

30 Cities, 1 Challenge: Examining Sidewalk Policies for Inclusive Access and Equity

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Special thanks to Investing in Place!

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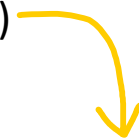
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Introduction

How I got here

my baby (c. 2017)



Children's Day School, San Francisco, with Jensen Architects

<https://jensen-architects.com/work/childrens-day-school-dolores-park/>

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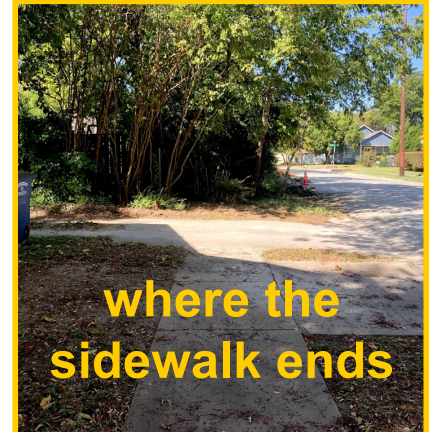
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Introduction

How I got here



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Introduction

How I got here

Why???

Dallas City Code:

SEC. 43-63. REPAIR OF DEFECTIVE SIDEWALKS OR DRIVEWAYS BY ABUTTING PROPERTY OWNERS.

(a) When a sidewalk, driveway, or any appurtenance to a sidewalk or driveway becomes defective, unsafe, or hazardous, the abutting property owner shall reconstruct or repair the sidewalk, driveway, or appurtenance, and the expense of such work must be borne by the abutting property owner.

What do other cities do?

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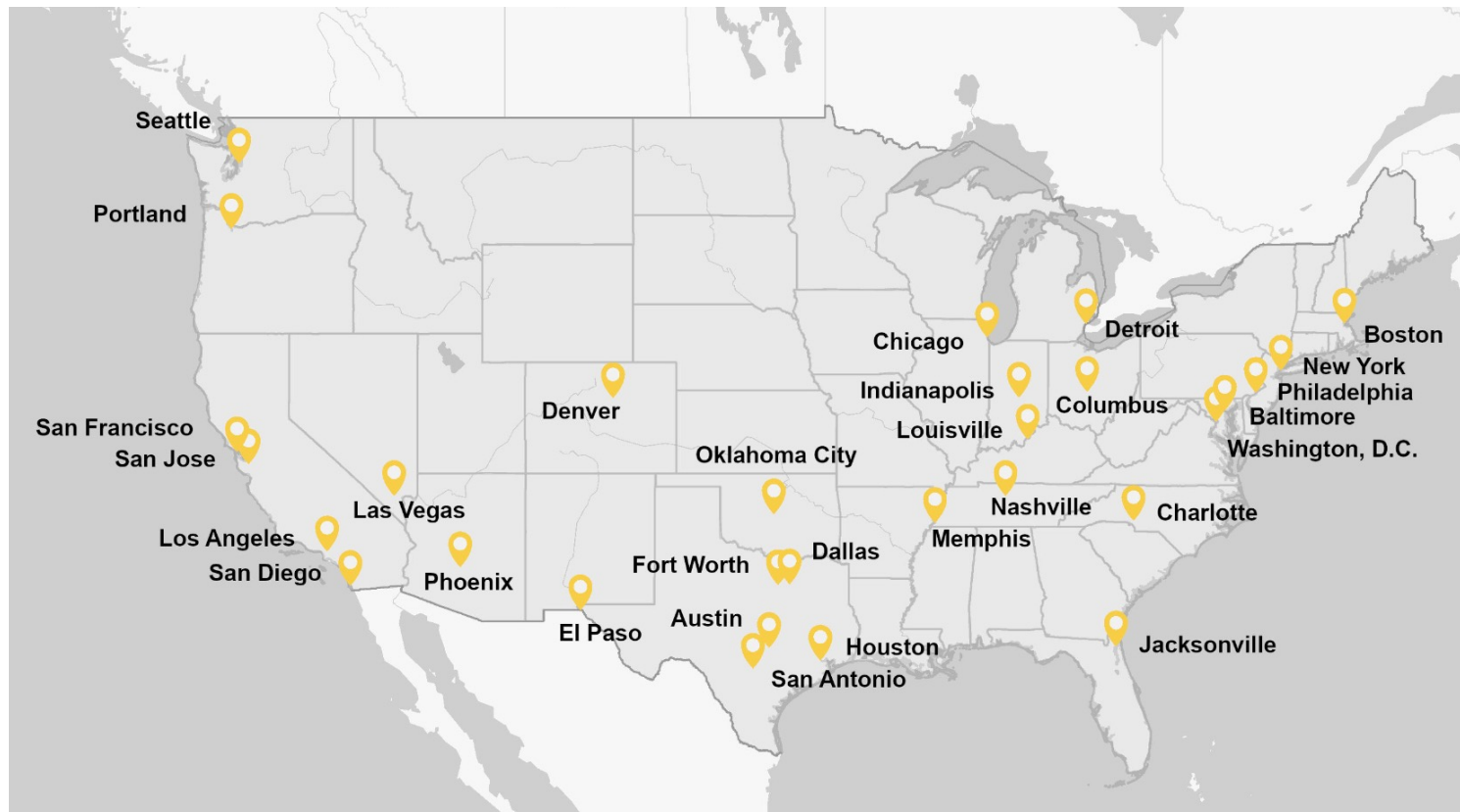
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The Study

Sidewalk policies in 30 U.S. cities



Cities included in study

- +Municipal codes
- +City websites
- +Pedestrian master plans
- +ADA transition plans
- +City newspapers

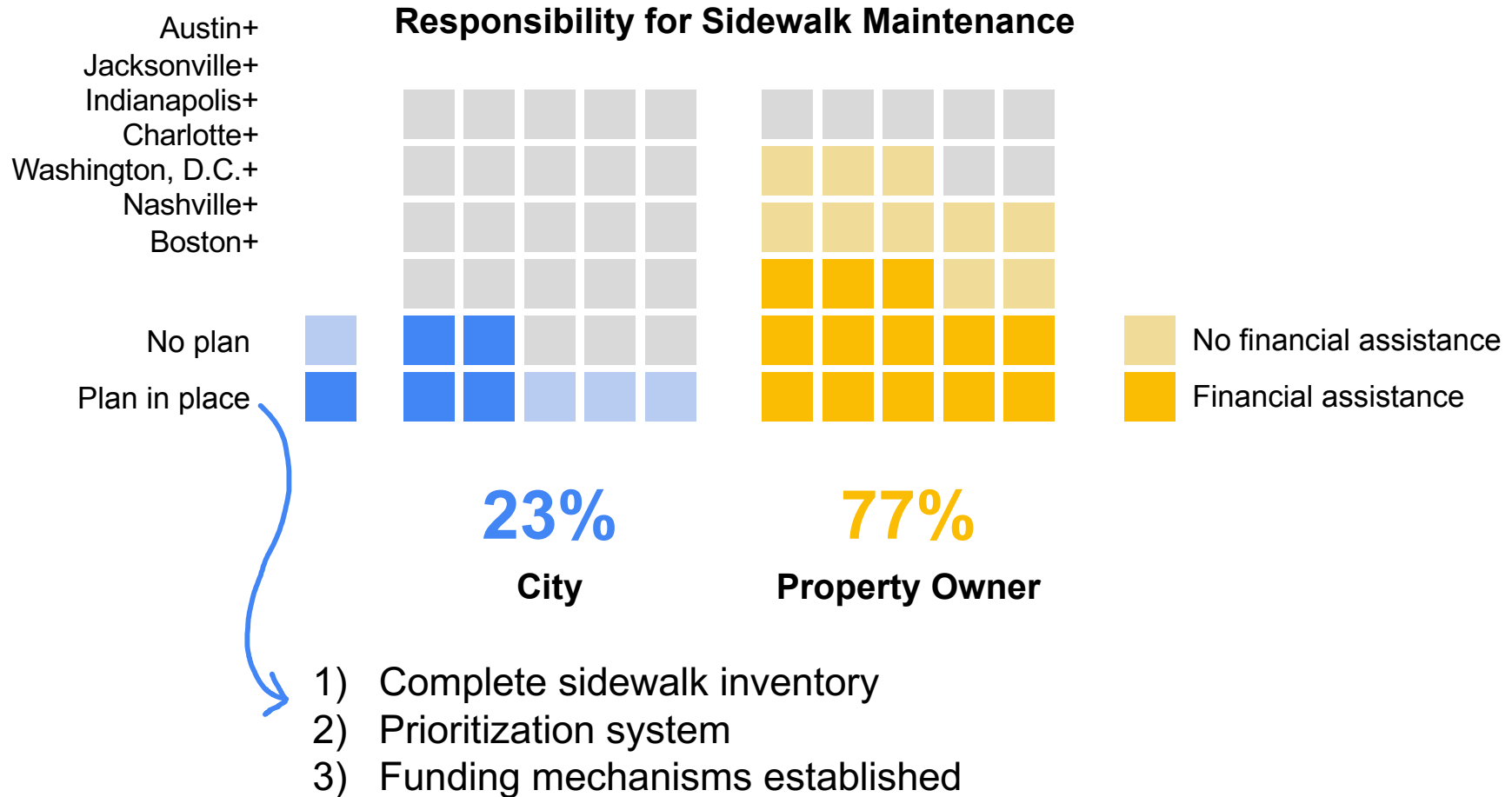
- +Dallas Strategic Mobility Plan
- +Dallas Sidewalk Master Plan

- +Staff from Dallas, Austin, Portland, Phoenix, and Memphis



Findings

Property owners responsible for maintenance





Findings

Owners don't take the initiative to repair their sidewalks

CITY OF SAN DIEGO, CALIFORNIA
COUNCIL POLICY

C U R R E N T

SUBJECT: SIDEWALK MAINTENANCE POLICY
POLICY NO.: 200-12
EFFECTIVE DATE: February 6, 1975

BACKGROUND:

The City's practices with regard to the maintenance of existing Portland Cement Concrete (PCC) sidewalks has for many years been based on the California Streets and Highways Code, Section 5610.

This section essentially places the responsibility for replacement of PCC sidewalk totally on the abutting property owner unless an unsafe condition exists because of some act of the City or some third party, such as allowing parkway trees to damage the sidewalk, permitting poor compaction of soil under a sidewalk, sidewalk damage caused by City utility intrusion, etc. Consequently, PCC sidewalk replacement at City expense is done only under the following conditions:

1. Damage caused by parkway trees.
2. Damage due to grade subsidence.
3. Damage due to City utility cuts.
4. Sidewalk fronting City-owned property.
5. Sidewalk at street intersection (no abutting property).
6. Damage due to heat expansion.

A significant portion of an existing unsafe sidewalk does not fall into any of the above categories, but is in such a condition because of its age. Naturally, these conditions are most prevalent in older parts of the community. Replacement of these unsafe old sidewalks therefore depends on the financial ability and willingness of the abutting property owners to do so. Experience indicates that few citizens avail themselves of the opportunity to replace an unsafe sidewalk. This is probably because they are reluctant to go through the process of obtaining a contractor, bids, permits, etc. All unsafe sidewalk conditions which come to the attention of the City are patched with asphalt to eliminate tripping hazards and assist in protecting the City from liability.

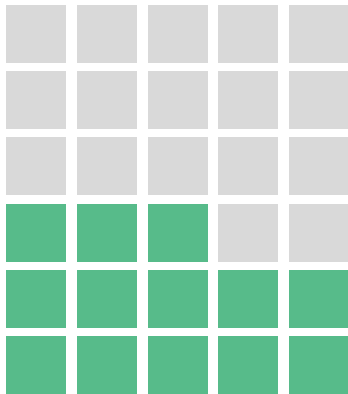


Findings

Policies often unclear

- 1) Stated in municipal code
- 2) Stated on an easily-locatable city website
- 3) Consistent between the two

Clear Policies



43%

Sidewalk Repair

Services

- [Report a Problem](#)
- [Cleaning Programs](#)
- [Contractor Resources](#)
- [Garbage & Waste](#)
- [Graffiti](#)
- [Permits](#)
- [Potholes](#)
- [Public Records Requests](#)
- [Public Toilets](#)
- [Recycling & Refuse Collection](#)
- [Storm Preparation](#)
- [Street Sweeping](#)
- [Sidewalks](#)
- [Street Resurfacing](#)
- [Street Trees and Plants](#)
- [Subdivisions and Mapping](#)
- [Other Services A-Z](#)

The State Highway Code (5611) and the local Public Works Code (Article 15, Sec. 706), DPW Order 177,525, requires property owners to maintain the sidewalk adjacent to their property to a condition acceptable to the Director of Public Works. This responsibility includes making repairs as needed when a sidewalk is damaged. Damage on the sidewalk for which a property owner is responsible for include, but are not limited to the following:

■ Missing pavement
■ Raised / sunken / uneven pavement
■ Holes or cracks in the pavement
■ Missing sewer vent covers

When such repair and improvements are required, a Sidewalk Repair Permit is required by the Public Works Code. San Francisco Public Works encourages all property owners to take a close look at the sidewalk adjacent to their property. If you believe it is damaged and choose to make the repairs immediately, please contact a reputable concrete contractor. Please note that you or your contractor are required to secure the necessary permits prior to commencing repairs; please contact the Bureau of Street-Use and Mapping at 628-271-2000 for more information.



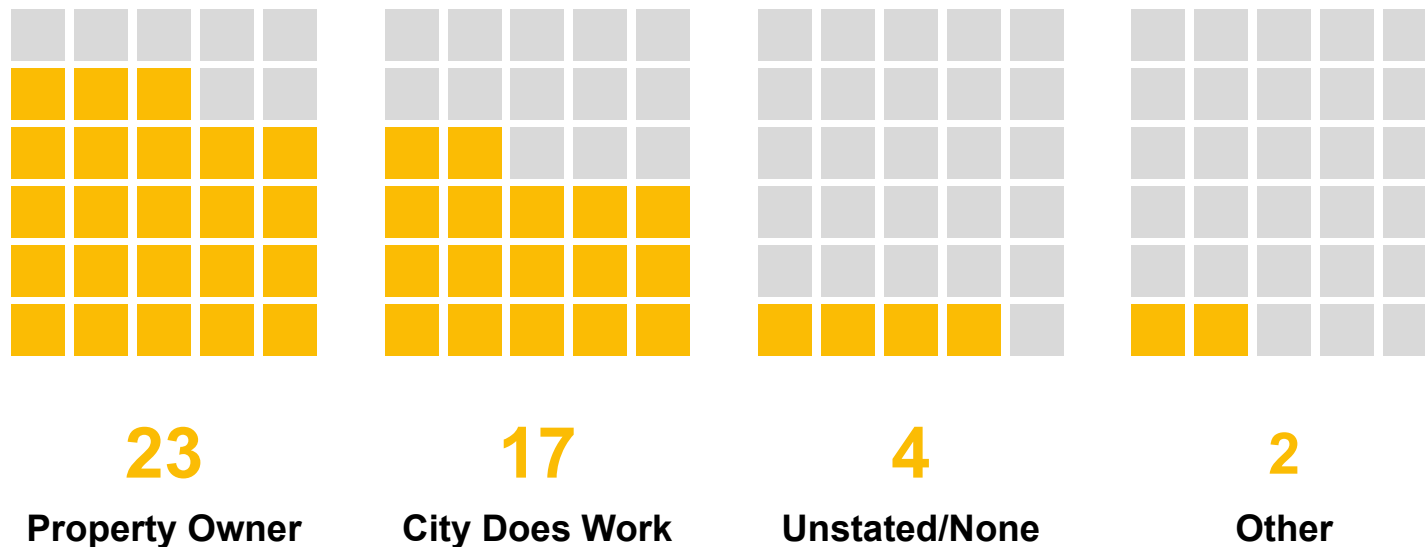
Findings

Cities largely have mechanisms in place to enforce their rules...

Charges property owner
Places lien, if necessary

Fine (Philadelphia)
Misdemeanor charges (Fort Worth)

Consequence for Failure to Maintain



(c) Any owner who fails to reconstruct or repair a defective, unsafe, or hazardous condition within 30 days after the date of the written notice from the director of public works or the director of code compliance to do so, or any owner who fails to begin such reconstruction or repair within 15 days after the date of such notice, is **guilty of an offense**. (Ord. Nos. 8590; 13898; 19963; 22026; 23694; [30239](#); [30654](#))

Findings

...but enforcement is rare

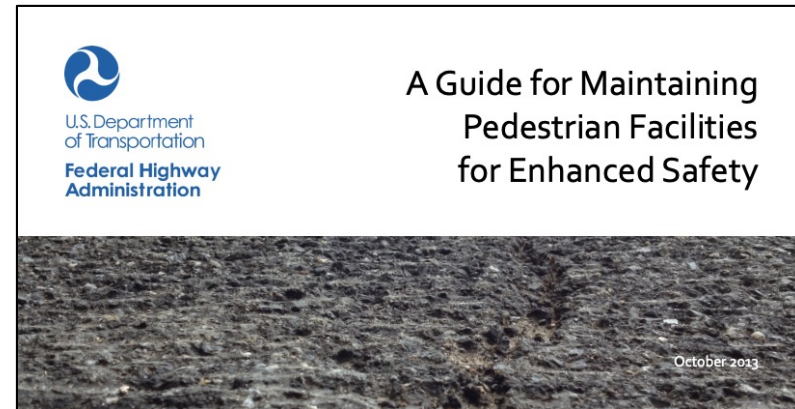
**Americans with Disabilities Act
Transition Plan
for Curb Ramps and Sidewalks**
Updates and Revisions
2007-2008

City and County of San Francisco
Department of Public Works
In collaboration with
The Mayor's Office on Disability

Average 12 month period:
+1,646 Notices to Repair sent to homeowners
+1,025 notices to other City Bureaus
+2nd highest density
+Highest median household income



+Not enforced in Phoenix (Zoom call with Planning)
+Burden is too high for low-income homeowners (Portland)



+Lack of enforcement a key factor in deterioration
+Many cities cite untenable financial burden and community backlash



Findings

Many cities don't know sidewalk conditions

4 Proactive, regular inspection program
+Denver – inspects 1 of 11 areas yearly

Irregular inspections as part of a large planning effort

+Seattle, 2017

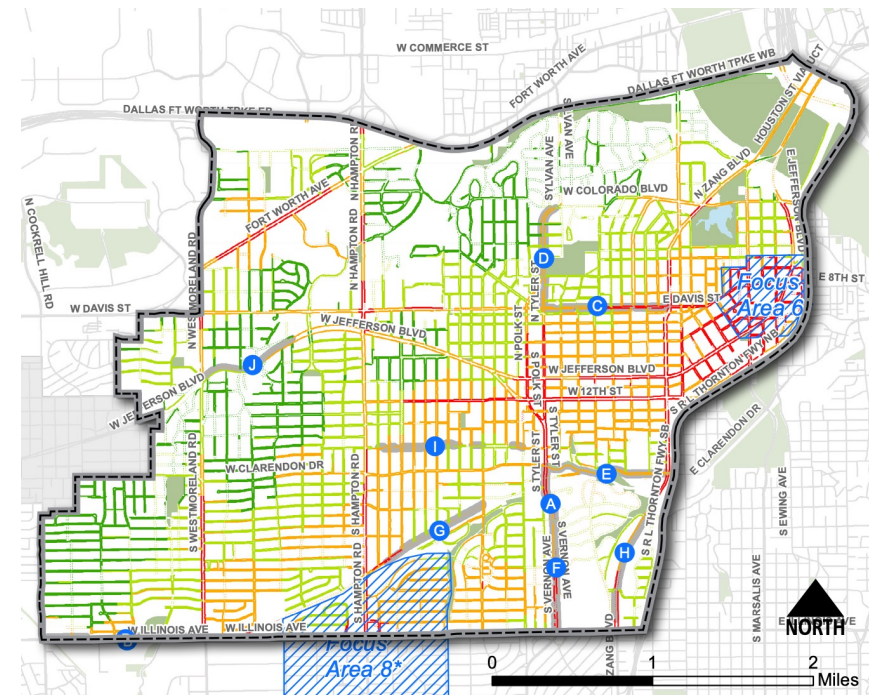
7 Sidewalk Condition Assessment Report
+San Antonio, 2008 and 2010

ADA Transition Plan

+Dallas, 2020

Sidewalk Master Plan

11 Complaints
+Portland – stopped proactive inspection during recession



Prioritization map from Dallas Sidewalk Master Plan, June 2021

Findings

Lack of sustained funding

\$2 billion

Dallas

\$3.63 billion

Portland

Backlogs: LA first program in 40 years



www.tenor.com

Constant decline:

+Memphis - another 33% of sidewalks in disrepair by the time current needs addressed

+Dallas – 81 miles of sidewalks deficient yearly

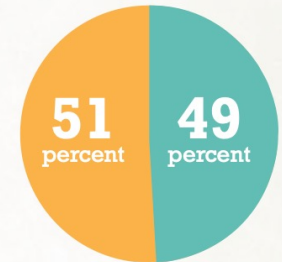
State of the Sidewalks

DID YOU KNOW?

Public Works is currently responsible for **2,400 miles** of existing sidewalks.

The City of Austin is missing **2,580 miles** of sidewalks.

\$1.64 billion is needed for construction and maintenance of new and existing sidewalks.

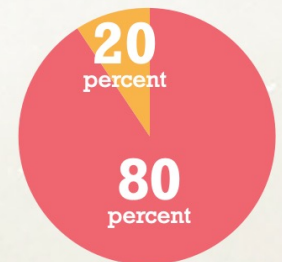


■ existing sidewalks
■ missing sidewalks

At the current funding rate, it will take **192 years** to build and repair Austin's sidewalk network.

While **20%** of sidewalks are in good condition, **80%** of existing sidewalks are in poor condition.

Approximately **40%** of existing sidewalks have some type of overgrown vegetation blocking the pedestrian pathway.



■ Good Condition
■ Poor Condition

City of Austin Public Works Department



Opportunities

Learn from peer cities

1.

San Francisco

Property-owner responsibility

Proactive sidewalk inspection

Enforcement

Financial assistance

2.

Austin

City responsibility

Proactive sidewalk inspection

Plan in place

3.

Denver

Moving toward city responsibility

Proactive sidewalk inspection

Denver sidewalk fees clear final hurdle, billing to begin in 2025

Denver transportation officials ask residents to report problem sidewalks, give repair program a head start

By: Joe Rubino | The Denver Post

Posted 6:02 PM, Sep 16, 2024 and last updated 6:03 PM, Sep 16, 2024

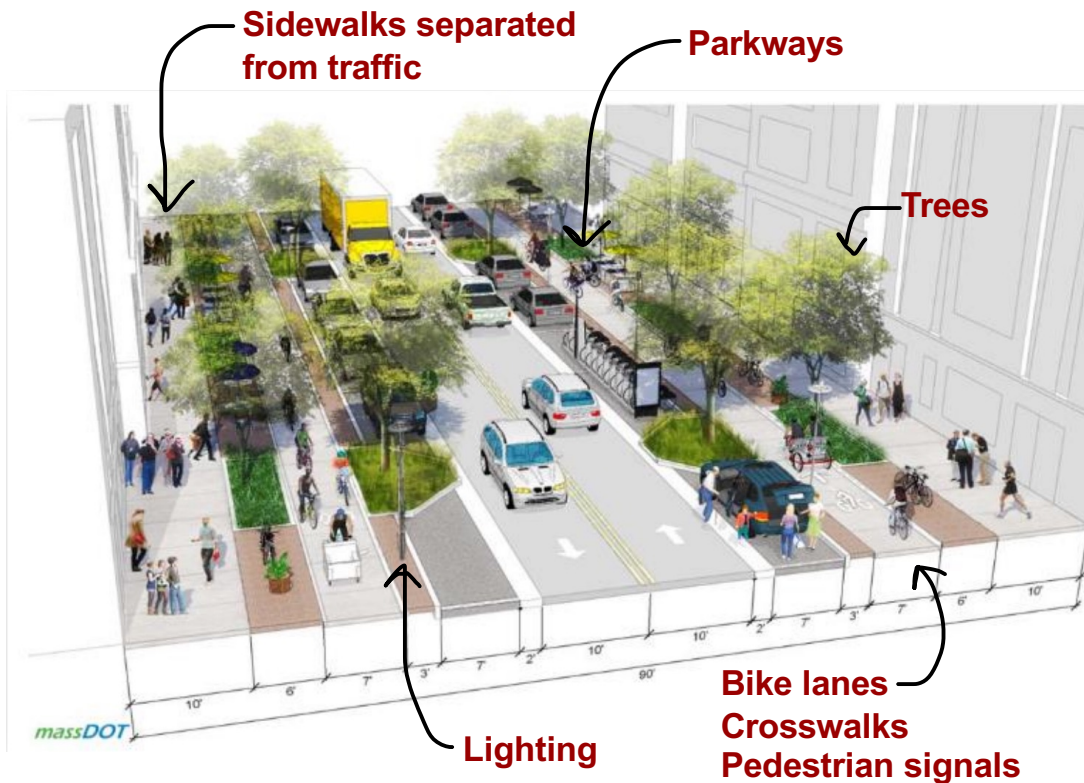
The Denver City Council on Monday gave final approval to [converting the billing structure](#) for Denver's voter-supported sidewalk repair and construction program to a flat \$150 for more than 95% of property owners next year, doing away with the highly variable billing approach outlined in the original measure.

Property owners with large lots will still pay more. The billing formula will add \$3.50 per foot to the annual cost for any property with more than 230 feet of street boundary.

<https://www.denver7.com/news/front-range/denver/denver-sidewalk-fees-clear-final-hurdle-billing-to-begin-in-2025#:~:text=The%20Denver%20City%20Council%20on,outlined%20in%20the%20original%20measure>

Opportunities

Operationalize Complete Streets: Safe, accessible networks, not patchworks



2019 survey from 43 transit agencies
86.5% lack of sidewalks impacts
transit accessibility (National Academies of
Sciences, Engineering, and Medicine, 2019)

Larger alterations (e.g., widening) –
city responsibility



<https://www.dnswm.org/a-lack-of-accessible-public-transportation-creates-isolation/>

MassDOT Complete Streets example provided in CalTrans Complete Streets
Elements Toolbox, July 2018

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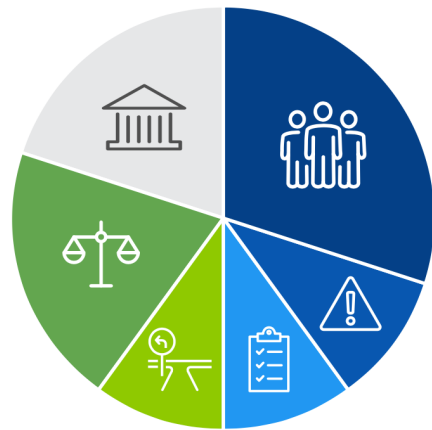
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Opportunities

Consider equity beyond prioritization frameworks



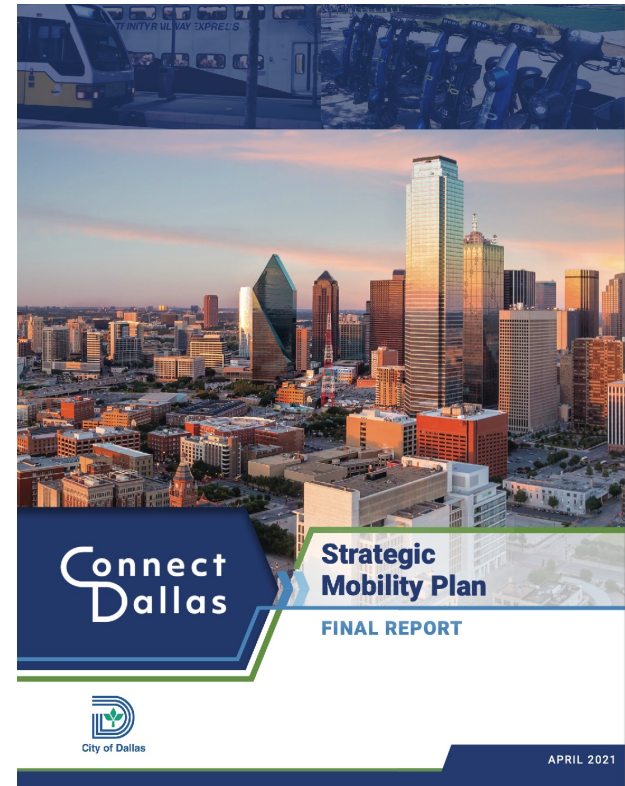
Property owner responsibility is regressive (Corning-Padilla & Rowangould, 2020)

Resource burden is more than financial (permitting, construction)

Health – quality of life, access to opportunities



Prioritization framework from Dallas Sidewalk Master Plan, June 2021



“equity” or “equitable” x 100
“health” or “healthy” x 2



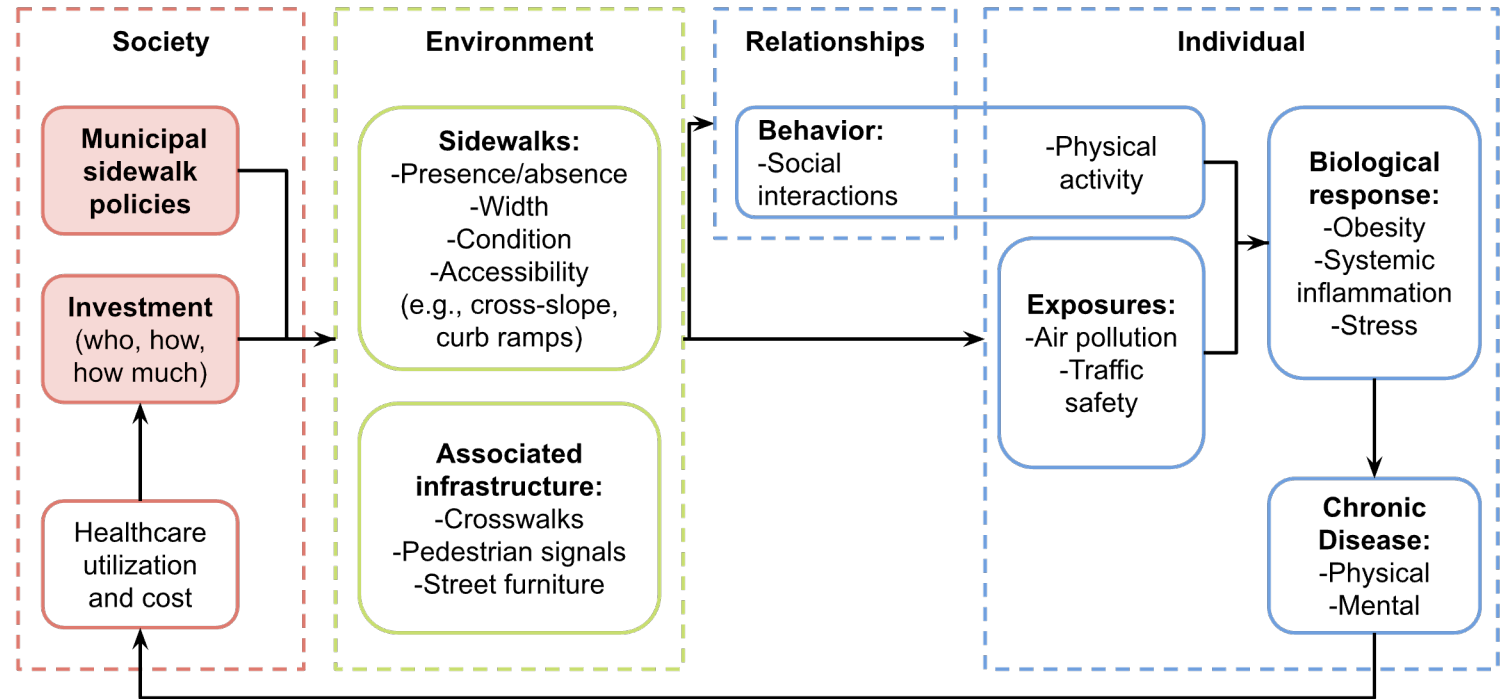
Opportunities

Equity: Sidewalks as a social determinant of health

Inadequate physical activity costs the U.S. \$117 billion annually (in 2012 dollars)

11% of aggregate health care expenditures

(U.S. Department of Health and Human Services, 2015)

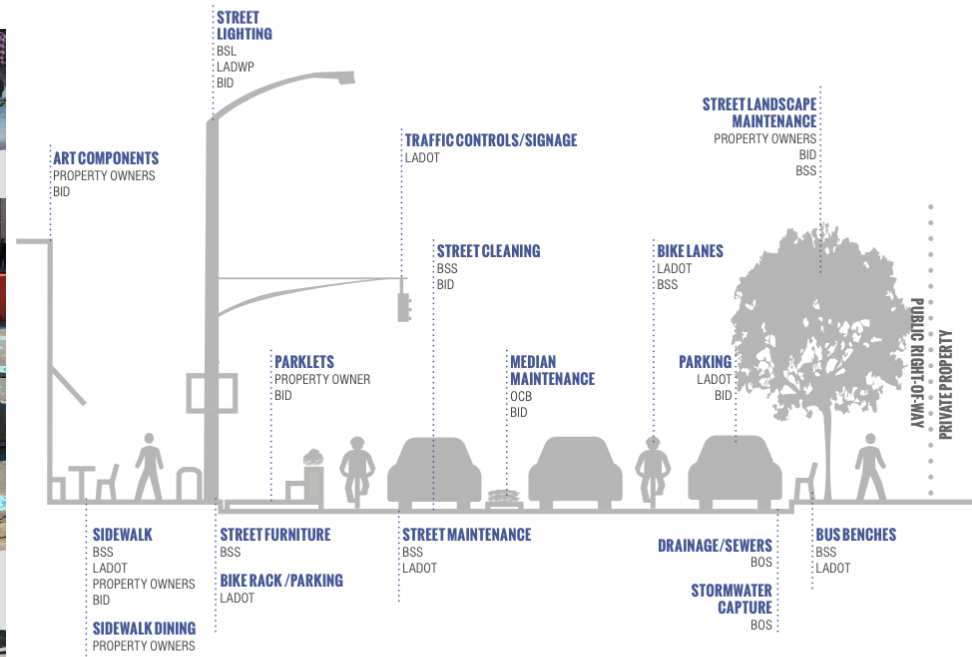


Theoretical framework based on the social-ecological model and adapted from Frank et al. (2019), the U.S. Department of Health and Human Services (2011) and Sallis et al. (2006).



Towards Equitable Networks

1. Centralize responsibility (with city), consider right-of-way holistically



LADWP (LA Department of Water and Power) delivers water, electricity, and power through utilities on and in the street.

LADOT (Department of Transportation) oversees transportation planning, street design, construction, maintenance, and operations of streets. Two programs that specifically support innovation in the public realm include the LADOT Bike Program which implements complete streets solutions for LA and LADOT's People St Program, which transforms underused areas of LA's 7,500 miles of streets to improve quality of life.

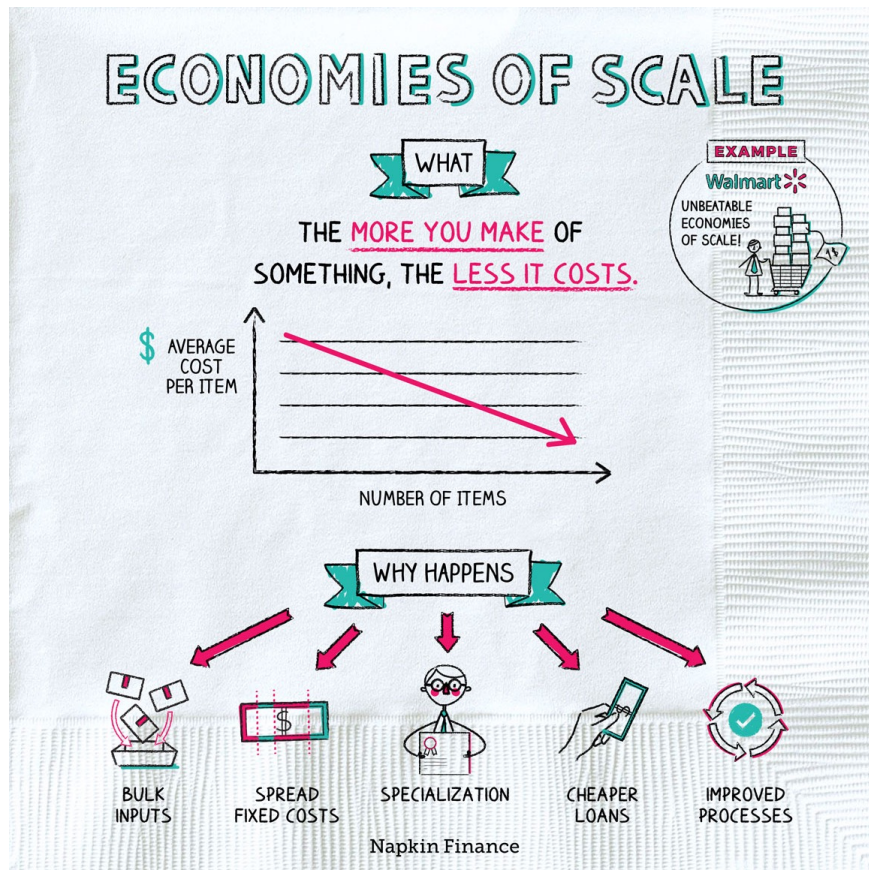
OCB (Office of Community Beautification) of the Board of Public Works encourages beautification efforts by volunteers, residents, community based organizations, and non-profit agencies.

DCP (Department of City Planning) oversees land use, mobility, and public space planning in streets.



Towards Equitable Networks

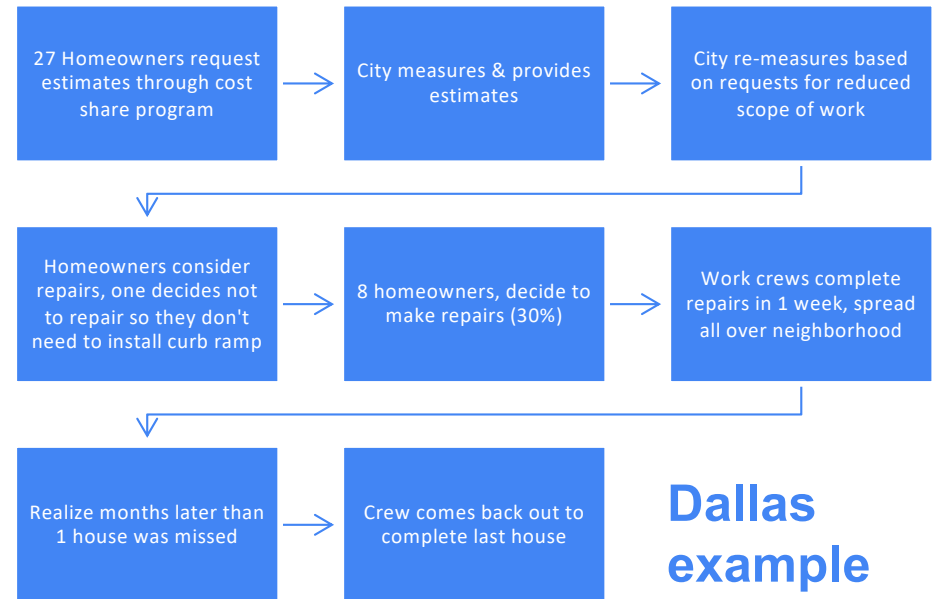
2. Increase efficiency



<https://napkinfinance.com/napkin/what-are-economies-of-scale/>

Limited funding can go further

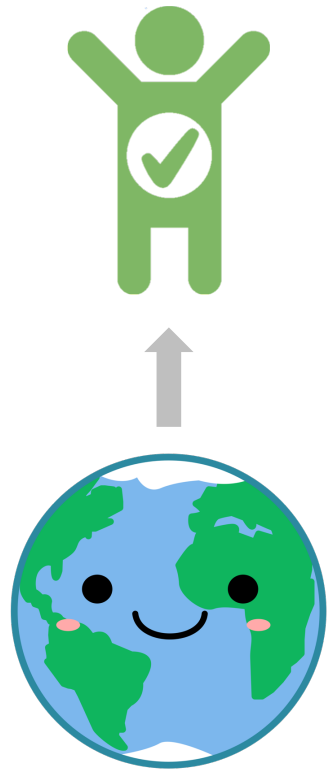
(Corning-Padilla & Rowangould, 2020)





Towards Equitable Networks

3. Identify additional funding



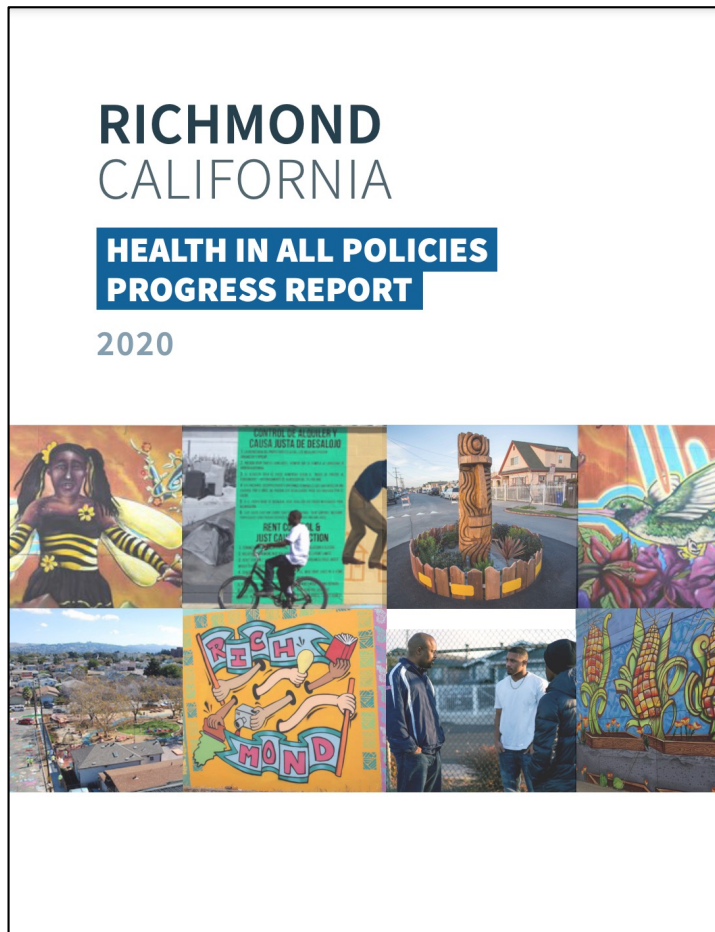
User fee on utility bills (Austin, Denver)
Commercial fees for sidewalk use (e.g., electric scooter parking)
Sales tax, property tax, gasoline tax (all still regressive)
(Corning-Padilla & Rowangould, 2020)

Consider health & environmental benefits!



Towards Equitable Networks

4. Connect to health



Health in All Policies (HiAP)

Work across silos

Understand tradeoffs

Charlotte – every \$1 spent on sidewalks results in almost \$3 in direct medical expenses

(City of Charlotte DOT, 2017)

State & Federal government

Delayed return on investment

[https://www.ci.richmond.ca.us/2575/Health-in-All-Policies#:~:text=Health%20in%20All%20Policies%20\(HiAP,related%20government%20systems%20or%20agencies.](https://www.ci.richmond.ca.us/2575/Health-in-All-Policies#:~:text=Health%20in%20All%20Policies%20(HiAP,related%20government%20systems%20or%20agencies.)

Towards Equitable Networks

5. Inventory sidewalks – proactive, regular

Austin – not always positive correlation between 311 requests and repair needs (City of Austin Public Works Dept, 2016)




Boston – some neighborhoods use 311 roughly twice as often as others (Irons, 2018)

San Bernardino County Transportation Authority, working with Fehr & Peers

MyLA 311

Your Connection to City Services & Information

MyLA311 connects residents, local businesses, and visitors to popular City services and information through its call center, website, & mobile app. Our mission is to connect people to City services and information, quickly and easily, via the communication channel of their choice.

-  Dial 311 or (213) 473-3231
MyLA311's Call Center is open Monday through Friday: 7am - 7pm & Weekends/Holidays: 8am - 5pm
-  Visit the MyLA311 Website
Need to reach us after hours? Submit requests online 24/7 at <https://myla311.lacity.org>.
-  Download the MyLA311 App
With the MyLA311 app, City services & info are just a few taps away. Available on the Google Play Store or Apple App Store.

I AM WHEEL. HEAR ME SQUEAK.



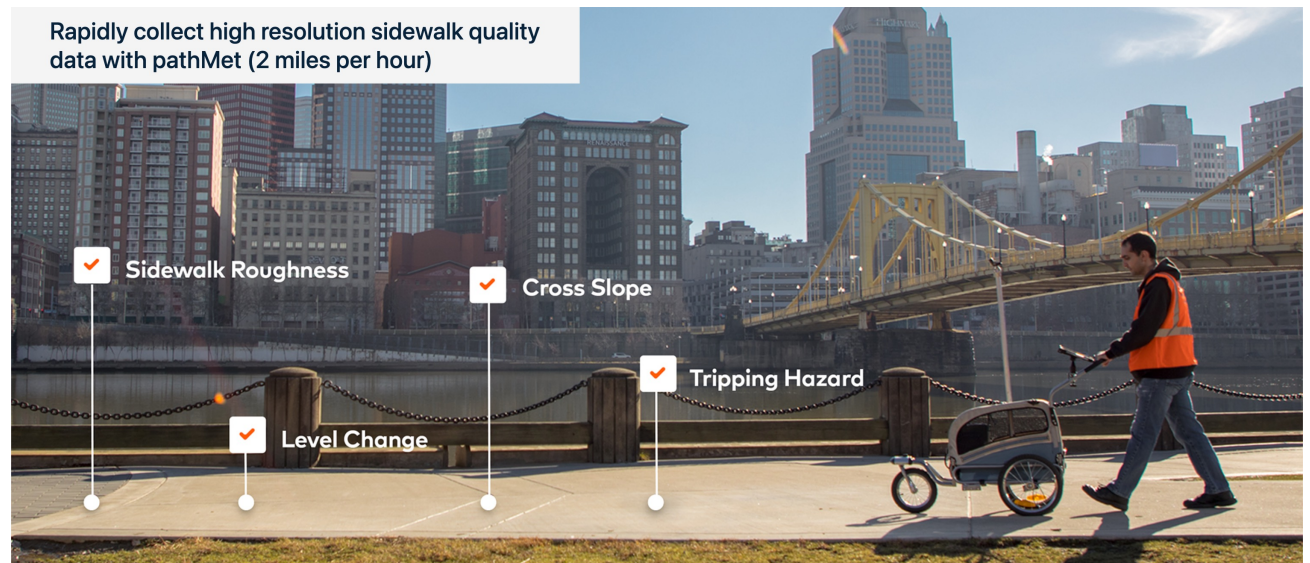
<https://www.linkedin.com/pulse/why-does-squeaky-wheel-squeek-briar-christensen>



Above: City of Seattle
Right: PathMet from pathVu

https://pathvu.com/why_datacollection.php

Rapidly collect high resolution sidewalk quality data with pathMet (2 miles per hour)





Towards Equitable Networks

5. Inventory sidewalks – proactive, regular

Find and label the following

Explore Curb Ramp Missing Curb Ramp Obstacle in Path Surface Problem Other

Zoom In Zoom Out Undo Redo

Current Neighborhood: Fort McNair, D.C. 0.0 miles 0 labels

Current Mission: Audit 1000ft of this neighborhood 15% complete

2 curb ramps, 0 missing curb ramp, 0 surface problem, 2 obstacles, 0 other

Follow the red line

Passable 1 2 3 4 5 Not Passable

Description (e.g., light pole blocking sidewalk)

Temporary (e.g., construction, trash)

Turn slightly towards right

1.8%
of target area mapped

0.7
miles covered

313
labels

328
validations



<https://projectsidewalk.org/>

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Towards Equitable Networks

6. Make a plan (that meets your goals)

HOW MUCH DOES DALLAS NEED?
PART 2

SIDEWALKS
\$ 976,486,028
over the next 40 years
\$ 976,486,028 / 40 = \$ 24,412,151
per year

Dallas Sidewalk Master Plan, June 2021



City of Dallas
Five-Year
Infrastructure Management
Program (IMP)
FY 2024 - 2028

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- **Improved Alley Maintenance Projects**

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- **Unimproved Alley Maintenance Projects**

Appendix F— Bridge Listing..... Pg. 252

- **Bridge Maintenance Program Projects**

City of Dallas Five-Year Infrastructure Management Program (IMP) FY 2024 - FY 2028

Dallas Sidewalk Master Plan (DSWMP)

The Department of Public Works is dedicated to improving and expanding Dallas' sidewalk network to create a more walkable, safe, and explorable city for all residents and visitors. The Dallas Sidewalk Master Plan used a data-driven strategic methodology that scored and prioritized sidewalk projects based on considerations of equity, places of public accommodation, street classification, citizen input, pedestrian safety, and activity areas. The Dallas Sidewalk Master Plan's 12 Focus Areas identified \$30 million in priority projects across all 14 Council Districts that is aimed at improving the city-wide pedestrian experience, increase accessibility, pedestrian safety and address sidewalk needs in historically underserved communities. The Sidewalk Master Plan completed was a process to identify the most impactful projects and provide guidance for decision makers on budgeting for both new construction and sidewalk repair projects. This FY 2024-2028 plan will discuss proposed program budget, project selection, and identifies planned projects through FY 2028.

Table 13- Proposed Five-Year IMP Sidewalk Maintenance Program Budgets

Program	FY 24	FY 25	FY 26	FY 27	FY 28	Total
Sidewalk – Community Development Block Grant (CDBG)	\$1.0M	\$0.0M	\$0.0M	\$0.0M	\$0.0M	\$1.0M
Sidewalk – General Funds	\$0.3M	\$0.3M	\$0.3M	\$0.3M	\$0.3M	\$1.5M
Sidewalk – Certificate of Obligation (CO)	\$4.0M	\$5.0M	\$5.0M	\$5.0M	\$5.0M	\$24.0M
Funding Total	\$5.3M	\$5.3M	\$5.3M	\$5.3M	\$5.3M	\$26.5M
Sidewalk Miles	7.3	11	11	11	11	51.3

* Note: Greyed out cells are subject to annual appropriations through the annual budget process

Program Budget

The FY 2024-2028 five-year plan has programmed \$26.5M to deliver approximately 51.3 miles of sidewalk improvements over the next five years. As shown in Table 13, the FY 2024 budget includes \$4 million of certificate of obligation, \$1 million of Community Development Block Grant (CDBG), and \$0.3 million of general funds for a total of \$5.3 million to continue the implementation of the City's Sidewalk Master Plan. Through this budget, the Department of Public Works will improve approximately 7.3 miles of sidewalk improvements focused on priority projects included in the Dallas Sidewalk Master Plan's 12 Focus Areas.



Towards Equitable Networks

7. Reconsider risk assessment

Los Angeles Times

CALIFORNIA

L.A. agrees to spend \$1.3 billion to fix sidewalks in ADA case



A buckled sidewalk at 4th and Main streets in downtown L.A. (Gary Friedman / Los Angeles Times)

By Emily Alpert Reyes
Staff Writer

April 1, 2015 3:34 PM PT

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ENTERTAINMENT & ARTS

Column: How Kamala Harris de-normalized Trump in less than 2 hours

ADVERTISEMENT



ADA, Trip & Fall

Liability varies by state

CA – *Gonzales v City of San Jose* (2004):
municipality can transfer liability to abutting property owner (shared in practice)

Address role of City Attorney

Balance risk *vs. reward*

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Towards Equitable Networks

8. Take advantage of existing policies, growing awareness & enthusiasm

LADOT
LIVABLE STREETS

ABOUT | **OUR PROGRAMS** | OUR PROJECTS | GET INVOLVED | MAPS

SAFETY PROGRAMS
Our streets should be safe, no matter how you get around.

- Vision Zero
- Active Transportation
- Safe Routes for Seniors
- Safe Routes to School

PUBLIC SPACE PROGRAMS
Streets can be more than just places to move people.

- Great Streets
- People St
- Play Streets
- Open Streets

<https://ladotlivablestreets.org/>
<https://yesonhla.com/>



Social Determinants of Health



<https://health.gov/healthypeople/priority-areas/social-determinants-health>

Social Determinants of Health
 Copyright-free Healthy People 2030

INFRASTRUCTURE INVESTMENT AND JOBS ACT

TACKLES THE MASSIVE BACKLOG TO FIX
ROAD, BRIDGES, AND HIGHWAYS
 THAT ARE IN POOR CONDITION



Conclusion

Sidewalks do so much for us, let's do more for them



<https://www.sociallifeproject.org/north-america-main-street-sidewalks/>

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Thank you!

Get in touch: Imessier@usc.edu



<https://www.sociallifeproject.org/north-america-main-street-sidewalks/>

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References

- Advocacy Advance. (2014). *How Communities are Paying to Maintain Trails, Bike Lanes, and Sidewalks*. Alliance for Biking & Walking, The League of American Bicyclists. <https://www.advocacyadvance.org/docs/Maintenance.pdf>
- Bise, R. D., Rodgers, J. C., Maguigan, M. A., Beaulieu, B., Keith, W., Maguigan, C. L., & Meng, Dr. Q. (2018). Sidewalks as measures of infrastructure inequities. *Southeastern Geographer*, 58(1), 39–57. <https://doi.org/10.1353/sgo.2018.0004>
- City of Austin Public Works Department. (2016a). *Sidewalk Master Plan/ADA Transition Plan Update*. City of Austin Transportation Department, MWM DesignGroup, HDR. <https://www.austintexas.gov/sites/default/files/files/Public Works/Street %26 Bridge/Sidewalk MPU Adopted 06.16.2016 reduced.pdf>
- City of Dallas, Texas Code of Ordinances, Volume 2 §43-63 (2023)
- City of Dallas. (2021). *Dallas sidewalk master plan*. Kimley Horn. <https://engagekh.com/dallassidewalks>.
- City of Memphis. (2015). *Memphis Pedestrian and School Safety Action Plan*. Alta Planning + Design, Powers Hill Design, LLC, Kimley-Horn and Associates, Inc., The Center for Partnerships in GIS, The University of Memphis. https://bikepedmemphis.wordpress.com/wp-content/uploads/2015/06/mpss_action_plan_final_optimized.pdf
- Corning-Padilla, A., & Rowangould, G. (2020). Sustainable and equitable financing for sidewalk maintenance. *Cities*, 107, 102874. <https://doi.org/10.1016/j.cities.2020.102874>
- DeAngelis, R. T., Hargrove, T. W., & Hummer, R. A. (2022). Skin tone and the health returns to higher status. *Demography*, 59(5), 1791–1819. <https://doi.org/10.1215/00703370-10191675>
- Frank, L. D., Iroz-Elardo, N., MacLeod, K. E., & Hong, A. (2019). Pathways from built environment to health: A conceptual framework linking behavior and exposure-based impacts. *Journal of Transport & Health*, 12, 319–335. <https://doi.org/10.1016/j.jth.2018.11.008>
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine*, 7(7), e1000316. <https://doi.org/10.1371/journal.pmed.1000316>
- Huber, T., Luecke, K., Hintze, M., Coffman, V., Toole, J. & VanOosten, M. (2013). *Guide for Maintaining Pedestrian Facilities for Enhanced Safety*. U.S. Department of Transportation, Federal Highway Administration.
- Irons, M.E. (2018, March 4). Sidewalks tell of two Bostons: Analysis sees clear disparity between rich, poor areas." *Boston Globe*. http://epaper.bostonglobe.com/infinity/article_popover_share.aspx?guid=61ccb2b6-ca4f-4933-bda7-551678a923a0
- Kelly, C. M., Schootman, M., Baker, E. A., Barnidge, E. K., & Lemes, A. (2007). The association of sidewalk walkability and physical disorder with area-level race and poverty. *Journal of Epidemiology & Community Health*, 61(11), 978–983. <https://doi.org/10.1136/jech.2006.054775>
- Landrigan, P. J., Fisher, S., Kenny, M. E., Gedeon, B., Bryan, L., Mu, J., & Bellinger, D. (2022). A replicable strategy for mapping air pollution's community-level health impacts and catalyzing prevention. *Environmental Health*, 21(1), 70. <https://doi.org/10.1186/s12940-022-00879-3>
- National Academies of Sciences, Engineering, and Medicine. (2019). *A research roadmap for transportation and public health*. National Cooperative Highway Research Program. <https://nap.nationalacademies.org/catalog/25644/a-research-roadmap-for-transportation-and-public-health>
- Pellow, D. N. (2016). TOWARD A CRITICAL ENVIRONMENTAL JUSTICE STUDIES: Black Lives Matter as an Environmental Justice Challenge. *Du Bois Review: Social Science Research on Race*, 13(2), 221–236. <https://doi.org/10.1017/S1742058X1600014X>
- Sallis, J. F., Cerin, E., Kerr, J., Adams, M. A., Sugiyama, T., Christiansen, L. B., Schipperijn, J., Davey, R., Salvo, D., Frank, L. D., De Bourdeaudhuij, I., & Owen, N. (2020). Built environment, physical activity, and obesity: Findings from the International Physical Activity and Environment Network (IPEN) Adult Study. *Annual Review of Public Health*, 41(1), 119–139. <https://doi.org/10.1146/annurev-publhealth-040218-043657>



References

- Smart Growth America. (2024). *Dangerous by design*. National Complete Streets Coalition. <https://smartgrowthamerica.org/dangerous-by-design/>
- Speck, J. (2012). *Walkable city: How downtown can save America, one step at a time*. North Point Press.
- Talen, E., & Koschinsky, J. (2013). The walkable neighborhood: A literature review. *International Journal of Sustainable Land Use and Urban Planning*, 1(1). <https://doi.org/10.24102/ijslup.v1i1.211>
- U.S. Department of Health and Human Services. (2011). *Principles of community engagement 2nd edition* (NIH Publication No. 11-7782). National Institutes of Health. https://www.atsdr.cdc.gov/communityengagement/pdf/PCE_Report_508_FINAL.pdf
- . (2015). *Step it up! The surgeon general's call to action to promote walking and walkable communities*. U.S. Public Health Service, Office of the Surgeon General. <https://www.hhs.gov/sites/default/files/call-to-action-walking-and-walkable-communities.pdf>
- . (2018). *Physical activity guidelines for Americans* (2nd edition). <https://health.gov/our-work/physical-activity/current-guidelines>
- Wang, F., Gao, Y., Han, Z., Yu, Y., Long, Z., Jiang, X., Wu, Y., Pei, B., Cao, Y., Ye, J., Wang, M., & Zhao, Y. (2023). A systematic review and meta-analysis of 90 cohort studies of social isolation, loneliness and mortality. *Nature Human Behaviour*, 7(8), 1307–1319. <https://doi.org/10.1038/s41562-023-01617-6>