Micromobility Research
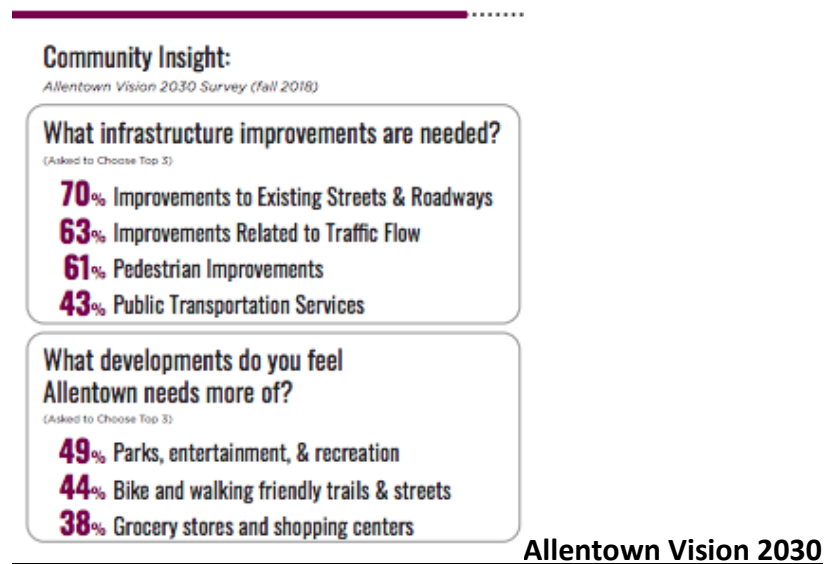
Jessica Bice

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Background

<u>Resolution</u>

Resolution R 108, approved on 9/16/2020

No. 108 RESOLUTION R - 2020 Introduced by the Administration and Allentown City Council on September 16, 2020 Supports the Development and Implementation of a Shared Micro-Mobility Program

https://allentownpa.legistar.com/LegislationDetail.aspx?ID=4636089&GUID=B1D1DCFB-3D13-4A92-926B-83C6532DC64C&Options=ID|Text|&Search=Micro+Mobility

file:///Users/jess/Downloads/R108%20Micromobility.pdf

Community Insight:
Allentown Vision 2030 Survey (fall 2018)

What infrastructure improvements are needed?
(Asked to Choose Top 3)

70% Improvements to Existing Streets & Roadways
63% Improvements Related to Traffic Flow
61% Pedestrian Improvements
43% Public Transportation Services

What developments do you feel Allentown needs more of?
(Asked to Choose Top 3)

49% Parks, entertainment, & recreation
44% Bike and walking friendly trails & streets
38% Grocery stores and shopping centers

Allentown Vision 2030

44% of respondents felt that Allentown needs more developments of bike and walking friendly trails and streets" (Allentown Vision 2030 Survey, fall 2018) (page 10)

https://allentownvision2030.org/wp-content/uploads/2019/12/20191218_Final-Report_00-Combined_compressed.pdf

Data Lehigh Valley

Station-Based Vs Dockless

SOURCE: NACTO.ORG

https://nacto.org/bike-share-statistics-2017/
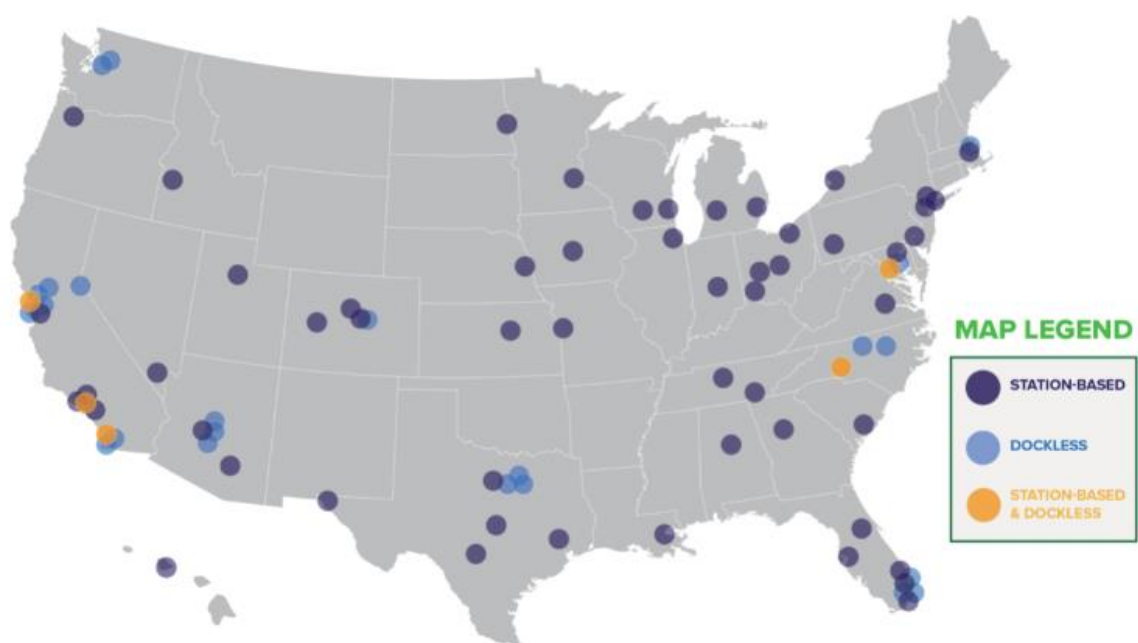
"Dockless bike shares do not require a docking station — an expense that could sometimes limit the number of bikes a city could afford. With dockless systems, bicycles can be parked within a defined district, at a bike rack, or along the sidewalk. Dockless bikes can be located and unlocked using a smartphone app."
read more here: https://altago.com/dockless-bike-share/
"Less predictable usage patterns may also make it harder for operators to redistribute bikes, since they won't all be parked at a fixed number of locations."

Is Dockless Bike Share Right for Your Community?
https://altago.com/how-to-plan-for-dockless-bike-share/

- There are also hybrids

E Scooters:

"While ride-hailing services like Uber and Lyft are now mostly regulated at the state level, cities remain in charge of overseeing e-scooters" https://slate.com/business/2020/02/e-scooters-regulations-bird-lyft-lime-cities.html

Environmental Benefits

"The Lehigh Valley Planning Commission's MOVELV Long Range Transportation Plan has identified a goal of constructing transportation improvements that are compatible with the built and natural environments. Some of the policies established to help achieve this include:
• Study, design and construct major highway and bridge projects in accordance with the most recent environmental regulations.
• Reduce Lehigh Valley greenhouse gas emissions. Air quality conformity determinations of the Transportation Improvement Program and Long Range Transportation Plan will document that hydrocarbon, nitrogen oxide and small particulate matter emissions from vehicles do not exceed the emissions budgets established by the U.S. Environmental Protection Agency.
• Protect, conserve and enhance natural ecosystems to provide long term resilience to climate change.
•**https://lvpc.org/pdf/2017/Green%20Infrastructure%20Guidelines.pdf pge 29**

Allentown Data

Population	Density (mi²)	Land Area (mi²)
118,032 (2010 census) 121,442 (2019 estimated)	6,557.3/sq. mi.	17.5 sq mi

Existing Bikeshare programs

Wikipedia lists all the major bikeshare programs (present and past) in the United States: https://en.wikipedia.org/wiki/List_of_bicycle-sharing_systems#United_States

Bethlehem Bike share (info from Scott)

Modeled off of Pottstown's

- free
- single speed bikes
- beach cruisers, simple,
- Bike Pottstown

Low tech benefits: human interaction, education materials, loan out helmets

From Josh Berk | Executive Director | jberk@bapl.org:

-bikes were provided by the City of Bethlehem with a St. Luke's grant.

-There is a PA Department of Health's Preventive Health and Health Services Block Grant that sustains the program.

- CAT is responsible for maintenance

Claudia Richan at the City Health Dep't is a good contact if you have questions on how they got the grant: CRichan@bethlehem-pa.gov

Bike Bethlehem: https://www.bapl.org/bike-bethlehem-is-back/

Article on Bethlehem bike share: https://www.mcall.com/

Boulder, CO

Population Estimate (2019)[9]: 105,673

"In May 2011, Boulder, Colorado launched a bicycle sharing system, Boulder B-Cycle, with 100 bicycles and 15 stations. This system, like many in northern latitude cities, closes down during winter months to help preserve the life of the equipment.[473] "
https://en.wikipedia.org/wiki/List_of_bicycle-sharing_systems#United_States

Sync Bikeshare (Syracuse, NY)

https://ridegotcha.com/locations/syracuse/

Company: Gotcha

Sponsor: Excellus BlueCross BlueShield (a nonprofit independent licensee of the Blue Cross Blue Shield Association).

Launched: July 9, 2019

"Phase 1 included 200+ e-assist bicycles at 35 hubs. At the launch, the e-assist bikes were the first of their kind in the nation, making riding up hills and in winter conditions much easier in Syracuse."
https://www.adaptcny.org/ttf

Syracuse Data

Population	Density (mi²)	Land Area (mi²)
142,310 (2019 estimated)	5,696.1/sq. mi.	25 sq mi

Indego (Philadelphia's bike share)
https://www.rideindego.com/about/
Philly stats: https://worldpopulationreview.com/us-cities/philadelphia-pa-population
Land Area (mi²): 134.3 sq mi **Density (mi²):**11,803.90/sq mi   **City Population: 1,585,010**

- Launched in 2015
- over 1,000 self-service bikes and 130+ stations
- Station locations are selected based: proximity to community resources, employment centers, bike and transit infrastructure, community groups, and public feedback.
- Many stations have a touchscreen kiosk, a map of the service area. Check out your bike using the mobile app or with an Indego Key at a dock.

Owner: The City of Philadelphia

- The City of Philadelphia owns the bicycles and stations. Indego is planned and managed by the Office of Transportation & Infrastructure Systems (OTIS).

Sponser: Independence Blue Cross

- **Independence Blue Cross** (the leading health insurance organization in southeastern Pennsylvania).

Operator: Bicycle Transit Systems

- Bicycle Transit Systems manages all operational elements of Indego, including bike and station maintenance, marketing, and customer service. This Philadelphia-based business specializes in bike share launch, operations, and management.

Equipment: BCycle, LLC

- BCycle, LLC manufactures the Indego bikes and stations. Based in Waterloo, Wisconsin, BCycle is owned by Trek Bicycles.

Better Bike Share Partnership Participent

- Better Bike Share Partnership (BBSP) is a JPB Foundation-funded collaboration between The City of Philadelphia, Bicycle Coalition of Greater Philadelphia, the National Association of City Transportation Officials (NACTO) and People For Bikes to build equitable and replicable bike share systems. To learn more, visit **www.betterbikeshare.org**.

(Past) **Harrisburg, PA**[edit]

The City of Harrisburg launched the Harrisburg Bike Share in late 2017 with 55 bikes through Zagster. 93% of the proceeds benefited a State nonprofit to prevent school dropouts.[505] In June 2020 the bikeshare program was shut down when Zagster shut down operations across the country.[506][507]

Model Biking Cities

Oakland
- Has a **Bicyclist and Pedestrian Advisory Commission (BPAC)** Oakland's Bicyclist & Pedestrian Advisory Commission (BPAC) advises the City Council on programs and projects related to walking and bicycling. BPAC meetings are on the third Thursday of the month from 6-8 and open to the public.

BPAC Purpose

The duties of the BPAC according its establishing ordinance are:

1. Review and advise on proposed projects for Transportation Development Act Article 3 funding;
2. Provide input to staff on the expenditure of Measure B Bicycle & Pedestrian Pass through funds;
3. Provide input to staff in implementation of the Bicycle Plan, the Pedestrian Plan, and other related Plans;
4. Identify projects and plans that are pertinent to the Commission's purpose and prioritize those projects and plans for design review by the Commission

Charlottesville VA
- Like Oakland, Charlottesville also has a Bicycle and Pedestrian Advisory Committee.
- has a dockless scooter and bikeshare
- a great example of a city website page on biking and walking!
  https://www.charlottesville.gov/559/Biking-Walking

Minneapolis

Bicycling- Minneapolis ranks as one of the best biking cities in the country.

Minneapolis bike share:

 https://www.niceridemn.com/

Funding

Our programs are made possible with support from groups like the Center for Prevention at Blue Cross and Blue Shield of Minnesota, Quality Bicycle Products, Dero Bike Racks, Brazil Law Group, Town Hall Brewery, and hundreds of individuals just like you.

Bicycling- Learn how we promote cycling as a safe, healthy and low-cost way to get around.
https://www.minneapolismn.gov/getting-around/biking/

CITY OF MINNEAPOLIS Transportation Action Plan https://go.minneapolismn.gov/final-plan/bicycling

Our priorities for the Transportation Action Plan
 https://www.ourstreetsmpls.org/transportation_action_plan_march_2019

MNBicycle Connectors Posts
Our Streets Minneapolis
 https://www.ourstreetsmpls.org/tags/bicycle_connectors
http://richmondgov.com/bikeped/

Funding and Grants:

Better Bike Share Mini-Grants
The PeopleForBikes Foundation, as part of the Better Bike Share Partnership, is currently accepting mini-grant applications of $2,500 to $10,000 from non-profit community-based organizations, cities, or bike share operators (or collaborations between two or more of these entities) to support small, time-bound programs or events in 2021. Projects must have the broad goal of increasing access to and use of bike share in low-income or communities of color.
Lyft's Approach To Bikes & Scooters: Accelerating Public + Private Mobility
https://medium.com/@johnzimmer/lyfts-approach-to-bikes-scooters-90ce505ff496

Constraints

"The main concerns with micro-mobility vehicles, and e-scooters in particular, are safety and whether cities current infrastructure can support the massive influx of these vehicles. Common questions include "how do we keep the e-scooters from being parked where we don't want them?" and "how do we modify our bike lanes to keep e-scooter riders and bike riders safe while also keeping enough sidewalk space for pedestrians?"
Most of the large micro-mobility companies have been working with cities to address these concerns including using electronic geo-zones to prevent riders from either riding in an unsafe area or parking in an area where the city doesn't want them to park (this could also be used to prevent people from riding on sidewalks), and e-scooter companies require riders to be 18 years or older and with a valid driver's license scanned before you can open an account. "
https://www.forbes.com/sites/adeyemiajao/2019/02/01/everything-you-want-to-know-about-scooters-and-micro-mobility/?sh=3e82b78e5de6

Parking:
- Necessary infrastructure such as comprehensive networks of connected and protected bike lanes, better parking solutions for personally owned and shared modes of transport.

"For micromobility to rise to the next level in the U.S., we must make the same public space provisions to ensure that riding a bike, e-bike or e-scooter is at least as safe and convenient as driving a car."
https://www.smartcitiesdive.com/news/for-this-micromobility-boom-to-last-we-need-to-address-parking/592655/

Barriers to Use

The lack of secure parking is a significant barrier preventing people from purchasing or using their own micromobility vehicles, especially in dense cities where few residents have access to a garage or other safe storage. This infrastructure shortcoming has a disproportionate impact on lower-income communities: up to half of all bicycle commuters in the U.S. come from households making less than $25,000 a year — meaning a decent e-bike could exceed a month's take-home pay. And with bike thefts up 68% in the U.S., it's vital to help working cyclists and everyday micromobility users protect their investments."
https://www.smartcitiesdive.com/news/for-this-micromobility-boom-to-last-we-need-to-address-parking/592655/

Current Programs/Plans

- trails/roads plan from 2010:
  http://www.allentownpa.gov/Portals/0/files/Parks_Recreation/Allentown_ExecSum_LowRes.pdf

- MOVE LV Transportation Improvement Program:
  https://www.lvpc.org/pdf/2019/TIP%20Plan%20Final.pdf

- COORDINATED PUBLIC TRANSIT — HUMAN SERVICES TRANSPORTATION PLAN June 2018 https://lvpc.org/pdf/2018%20Coordinated%20Transit%20Plan.pdf

- Race Street Corridor Study: CAT is conducting an internal study of the Race Street corridor (between Catasaqua and Airport Rd), where there was a fatal accident. CAT will put together a report (what it was supposed to look like, it's terribly dangerous right now).

- Southwest Quadrant: Allentown Waterfront to Race Street Bridge The southwest quadrant follows the former RJ Corman railroad connecting Allentown's Waterfront and Buck Boyle Park to the Race Street Bridge and is owned by our trail friendly partners at the Waterfront Development Corporation. ...The D&L is actively working with Waterfront Development Corporation, Lehigh County, Lehigh Valley Planning Commission, City of Allentown, Whitehall Township and many other partners to plan how to fund the engineering phase. When the northeast quadrant described above and this quadrant are constructed, we anticipate they will form the first connected D&L Trail route

through the Lehigh Valley, eliminating the gap <mark>but not completely building out all the potential connections</mark>…

https://delawareandlehigh.org/blog/tackling-the-dl-trail-lehigh-valley-gap-our-largest-gap-in-parts/

- He stated that the connectability of the municipalities including South Whitehall and Whitehall.

- Lehigh Valley Transportation Study https://lvpc.org/transportation.html

- More info: https://www.penndot.gov/ProjectAndPrograms/operations

Observations From Bike Ride

Scott Slingerland's observations from our ride

1. "Waterfront is really cutoff from downtown via Jordan Creek and American Pkwy. Only connections are:
    1. Hamilton St
    2. Linden St
    3. Gordon St (bridge under construction but pedestrian/bike access still open)-- big hill between Neuweiler Brewery and Jordan Creek bridge
    4. Union St (could be worth to investigate if future bridge/road rehab could add a trail along side_
    5. Sumner Ave (not direct but could connect via Jordan Park to the north)
2. Looking for alternatives to high-volume E-W roads (Linden & Turner) and N-S roads (4,6,7th Sts)"

Bicyclist/Pedestrian Safety in the Lehigh Valley

Issues

- "A huge problem in the Lehigh Valley (and most places in the U.S.) is that road designers work to give car drivers a freeway-like experience while driving on ordinary city streets. This creates a go-fast mentality that creates hazards for bicyclists, pedestrians, and the disabled" …with three examples given (CAT Vision for Better bicycling, page 30)

- "The bias in road design is to make roads safer and more convenient for motorists who are speeding, with wide lanes, large radius turns, and features like the aforementioned slip ramps. In other words, fast roads." (CAT Vision for Better bicycling, page 30)

Bike Lanes

- "Often you will hear that bike lanes cause massive increases in bicycle usage, or that bike lanes have created safer cycling. Both claims don't match up with the facts. Data show -- repeatedly -- that in cities with high bicycle use, **the bicycle use came first and the bike lanes came later.**" (CAT Vision for Better bicycling, page 30)

"Better city planning and building more livable urban communities could further reduce the transportation demand and thus slash emissions by providing access to alternative transport mode to private vehicles such as public transit, cycling and walking.
New mobility could promote the use of shared cars and bicycles while also integrating advances in electric, autonomous and data-driven technologies. If cities embrace automation, electrification, and ride sharing, research says they could cut transport emissions a drastic 80%. In consideration of equity, accessibility and sustainability, new mobility can have a greater effect on both behavioral change and policy regulation."
https://www.wri.org/blog/2019/10/everything-you-need-know-about-fastest-growing-source-global-emissions-transport
"While some among our members are not opposed to a municipality's installing a bike lane fully separated from traffic to the extent of having its own signaling system that omits any conflict between cyclists and motorists, we appreciate that the cost of designing, installing and maintaining such infrastructure is substantial and we do not see such bikeways as a practical facility for widespread use." -CAT

Solutions:

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. https://visionzeronetwork.org/about/what-is-vision-zero/#:~:text=Vision%20Zero%20is%20a%20strategy,momentum%20in%20major%20American%20cities.

Bike Share Companies

Tandem Mobility
website

blog

Pricing: $2,000 per bike/year

Includes everything: bikes, stations, branding, software, operations, account management, customer support, and insurance

Discount to $1,800 a bike if you sign a contract with us this year (2021)!

for 10 stations with 10 bikes

Do it all

"We offer turnkey bike share and e-mobility solutions for communities of all sizes. We handle everything including hardware, software, operations, and customer support."

Local

We work with local contractors to manage the daily operations of our systems, but we empower them to do more than just turn the wrench—creating a culture where our mechanics care about the community and the program as much as they do about servicing bikes.

Customizable

We also know every community is different, so we have created an a la carte menu for bike share and e-mobility enabling you to build a program that fits your specific needs. Maybe you want to own the assets, or manage the operations—we can work with you to create a custom product offering."

- "Our software platform also supports manual rentals of "non-smart" fleets (i.e. bikes without integrated bluetooth locks), as might be the case at a bike library location."

Phased approach

"For programs with limited initial funding and opportunities to expand over time, we often recommend launching with a modest-sized program within a defined core service area. The density and visibility of such a system will not only have a great impact on adoption but, when thoughtfully implemented, will also provide reassurance for any community members skeptical of the program's value. Once established, we find that there is not only less resistance but usually great enthusiasm for adding vehicles and stations in new service areas and in alignment with broader transportation goals."

Some of these variables that might make it take longer might include:

- station location permitting
- timely receipt of partner/sponsor branding design files
- identifying qualified local mechanic(s) to launch and operate the system ongoing.

Our most successful programs with smooth launches are typically those in which the local partner(s) are engaged in these efforts.

Gotcha

mission: empowering people to lead better lives through sustainable shared mobility. When you ride with Gotcha, you ride with a fierce group of advocates who make your experience fun, easy, safe, and dependable.
https://ridegotcha.com/about/

Lyft
Lyft in DC:
Capital Bike Share "for all"
"We accept the following forms for program qualification:
- EBT Card
- Discounted utility bill dated in last 30 days
- SSI/SSDI Statement of benefits
- Medicaid Card"

Citi bike
Community programs: https://www.citibikenyc.com/community-programs

Reduced Fare Bike Share
Citi Bike, the nation's largest bike share system, is partnering with Healthfirst to expand access to bikeshare through $5 monthly memberships for NYCHA residents and SNAP recipients that do not require an annual commitment.

Community Grants Program
Supporting programs, events, and activities organized by non-profit and community-based organizations that share Citi Bike's commitment to increasing people of color and low-income New Yorkers' access to bike share

LyftUp & Bike Share For Youth
We're working to make sure everyone has access to affordable, reliable transportation to get where they need to go — no matter their age, income, or zip code.

Partner Keys Program
Allowing organizations to support and imbed bike-related activities into their current programming at no cost.

Prescribe-A-Bike

Equipping patients, referred by medical providers of select hospitals, with free Citi Bike memberships (sponsored by Healthfirst) to foster healthy, sustainable habits to assuage preventable chronic illnesses.

NYC Better Bike Share Partnership
The Partnership is a community-driven collaboration of diverse stakeholders who influence transportation, health, and economic opportunities by leveraging the NYC bike share program.

Equity

● How to Build a Thriving, Equitable Bike Share System Video shows how different cities are implementing and operating systems in a more equitable way.

"geographic coverage requirements and income-based discounts.

Smartphone and cashless barriers
Possible solutions
"Provide a non-smartphone bike access option. Potential options are using smart cards or account codes, which could be distributed by local partners and affiliated organizations.
Work with the operator to minimize overhead cost. Consider partnering with transit agencies to allow integration into their payment system or cards. There may be a need to maintain bikes in certain locations that are easy to find, such as stations, so people without smartphones can locate bikes when needed.

Accept cash payments. In addition to discounted memberships, it is important to accept cash payments, particularly for unbanked and underbanked users. The PayNearMe program is an example of a program where individuals have widespread access to commercial or public locations that have wideranging operating hours and are easily accessible by public transit. Because users don't have a credit card on file, systems have accepted some of the damage liability as part of operating the system.

Develop a policy for protecting customer privacy. New technology, including smartphone enabled data collection, can help systems deliver better service, but also puts users at risk. A strong and clear privacy policy can help users, particularly those who may be wary of providing

personal information, be more comfortable with using the system. This is particularly important for immigrant communities where concerns of privacy are of high importance. "

"Evaluating access and payment programs is critical to understanding how to better serve all users. Some ways to develop insights on the barriers facing potential users:
• Work with community partners to survey or conduct focus groups of non-users about barriers to using the system.
• Survey users that used cash payment options.
 • Track engagement in marketing campaigns about understanding of and access to the system and payment options.
Examples of metrics to track:
 • # of sign-ups by payment type; location of signups
• # of rides by cash payers; location of rides by payment type (within target neighborhoods)
 • Ride characteristics - ride duration; overage fees; etc.
• % of cash payers switching to credit payment (over time)."
https://trec.pdx.edu/sites/default/files/PSU_BikeShareEquity_PaymentAndAccess_7of10.pdf

Evaluating Efforts to Improve the Equity of Bike Share Systems:
https://trec.pdx.edu/research/project/884/Evaluating_Efforts_to_Improve_the_Equity_of_Bike_Share_Systems

- "Bike share may address many of the major barriers to bicycling for these residents" good article with stats (page 8)
  https://ppms.trec.pdx.edu/media/project_files/TREC_BreakingBarriersSummaryReport_emQeiBA.pdf

Siting Bike Share Stations:

Bike share considerations:
- Convenience, Scale, Density
- Safe Places to Ride
- Engagement
- Transit Access
- Jobs & Opportunities
- Pricing

- If a station is within a 5 minute walk of where you live or work, you are more likely to use it ([Source](#))
- How Philly chooses it's station locations: proximity to community resources, employment centers, bike and transit infrastructure, community groups, and public feedback.
- New York city uses the 28 station per square mile planning principle. (much higher population) ([Source](#))
- **Siting:** Stations should be accessible and convenient, at any time, in any season. They should enhance the pedestrian realm; be designed for safety and thus considered a traffic-calming tool; be operationally feasible (with adequate sun exposure if solar powered, and accessible to maintenance vehicles); and meld with the streetscape hierarchy, not impeding permanent elements like hydrants or bus stops. They're most effective when located near existing bike lanes and other bike infrastructure. https://nextcity.org/daily/entry/new-nacto-guide-new-bike-share-station-locations

" **Systems/product thinking example:** (scooters)

"In the graphic, the product wheel revolves around the product (scooters) and product goals, in this case the ability to satisfy short trips, provide access to transit and design for safety (note: goals will vary from place to place and have an influence on how the supporting elements are crafted). For shared scooters to succeed, there is a collection of supportive elements needed to create a sustainable service model. With the results from pilots, we can begin to understand the elements of a successful program." https://wginc.com/micromobility-part-2/

NACTO Resources

https://nacto.org/program/bike-share-initiative/

Guidelines for Regulating Shared Micromobility Version 2 September 2019: NACTO's Guidelines for Regulating Shared Micromobility outlines best practices for cities and public entities regulating and managing shared micromobility services on their streets. Its recommendations were developed to reflect the wide variety of experiences that North American cities have had in regulating and managing shared micromobility. https://nacto.org/wp-content/uploads/2019/09/NACTO_Shared_Micromobility_Guidelines_Web.pdf

Strategies for Engaging Community: Strategies for Engaging Community, produced in coordination with the Better Bike Share Partnership, provides guidance for practitioners seeking to build meaningful relationships with communities they serve as they plan for and operate bike share systems. https://nacto.org/strategies-for-engaging-community/

Bike Share Station Siting Guide
To support cities across the country working towards all of these goals, NACTO has released the NACTO Bike Share Siting Guide, which highlights best practices in station placement and design. https://nacto.org/publication/bike-share-station-siting-guide/

Walkable Station Spacing is Key to Successful, Equitable Bike Share
https://nacto.org/walkable-station-spacing-is-key-to-successful-equitable-bike-share/

Equity Practitioners' Paper #1: Based on an analysis of ridership data from a variety of U.S. bike share systems, this report makes the connection between station density, service quality and equity, and provides a data-driven analysis for system operators looking to expand the reach and utility of their bike share systems.

Urban Bikeway Design Guide
https://nacto.org/publication/urban-bikeway-design-guide/

Other resources:

Bike Network Mapping Idea Book

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/bikemap_book/

Micromobility **https://www.fhwa.dot.gov/livability/fact_sheets/mm_fact_sheet.pdf**

Micrombility paper https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/micro-mobility-is-the-future-of-urban-transportation.html
STRATEGIES FOR ACCELERATING MULTIMODAL PROJECT DELIVERY :
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_delivery/fhwahep19006.pdf

Micromobility in Cities A HISTORY AND POLICY OVERVIEWhttps://www.nlc.org/wp-content/uploads/2019/04/CSAR_MicromobilityReport_FINAL.pdf

Micromobility
https://www.pedbikeinfo.org/topics/micromobility.cfm
https://www.pedbikeinfo.org/resources/resources_details.cfm?id=5254

The Online Bikeshare Planning Guide is LIVE!*A resource for cities to design, plan, implement and measure the success of a bikeshare system*
https://www.itdp.org/2018/06/13/the-bike-share-planning-guide-2/?nabw=0

PennDOT Bicycle Planning and Design Resources
https://www.penndot.gov/TravelInPA/RideaBike/Pages/Bicycle-Planning-and-Design.aspx
PennDOT Active Transportation Plan
https://www.penndot.gov/TravelInPA/RideaBike/Pages/Master-Plan.aspx

https://nationalcenterformobilitymanagement.org/by-topic/
 https://nationalcenterformobilitymanagement.org/by-topic/by-topic-economic-development/
Bikeshare Planning Guide (Institute for Transportation and Development Policy, 2013). A comprehensive report on bike share's history and current practice.
https://nationalcenterformobilitymanagement.org/by-topic/by-topic-biking/

https://nacto.org/wp-content/uploads/2016/02/2015_Shaheen-and-Martin_Unraveling-the-Modal-Impacts-of-Bikesharing.pdf

These Are the Most Bikeable Cities in the United States

https://www.rei.com/blog/cycle/here-are-the-most-bikeable-cities-in-the-united-states

street connectivity - LVPC
https://www.lvpc.org/pdf/streetConnectivity.pdf

https://www.governing.com/archive/memo-to-cities-most-cyclists-arent-urban-hipsters.html

EAC GHG report
https://www.allentownpa.gov/Portals/0/files/AuthsBdsComms/EnvironActionComm/GHG%20Inventory%202020.pdf

Helpful mapping resource: https://opendata.allentownpa.gov/