they are stranded at work due to an emergency or unexpected overtime. Commuters can sign up for the program at <http://www.morpc.org/transportation/ridesolutions/grh.asp> or 1-888-742-RIDE.

Compute your Commute, an online tool with which users can easily calculate what it costs to drive to work, including the costs of fuel, insurance, vehicle depreciation, taxes, and parking: <http://www.morpc.org/transportation/ridesolutions/CommunityCompute.asp>.

### Employer Services:

- Surveys to identify employee transportation needs
- Presentations to employers and employees
- On-site events and promotions for employees
- Outreach materials, including fliers, posters, brochures, and email marketing
- Assistance with employee relocation
- Promotion and assistance with commuter programs, including carpool, vanpool, transit biking, and walking

Carpool Matchlists, where commuters who sign up and provide information about their regular working hours and origin and destination of travel receive contact information about other commuters with similar characteristics. This service is free and allows commuters to find partners for carpooling.

Vanpool Assistance, where MORPC staff work with companies and commuters to form groups of 7-15 people to share the ride to work in a van. Specific assistance includes:

- Determines the basic route, schedule, and estimated passenger cost
- Advertises the route and signs up riders
- Facilitates group meeting to determine roles of each rider and other details
- Arranges for the delivery of the van
- Enrolls vanpoolers in the Guaranteed Ride Home program (GRH)

School Pool Program, a voluntary program that works with schools and school districts to create matchlists for parents and students. It helps parents to find carpooling partners and students to find a bike or walk companion for a safer commute to school.

Community Program, where MORPC staff works with a specific community to establish a TDM program for its residents who commute to work to places outside of their community. Program elements can include identifying Park & Ride lots or giving out information on transit schedules and bike routes.

## Chapter 5—Education and Encouragement

### 5.8 Transportation Demand Management

#### Smart Trips Program

Smart Trips is an individualized marketing program that actively promotes alternative modes to driving alone to residents of a selected geographic area or employees of targeted businesses. Its main goals are to increase walking, biking, transit, carpooling, and carsharing trips, and to increase neighborhood mobility and livability in general. As part of the effort, a variety of newsletters, special events, and free activities are made available to the area residents.



▲ Participants enjoy a Senior Stroll event in Oregon.  
(Photo: Transportation Options, Portland, OR)

This program originated in Australia and Europe, under the name TravelSmart, but has been used successfully in many communities in the U.S. over the past decade. Smart Trips can be a component of a larger Transportation Demand Management campaign.

#### Success of the Smart Trips program ([Bicyclinginfo.org](http://Bicyclinginfo.org) entry on Portland SmartTrips, 2011)

Community-based SmartTrips projects have yielded a reduction of 9 to 13 percent in drive-alone car trips by all area residents with a corresponding increase in walking, bicycling, and transit mode shares in the SmartTrips areas ([www.gettingaroundportland.org/](http://www.gettingaroundportland.org/)).

All SmartTrips area residents receive SmartTrips messages at least seven times through mailers, media coverage, and outreach events. Approximately 30 percent of all area residents either ordered materials or participated in a SmartTrips event or activity. Twenty percent of all households order materials

For more detailed information about the results methodology, check the SmartTrips final reports online, listed by yearly program: <http://www.gettingaroundportland.org/>

Employer-based Smart Trips programs showed that ([Smart Trips Downtown Final Report, 2009](#)):

- Participants who pledged to reduce trips demonstrated a 24% relative reduction in drive-alone commute trips.
- Participants reported a 15% relative reduction in drive-alone trips one year after ordering materials.
- Approximately 1 out of every 4 participants shifted at least one drive-alone commute trip a week to an environmentally friendly mode.

#### Cost of the Smart Trips Program

([Bicyclinginfo.org](http://Bicyclinginfo.org) entry on Portland SmartTrips, 2011):

- The program costs \$10 per person in the SmartTrips area.
- A typical 20,000-household program costs \$570,000. Residents are not charged to participate in the program.
- This cost includes 4.35 full-time staff and most materials and services. Staff overhead is included in this number, but computer and general overhead and printing bicycle maps and transit schedules are not.

### Types of Information Provided on All Modes of Travel

Following are examples of the different types of materials and information that can be distributed based on the promotion of a specific mode ([Bicyclinginfo.org](http://Bicyclinginfo.org) entry on [Portland SmartTrips](http://Portland SmartTrips), 2011).

#### Walking-related items:

- Calendar of walks and walking tours in the residents' area
- Area walking maps
- A Walk to Wellness brochure focusing on health
- A crosswalk laws brochure
- A free pedometer and a walking log to keep count of daily steps.

#### Bicycling-related items:

- Citywide and neighborhood bicycle maps
- Bicycle Guide with tips and rules of the road
- Rides and workshop schedules
- Bikes on Transit Guide
- Pant leg strap

#### Transit-related items:

- Bus and light-rail schedules
- Transit guide for seniors and the disabled
- Information on the four bus stops closest to the resident's home, which can be used to get real-time bus arrival information

#### Driving-related items:

- Information on local carshare options
- Information on carpooling
- Information specific to older drivers

For key resources, visit Portland Smart Trips program website: <http://www.gettingaroundportland.org/>.



▲ Participants enjoy a Sunday Parkways (ciclovía) event in Oregon. (Photo: Transportation Options, Portland, OR)

### Example: Pilot Program in Cleveland

There are no Smart Trips programs in the central Ohio area. However, the Federal Transit Administration (FTA) conducted a pilot program, called "Individualized Marketing Demonstration Program (IMDP) in four cities: Bellingham, WA; Sacramento, CA; Durham, NC; and Cleveland, OH ([FTA IMDP report](#), 2006). Results from the Cleveland pilot program included:

- According to daily mode choice, car (as driver) usage decreased by 3%, whereas car (as passenger) mode increased by one percentage point.
- Relative changes in mode choice measured by the 'After' survey in terms of trips per person per year included a 4% reduction in car (as driver) use with a 5% increase in car (as passenger) mode.
- Car (as driver) trips were replaced by environmentally friendly modes, where walking increased by 13%, bicycling by 33%, and public transportation by 26%.

# Chapter 5—Education and Encouragement

## 5.8 Transportation Demand Management



▲ Columbus Mayor Michael Coleman during a kick-off ride in 2010 in Columbus, OH.  
(Photo: [ODOT Bike to Work webpage](#))

### Bike Month Activities and Programs

The National Bike Month in the U.S. is May. The League of American Bicyclists (LAB) specifies the Bike to Work Week and Bike to Work Day. During this time, many cities across the nation provide a variety of events and programs to celebrate and promote biking.

#### Common Bike to Work and Bike to School Events

Below are short descriptions of the different types of events that can be held to increase the number of people biking to work or school (as compiled by the [Bike to Work website](#)).

#### Commuter Energizer/Breakfast Stations

Stations are usually set up along major bike routes and offer coffee, food, and other giveaways, such as safety equipment and coupons.

#### Commuter Convoy

In a convoy, more experienced riders can lead group rides to local employment centers, providing guidance for novice bicycle commuters. Commuter convoys provide an introduction to bicycle commuting, which can help new riders gain confidence in their ability.

#### Community Ride

A community ride reinforces the legitimacy of bicyclists on the road and in the community and fosters a sense of identity around bicycling. Most community rides are relatively short and relaxed, with the intention of creating an inclusive atmosphere for bicyclists of all skill levels.

#### Other Ohio Bike to Work Programs

The [ODOT Bike to Work webpage](#) lists all the programs in Ohio. Most are focused only on the official Bike to Work Week. Below is a partial list of locations with programs and their websites:

- Cleveland
- Cincinnati
- Dayton
- Licking County

**Bike Workshops**

Bike Workshops are free events that link qualified bicycle mechanics with bicycle commuters on the way to work. Commuters can get a free tune-up and safety inspection and as well as resources regarding local bike shops.

**Bike to School Ride**

Parents can organize a bike pool or bike alone with their children. This reinforces good safety habits and demonstrates that biking is an activity for all ages. Biking to School is supported by Safe Routes to School programs (also see section 5.5.)

**Company Commuter Challenge**

Companies are challenged to encourage bicycle commuting to work with the goal of achieving the highest percentage of bike commuters. This is an excellent way of getting employees together in a friendly competition against other regional companies, building company morale, and creating a culture of bicycle commuting at a workplace.

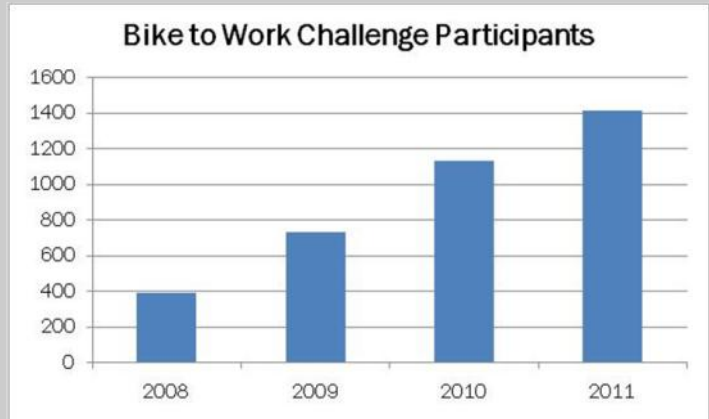
**Local Example Highlight - YayBikes! Bike to Work Challenge**

A Bike to Work Challenge encourages teams within organizations to achieve the highest bicycle mode share within a selected period of time. Mode share is defined as the percentage of total trips made by a particular mode of transportation, including bike to transit or bike from Park & Ride lots.

Below is summarized information on the Columbus Bike to Work Challenge, which was started in 2008 (2009

[YayBikes report](#)):

- Since 2008, when 393 individual cyclists from 29 teams rode more than 10,000 miles on 1,738 trips, Columbus' Bike to Work Challenge has grown substantially—in large part because the switch to a web-based tracking and sign-up system facilitated an easier process for both organizers and participants.
- In 2009, 734 cyclists on 110 teams rode more than 34,000 miles on 5,817 trips.
- In 2010, 634 of the 1,129 registered cyclists on 114 teams rode more than 30,000 miles on 5,209 trips.



Year	Participants	Teams	Trips	Days
2008	393	29	1,738	4
2009	734	110	5,817	11
2010	1,129	114	5,209	11
2011	1,411	158	3,857	31

- For more information about the YayBikes! Bike to Work Challenge visit the website: <http://biketoworkchallenge.com/>.

# Chapter 5—Education and Encouragement

## 5.8 Transportation Demand Management

### Bicycle Share Programs

Bicycle share programs provide convenient rental bicycles for short utilitarian trips, similar to carsharing. They encourage bicycle use and are a way to improve bicycle transportation. Other names for these types of programs include Public Bike Systems, Bike Sharing, and Community Bike programs ([Public Bike Systems entry in the TDM Encyclopedia](#), Litman, 2011). Bike share programs are becoming more popular since advances in technology allow for payment at the stations and GPS tracking of the bikes help prevent theft. These newer bike share programs started in Europe, but have since appeared in the United States.



▲ Velib bike station payment machine, Paris, France.

(Source: [Flickr user Evan Bench](#))

The following elements are part of a bike share program:

- The bike share system includes a fleet of bicycles, a network of automated stations where bikes are stored, and bike redistribution and maintenance programs.
- Bikes may be rented at one station and returned to another, either for free or a small fee.
- As with carsharing, bike share systems are most efficient when bikes are shared by many users each day; some systems average as many as twelve daily users per bike. (See the Carsharing subsection further in this section for more information.)
- Successful systems have resulted in a mode shift from automobile to bicycle of 5-8%. Use declines during cold or wet weather.

In order to maximize effectiveness and benefits, a Public Bike System should also have the following attributes ([Public Bike Systems entry in the TDM Encyclopedia](#), Litman, 2011):



▲ Velib bike station. Paris, France.

(Source: [Flickr user Evan Bench](#))

- High number of easy-to-use docking systems around the city and near public transit stations.
- Offer bicycle improvement and encouragement programs for new and inexperienced riders,.
- Easy payment system with fees structured to encourage use for short trips (free or very inexpensive for the first 20 minutes).
- Well-maintained stations and bikes.
- Well-designed bike redistribution system to avoid areas that accumulate excess bikes and those that have too few bikes.

# Chapter 5—Education and Encouragement

## 5.8 Transportation Demand Management



### Local Examples of Bike Sharing

Well-known bike share programs in the U.S. are located in Louisville, KY (Humana, B-cycle), Chicago (B-cycle), and Washington, D.C. (Capital BikeShare). These bike share programs have a variety of locations and standardized bicycles for short-term use. While there are some local examples of bike sharing, they do not have the density of stations and number of bikes to promote widespread use. While all have fewer than 50 bikes, the Velib system in Paris, for example, has over 20,000 bicycles at almost 1,500 stations ([Velib entry in Wikipedia](#)).



▲ EveryoneBikes bikes, with the sponsoring business and checkout location displayed on the front basket. (Source: [EveryoneBikes Blog](#), Columbus, OH)

### Local University Bike Sharing Programs

Many local universities began a bike share program in 2008 and 2009. The programs were grass-roots in nature, organized by students, rather than a formal initiative of the university administration. Some of the programs are more long-term in nature, designed for use over a quarter or year, rather than a short time period more common of bike share programs.

- Buckeye Bikes is a bike share program on-campus at **The Ohio State University (OSU)**, started in 2008. Twenty Schwinn bikes are available for rent at the RPAC Sports Shop. All Ohio State Recreational Sports members can check bikes out for 48 hours. Students must fill out a Release, Waiver, and Assumption of Risk Agreement upon first use of the service. After the initial use, all that is needed to rent a bike is a valid BuckID ([Gottesman/The Lantern](#), 2009). Note that students, faculty, and staff of OSU may use the bikes, not just students. For more information view the video by the Lantern: <http://www.youtube.com/watch?v=wil19b5QXcY>.
- Otterbikes is a bike share program at the **Otterbein University** campus in Westerville, started in 2009. Check-out at the Library front desk requires a signed liability waiver and a \$10 one-time fee. Bikes may be rented for 3 days. When returning a bike, one must use a specified rack. For more information see the webpage: <http://www.otterbein.edu/Sustainability/otterbikes.asp>.
- The Bike Movement is a bike share program at the **Ohio Wesleyan University** campus in Delaware, started in 2009. Enrollment requires an annual \$5 fee. Bright yellow bikes will be locked in different locations around the campus ([Bike Movement](#) page).

### Local Bike Sharing Program: EveryoneBikes

The only local example of a non-university bike share program is the Everyone Bikes program.

- The program started in 2009 with 10 bikes. Returns must be made to the same location where the bike was booked ([Bushong/The Columbus Dispatch](#), 2009).
- In the summer of 2010 the program had 14 locations in the Short North neighborhood of Columbus with a total of 20 bikes. One downtown hotel also uses the program, as an internal bike-borrowing system. Different businesses participate by keeping a bike at their locations. The bikes are available for borrowing during the business hours of that location. Use of the bike is free and open to anyone, but a credit card and driver's license (or state ID) is required. For more information see the webpage: <http://www.everyonebikes.org/>

# Chapter 5—Education and Encouragement

## 5.8 Transportation Demand Management



### Commuter Tax Credit

A commuter tax credit refers to a variety of financial incentives for commuters, such as parking cash-out, rideshare benefits, and travel reimbursement ([Commuter Financial Incentive entry in the TDM Encyclopedia](#). Litman, 2011.) One notable incentive is the transit benefit, part of IRS regulation 132.

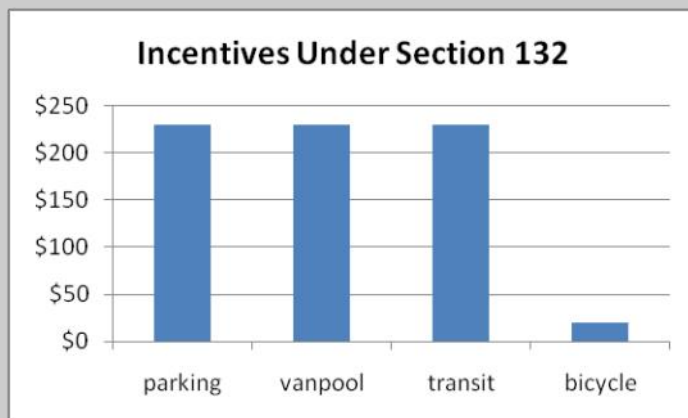
### Section 132 Pre-Tax Benefit

IRS Regulation 132 (section 132 (f) of the Internal Revenue Code) is the Qualified Transportation Fringe Benefit. This is commonly known as the “Commuter Tax Benefit” ([National Center for Transit Research](#), 2011). These savings are generated from the federal, state, and FICA taxes that are not accessed on transit costs when paid by employees on a pre-tax basis. The IRS establishes employers as the gatekeeper for this federally approved program and their responsibility is to deduct the cost of the pass each month from the employee's paycheck ([COTA website](#), 2011).

- This benefit allows employers to save on payroll-related taxes and allows employees to save on federal income taxes.
- More details can be found in the IRS document: [http://www.nctr.usf.edu/wp-content/uploads/2011/04/irs\\_finalrule\\_01-11-01.pdf](http://www.nctr.usf.edu/wp-content/uploads/2011/04/irs_finalrule_01-11-01.pdf).

### Section 132 Incentives for Employees in 2011

- Employers may provide workers with up to \$230 per month in tax-free transit expenses. Transit passes can be bought with this benefit.
- Employers may provide workers with up to \$230 per month in tax-free vanpool expenses. Vanpool fares can be paid with this benefit.
- Employers may provide workers with up to \$230 per month in tax-free qualified parking expenses. The parking must be located at or near the workplace. Or the parking can be at a facility from which the employee will commute by transit, vanpool, or carpool to the workplace.
- Employers may provide workers with up to \$20 per month in reimbursement for qualified bicycle expenses. Reasonable expenses include the purchase of a bicycle, bicycle improvements, bicycle repair, and bicycle storage.
- Note that an employee cannot receive the bicycle reimbursement for a month that they received a transit pass benefit, a vanpool fare benefit, or a qualified parking benefit. On the other hand, employees can receive the transit and parking benefits (total of \$460 per month) in the same month.
- This curtails the usefulness of the incentive for employees who would like to bicycle. It also ignores the multi-modal nature of bicycle trips, such as riding a bicycle in the beginning of your trip, and then using COTA bus service to complete your trip.



▲ Chart showing different incentives under Section 132. Combination of incentives not shown.

### Carsharing

Carsharing is an alternative program of car ownership, access, and use. Carsharing differs from traditional car rental companies, as it is intended to substitute private vehicle ownership. Carsharing is intended to be used by people for short periods of time and over shorter distances. The cars are also self-service and spread out throughout a metropolitan area, instead of at one rental location, to increase accessibility of the cars. Members of carsharing programs only pay for the time the car is used, as the gas, insurance, and maintenance are included in the membership price.

Carsharing is meant to act as an extension of the transportation network, to enhance mobility options, and to decrease the necessity of car ownership. According to the TDM Encyclopedia, carsharing “makes occasional use of a vehicle affordable, even for low-income households, while providing an incentive to minimize driving and rely on alternative travel options as much as possible” (<http://www.vtpi.org/tdm/tdm7.htm>). Carsharing programs need to be accessible, affordable, convenient, and reliable.

### How Does Carsharing Work?

If there is a carsharing program in your area, you can sign up for a membership with them through their website, usually with a yearly fee. Then you will be sent a membership card in the mail. Cars can be reserved via the website, or often through smart phone applications. The service provides you with real-time location of vehicles so you know the availability of cars of the station near you. The card allows members to gain access to the vehicles. When done with the car, you return it to any designated location.

### Benefits of Carsharing

Benefits include (Source: <http://www.vtpi.org/tdm/tdm7.htm>):

- Increased travel options and financial savings.
- Increased affordability for lower-income drivers who occasionally need a vehicle.
- Reduced per capita annual mileage, resulting in reduced congestion, road and parking facility costs, crashes, pollution and energy use.
- Reduced residential parking requirements and support for higher density residential development.



### Carsharing in Columbus

Currently, the only carsharing service in central Ohio is through The Ohio State University (OSU). However, there are discussions on a regional and local level to increase carsharing stations for both business and public use.

OSU Transportation and Parking has partnered with Hertz Connect to provide a carsharing program on campus. There are 15 vehicles at 6 different locations on campus. The fleet consists of Toyota Camrys, Ford Escapes, Toyota Prius Hybrids, a Mini Cooper, and a Ford Ranger pickup truck (<http://tp.osu.edu/carsharing/index.shtml>). Features in the cars include GPS navigation, interactive screen pad, 24-hour member care center, environmentally friendly vehicles, gas, insurance, damage waiver, iPod adapter, Bluetooth technology, and 24-hour roadside assistance (<http://tp.osu.edu/carsharing/features.shtml>).

Information about OSU's carsharing program can be found here: [tp.osu.edu/carsharing/index.shtml](http://tp.osu.edu/carsharing/index.shtml).

People can sign up to become members here: [www.connectbyhertz.com](http://www.connectbyhertz.com).

# Chapter 5—Education and Encouragement

## 5.8 Transportation Demand Management



### Smart Cards

In transportation there has been a variety of payment systems, usually associated with transit service. Payment options have included tokens, cash (coins or bills), paper tickets, and magnetic stripe cards. With advances in technology, a relatively new option is the “Smart Card.” Payment options such as magnetic stripe cards and “smart cards” can increase customers' flexibility, convenience, and ease of use ([Schaller, 1998](#)). This encourages utilizing transit as a transportation mode. Smart card systems have been a factor in increased ridership trends in New York City, Chicago, and Washington, D.C. ([Public Transit Encouragement entry in the TDM Encyclopedia](#), Litman, 2011).

### Magnetic Stripe Cards

Magnetic Stripe Cards, sometimes called swipe card or magstripe, function like a credit card and are read by physical contact and swiping past a magnetic reading head ([Magnetic Stripe Card entry in Wikipedia](#)). COTA's monthly passes are magnetic stripe cards. The magnetic swipe card improves boarding times, compared to paying in cash. However, physical swiping is required.

### Agreements with Local Colleges

Locally, agreements have been reached between COTA and two local colleges (OSU and CCAD) so that students may ride without paying bus fare when they board. Students pay a small fee as part of their tuition: <http://www.cota.com/Students.aspx>.

Note that while OSU ID cards are magnetic stripe cards, COTA equipment cannot currently “read” them. There are future plans to implement this, which would reduce any fraud by people using their OSU ID card who are not being enrolled for that quarter.

### Example of Smart Card

There are currently no applications of Smart Cards in transit agencies in Ohio ([Smart Card Alliance, 2011](#)). Below are some details about Smart Card in use in Washington D.C. ([WMATA page, 2011](#)).

- The transit agency is the Washington Metropolitan Area Transit Authority (WMATA). Its smart card is called “SmarTrip®” and is a registered trademark.
- “The smart card is a permanent, rechargeable farecard. It's plastic and is embedded with a special computer chip that keeps track of the value of the card.”
- Using the cards is as simple as holding the SmarTrip® card to the circular targets on top of or inside station faregates.
- The SmarTrip® card also works in other Washington area transportation options, such as buses, light rail, and registered van pools.

### Smart Cards

Smart Cards are pocket-sized cards with embedded integrated circuits ([Smart Card entry in Wikipedia](#)). Most smart cards used in transit systems are actually contactless and use radio to transmit the data ([Contactless Smart Card entry in Wikipedia](#)). Depending on the application, smart cards may or may not be connected to a bank account.

- Many smart cards used in transit do not need to be removed from a wallet or purse. Usually, smart cards function as “tap and go”, which is much faster than swiping, and thus help improve boarding times.
- Smart cards can be designed to be used over a variety of transit systems, which benefits users in regions with multiple transit agencies. They can also be used for other payments, such as vehicle parking, bicycle share systems, or general retail purchases.

## Chapter 5—Education and Encouragement

### 5.8 Transportation Demand Management



#### Resources

- Bicyclinginfo.org, 2011. Entry on “Portland SmartTrips.” <http://www.bicyclinginfo.org/library/details.cfm?id=3961> (retrieved May 24, 2011)
- Bike Movement program. Ohio Wesleyan University. Delaware, OH campus. <http://sites.google.com/site/osecommunity/Home/colleges/OWU/the-bike-movement> (retrieved May 27, 2011)
- Bike Sharing Blog. <http://bike-sharing.blogspot.com/> (retrieved May 26, 2011)
- Bike to Work website, 2011. [http://www.biketoworkinfo.org/resources/rsc\\_events.cfm](http://www.biketoworkinfo.org/resources/rsc_events.cfm) (retrieved May 25, 2011)
- Bike to Work website, 2011. Entry on Central Ohio “YayBikes! Bike to Work Challenge”. [http://www.biketoworkinfo.org/programs/program\\_story.cfm?ID=35](http://www.biketoworkinfo.org/programs/program_story.cfm?ID=35) (retrieved May 25, 2011)
- Buckeye Bikes program. The Ohio State University. Columbus, OH campus. <http://www.otterbein.edu/Sustainability/otterbikes.asp> (retrieved May 25, 2011)
- Bushong/The Columbus Dispatch. August 9, 2009. “Free Rides in Short North.” [http://www.dispatch.com/live/content/local\\_news/stories/2009/08/09/bikeshare.ART\\_ART\\_08-09-09\\_B3\\_63ENGGK.html?sid=101](http://www.dispatch.com/live/content/local_news/stories/2009/08/09/bikeshare.ART_ART_08-09-09_B3_63ENGGK.html?sid=101) (retrieved May 24, 2011)
- Cincinnati Bicycle Week website, 2011. Queen City Bike. [http://www.queencitybike.com/?page\\_id=1127](http://www.queencitybike.com/?page_id=1127) (retrieved on May 23, 2011)
- Cleveland Bicycle Week website, 2011. <http://www.clevelandbicycleweek.org/>. Various organizations (retrieved on May 23, 2011)
- Columbus Bicycle Month website, 2011. YayBikes! <http://biketoworkchallenge.com/> (retrieved on May 23, 2011)
- Dayton Bicycle Week website, 2011. Five Rivers MetroParks. [http://www.metroparks.org/GetOutside/NationalBike\\_RegionalEvents.aspx](http://www.metroparks.org/GetOutside/NationalBike_RegionalEvents.aspx) (retrieved on May 23, 2011)
- ESTC—Commuter Choice Primer: An Employer’s Guide to Implementing Effective Commuter Choice Programs. Prepared with SAIC for FHWA, FTA and EPA, Report FHWA-OP-03-007, 2003.
- EveryoneBikes Blog. <http://www.everyonebikes.org/blog/> (retrieved May 24, 2011)
- EveryoneBikes program. Various locations in Columbus, OH. <http://www.everyonebikes.org/> (retrieved May 24, 2011)
- Federal Transit Administration. FTA IMDP report, 2006. [http://www.fta.dot.gov/documents/IMDP\\_Final\\_Report.pdf](http://www.fta.dot.gov/documents/IMDP_Final_Report.pdf) (retrieved May 25, 2011)
- Flickr user Evan Bench. Velib bike station payment machine. Paris, France. July 18, 2007. <http://www.flickr.com/photos/austinevan/887339707/>. (retrieved May 25, 2011.)
- Flickr user Evan Bench. Velib bike station. <http://www.flickr.com/photos/austinevan/1849200514/>. Paris, France. November 1, 2007 (retrieved May 25, 2011)

## Chapter 5—Education and Encouragement

### 5.8 Transportation Demand Management



- Gottesman/The Lantern. June 20, 2009. "RPAC Offers Buckeye Bikes." <http://www.thelantern.com/2.1345/rpac-offers-buckeye-bikes-1.73967> (retrieved May 24, 2011)
- International Bicycle Fund bike share webpage. <http://www.ibike.org/encouragement/freebike.htm> (retrieved May 27, 2011)
- Licking County Bicycle Week website, 2011. Licking County Trails. <http://www.clevelandbicycleweek.org/> (retrieved on May 23, 2011)
- Litman, Todd. *Online TDM Encyclopedia*. "Carsharing." Victoria Transport Policy Institute. <http://www.vtpi.org/tdm/tdm7.htm> (retrieved May 27, 2011)
- Litman, 2011. *Online TDM Encyclopedia*. "Cycling Improvements." Victoria Transport Policy Institute. <http://www.vtpi.org/tdm/tdm93.htm> (retrieved May 23, 2011)
- Litman, 2011. *Online TDM Encyclopedia*. "Public Bike Systems." Victoria Transport Policy Institute. <http://www.vtpi.org/tdm/tdm126.htm> (retrieved May 23, 2011)
- Litman, Todd. *Online TDM Encyclopedia*. Victoria Transport Policy Institute. <http://www.vtpi.org/tdm/tdm12.htm> (retrieved May 25, 2011)
- ODOT (Ohio Department of Transportation) Bike to Work webpage, 2011. <http://www.dot.state.oh.us/Divisions/TransSysDev/MultiModalPlanning/bicycle/Pages/Biketowork.aspx> (retrieved on May 24, 2011)
- Ohio State University Transportation and Parking. Carsharing. <http://tp.osu.edu/carsharing/index.shtml>. Accessed May 27, 2011.
- Otterbikes Bike program. Otterbein University. Westerville, OH campus. <http://www.otterbein.edu/Sustainability/otterbikes.asp> (retrieved May 27, 2011)
- Smart Trips program. Smart Trips Downtown Final Report, 2009. <http://www.portlandonline.com/transportation/index.cfm?c=43820&a=215711> (retrieved May 24, 2011)
- The Lantern YouTube video on Buckeye Bikes program. Uploaded by YouTube user "wmiller8705." <http://www.youtube.com/watch?v=wil19b5QXcY> (retrieved May 23, 2011)
- Transportation Options. Smart Trips program website, 2011. North – Northeast Newsletter April 2011. <http://www.portlandonline.com/transportation/index.cfm?c=44323&a=343083> (retrieved May 24, 2011)
- Wikipedia. Velib entry. <http://en.wikipedia.org/wiki/V%C3%A9lib%27> (retrieved May 23, 2011)
- Yay Bikes! Report on Central Ohio's 2009 Bike Month. <http://biketoworkchallenge.com/files/2010/02/b2ww-report.pdf> (retrieved on May 24, 2011)