TARTU KLIIMAKOGU

Kuidas luua head (tänava)ruumi?

Tõnis Savi
Arhitekt
Linnalise liikumisruumi ekspert

Liikuvusagentuur OÜ
Elav Tänav MTÜ
Eesti Linnaratturite Liit MTÜ

KUIDAS TEHA HEAD (TÄNAVA)RUUMI?

- **Mis on tänav?**
- **Kes kasutavad tänavat?**
- **Millest pihta hakata?**
- **Mida me oleme valesti teinud?**
- **Kuidas innustada jalgsi liikujat?**
- **Kuidas ohjata autoliiklust?**
- **Mis on mõjud?**

Linn on loodud inimestele!

Lihtne tõde, mida kipume unustama

1.1 | What is a Street

A street is the basic unit of urban space through which

Streets are like outdoor rooms shaped by multiple planes: the
the roadbed edges
he ceiling of the
idual elements
of different
ices.
eet as either
e approach to
lanes, and travel
der to function

economic activity, and cultural significance.

effectively, interchangeable elements such as parking spaces,
klets, and transit stops allow a street to be adapted
s context. The terms below broaden the definition of

Defining Streets
What is a Street

Service Infrastructure

The utilities and services provided within the space of the right-of-way.

Street Activity

Social interactions, neighborhood activities, and citywide events that take place within the street.

Street Furniture

The objects, elements, and structures placed within the street.

Building Edges

The collection of building facades, windows, setbacks, signs, and awnings that define each side of the street.

Right–of–Way

The entire distance from building edge to building edge.

Sidewalk

Dedicated space with clear walking paths and universal access used for a variety of activities and functions. *See 6.3.4: Sidewalks.*

Roadbed

The space between the two sidewalks that can be designed to carry various modes of transportation and their ancillary facilities.

Transit Facilities

Dedicated space within the roadbed for different types of transit to travel on. *See 6.5.4: Transit Facilities.*

Travel Lanes

The dedicated space within the roadbed for motorized vehicles to move on. *See 6.6.4: Travel Lanes.*

Ancillary Lanes

Dedicated spaces for stationery cars, cycles, transit vehicles, loading and unloading zones.

Cycle Facilities

Dedicated space for cyclists to travel. This can be within or separate from the roadbed. *See 6.4.4: Cycle Facilities.*

Planting

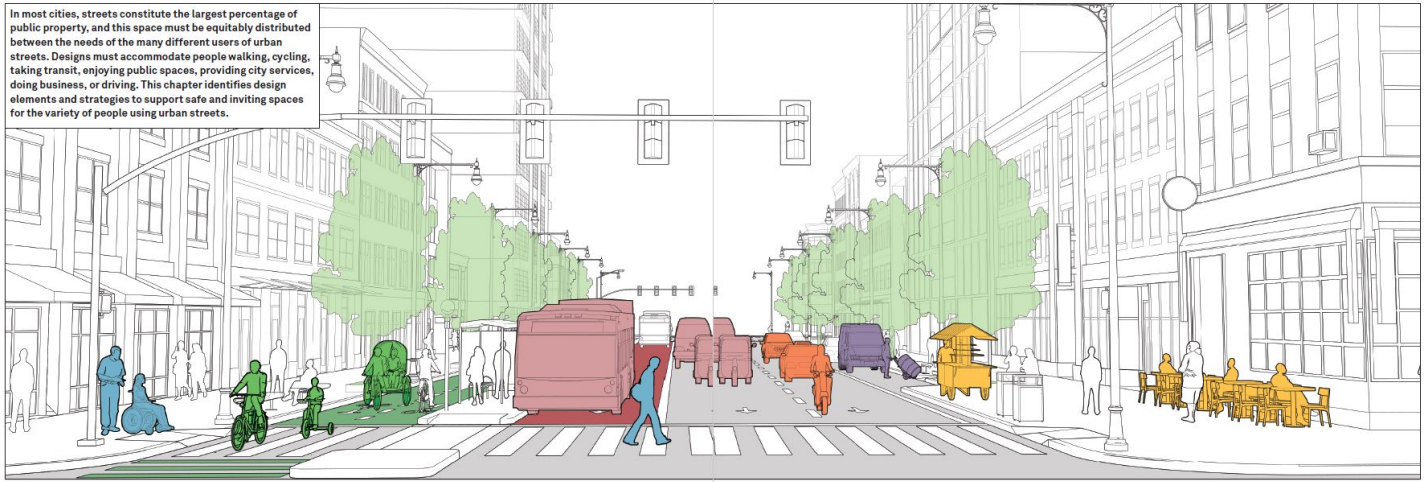
Trees, planting beds, and green infrastructure within the sidewalk, between parking spaces, or in medians. *See 7.2: Green Infrastructure.*

Millest tänav koosneb?

Kellest tänav koosneb?

6.1 | A Variety of Street Users

In most cities, streets constitute the largest percentage of public property, and this space must be equitably distributed between the needs of the many different users of urban streets. Designs must accommodate people walking, cycling, taking transit, enjoying public spaces, providing city services, doing business, or driving. This chapter identifies design elements and strategies to support safe and inviting spaces for the variety of people using urban streets.



Pedestrians

Pedestrians include people of all abilities and ages, sitting, walking, pausing, and resting within urban streets. Designing for pedestrians means making streets accessible to the most vulnerable users. Design safe spaces with continuous, unobstructed sidewalks. Include visual variety, engage building frontages, design for human scale, and incorporate protection from extreme weather to ensure an enjoyable street experience.

Cyclists

Cyclists include people on bicycles, cycle-rickshaws, and cargo bikes. Facilities should be safe, direct, intuitive, clearly delineated, and part of a cohesive, connected network to encourage use by people of all ages and confidence levels. Cycle tracks that create an effective division from traffic, are well coordinated with signal timing, and are incorporated in intersection design form the basis of an accessible and connected cycle network.

Transit Riders

Transit riders are people using collective transport such as rail, bus, or small collective vehicles. This sustainable mode of transportation dramatically increases the overall capacity and efficiency of the street. Dedicated space for transit supports convenient, reliable, and predictable service for riders. Accessible boarding areas promote safe and equitable use. The space dedicated to a transit network should be aligned with demand, meeting service needs without sacrificing streetscape quality.

Motorists

Motorists are people driving personal motor vehicles for on-demand, point-to-point transportation. This includes drivers of private cars, for-hire vehicles, and motorized two-and three-wheelers. Streets and intersections must be designed to facilitate safe movement and manage interactions between motor vehicles, pedestrians, and cyclists.

Freight Operators and Service Providers

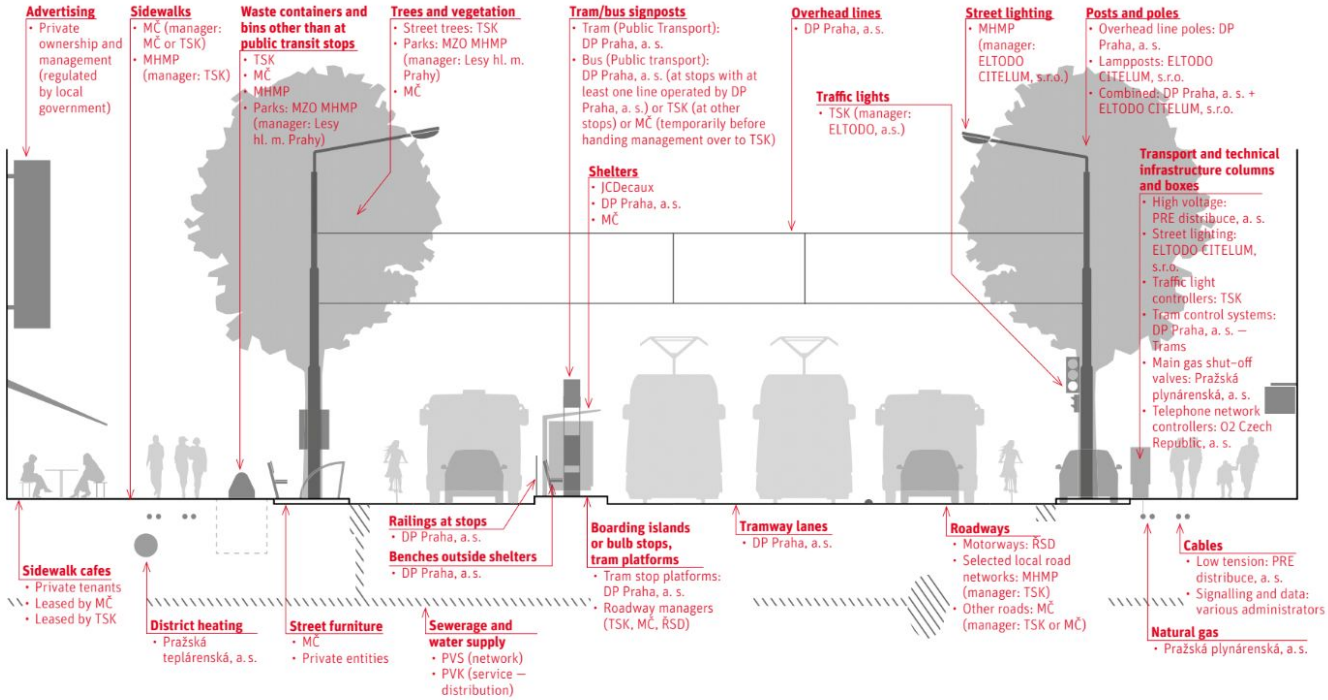
Freight operators and service providers are people driving vehicles that move goods or conduct critical city services. These users benefit from dedicated curb access and allocation of space for easy loading and unloading as well as dedicated routes and hours of operation. Emergency responders and cleaning vehicles need adequate space to operate, which must be accommodated while ensuring the safety of all other street users.

People Doing Business

People doing business include vendors, street stall operators, and owners or renters of commercial storefronts. These users provide important services that support vibrant, active, and engaging street environments. Adequate space should be allocated to these uses. Provide regular cleaning, maintenance schedules, power, and water to support commercial activity and improve local quality of life.

Kellele tänav kuulub?

Diagram of ownership and management of the various parts and elements of public space



[MČ = Municipal District; MHMP = City of Prague; TSK = Technical Administration of Roads; MZO MHMP = City Greenery Department; Lesy hl. m. Prahy = Prague Forest Management; DP Praha, a. s. = Prague Public Transport Company; ŘSD = Road and Motorway Directorate; PVS = Prague Water Management Company; PVK = Prague Water Supply and Sewerage Company]


TÄNAV


Tänav on meie kõigi ühine eluruum

Something happens
because something
happens because
something happens

Jan Gehl

Kuidas luua head (tänava)ruumi?

- **Ülesande püstitus / probleemide analüüs**
- **Kontekst**
- **Kasutajad**

- **P**roblem
- **O**rigin (cause)
- **G**oal (objective)
- **S**olution
- **E**valuation

Probleem
Põhjus
Eesmärk
Lahendus
Hindamine

POGSE on akronüüm, kus tähed tähistavad:
* Problem - Millist probleemi me lahendama hakkame?
* Origin - Kust probleem tuleb? Mis on selle põhjused?
* Goal - Millist tulemust soovime saavutada ja kuidas me seda mõõdame?
* Solution - Võimalike lahenduste väljatöötamine, testimine ja rakendamine.
* Evaluation - Ning viimaks hindamine: kuidas saame mõõta, kas pakutud lahendus töötas?

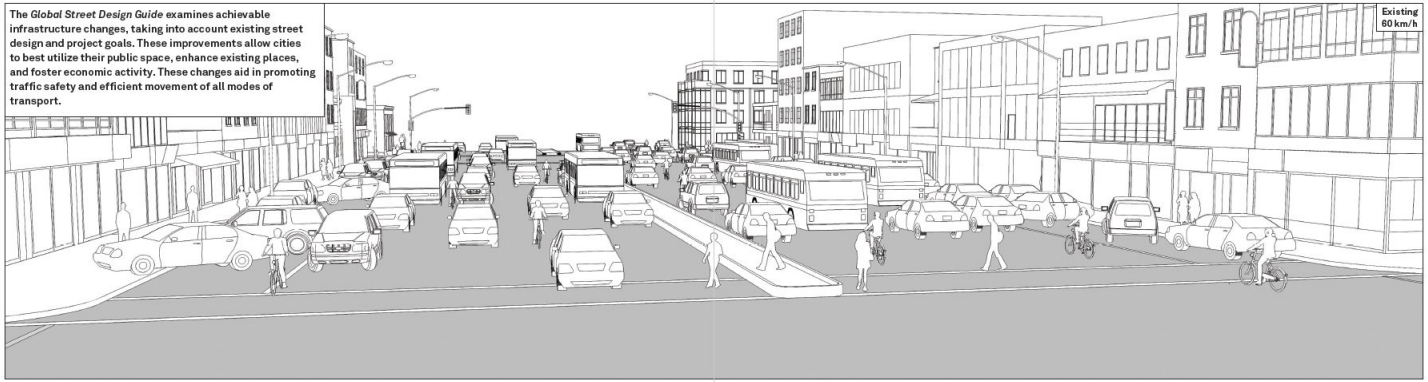
Sisuliselt on tegemist ühe disainmõtlemise versiooniga, kus mitmetahulise probleemi lahendamise aluseks on kasutajate mõistmine ning kus lahenduse ellu viimisele eelneb põhjalik uurimise ja prototüüpimise faas. Disainmõtlemise meetodi kasutamine probleemi lahendamisel on tänapäeval laialt levinud lähenemine, mida kasutavad erinevat tüüpi organisatsioonid, idufirmadest ja pankadest, muuseumite ja ministeeriumiteni.

https://www.mnt.ee/sites/default/files/content-editors/Failid/Juhendid/ehitus/safe_road_design_manual_final.pdf

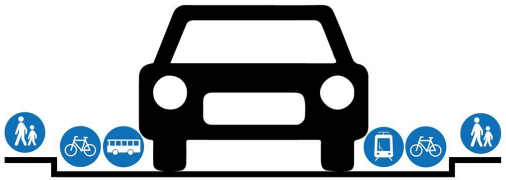

Mida me täna
valesti teeme?

1.8 | What is Possible

The *Global Street Design Guide* examines achievable infrastructure changes, taking into account existing street design and project goals. These improvements allow cities to best utilize their public space, enhance existing places, and foster economic activity. These changes aid in promoting traffic safety and efficient movement of all modes of transport.

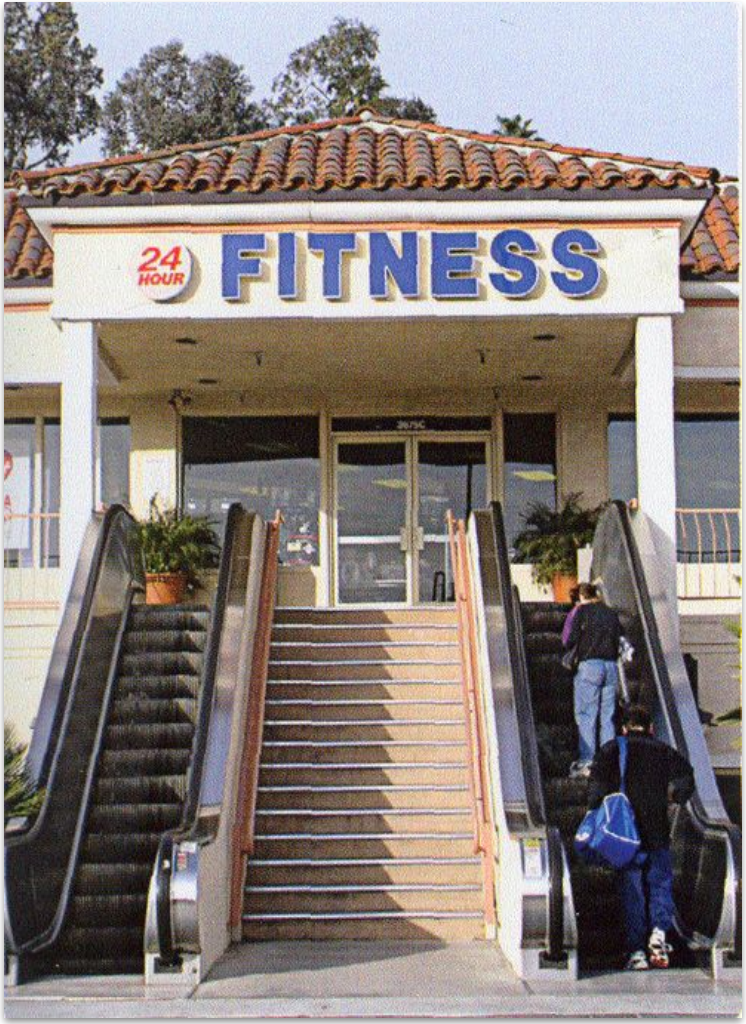


Defining Streets
What is Possible

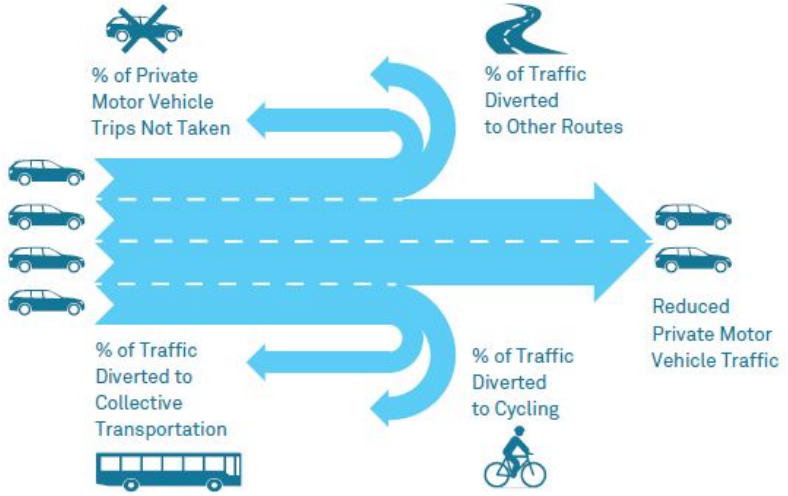


How most traffic engineers see your city

https://www.autocar.co.uk/car-news/features/investigation-why-are-cars-becoming-so-wide

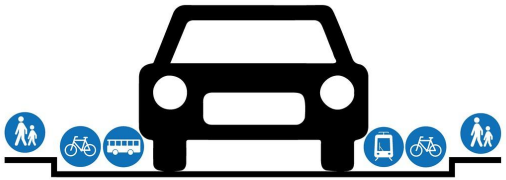

24 HOUR
FITNESS

Cities must make investments that consider the life of major infrastructure investment and account for anticipated future growth and development. Yet, traditional traffic forecasting substantially overestimates traffic growth. Even as trends show otherwise, many transportation models still assume an upward trend in traffic demand, accepting more vehicle kilometers traveled as inevitable. Instead, cities must link design capacity for each mode to the desired mode split and activity on a street. Capacity should be measured based on total person capacity rather than vehicle level of service, using vehicle capacity to understand operational decisions.



Traffic Evaporation. Research shows that when road capacity is shifted to other modes, some peak-period traffic disappears from the network. Drivers shift to other modes, make trips at other times, or shift destinations.

Planeeritud keskkond mõjutab inimeste liikumisotsuseid



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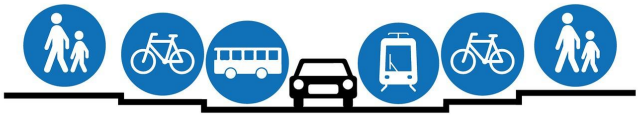
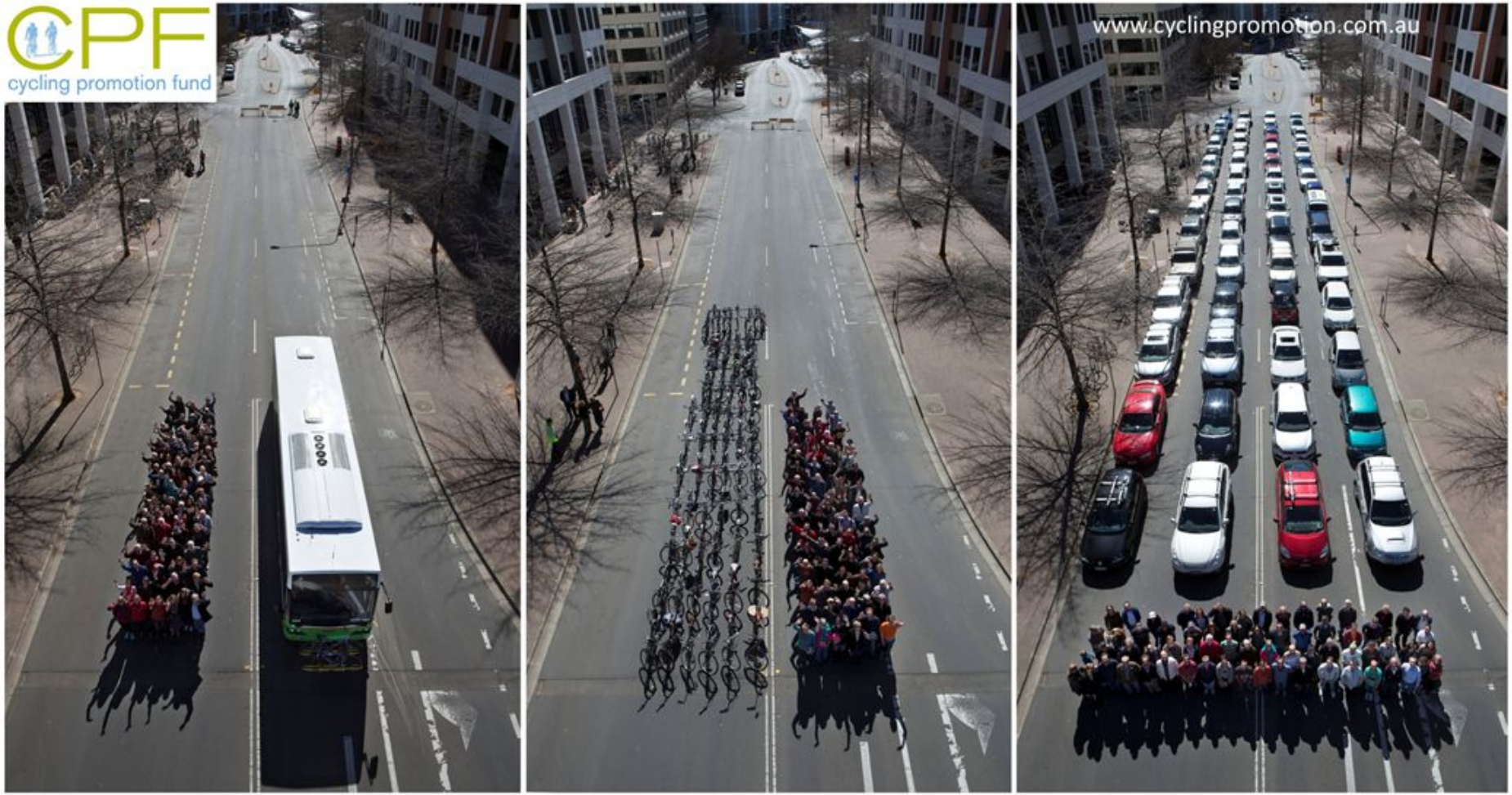


How cities should be designed

COPEN
HAGEN
IZE
EU

Copenhagenize Design Co.
2013

CPF
cycling promotion fund



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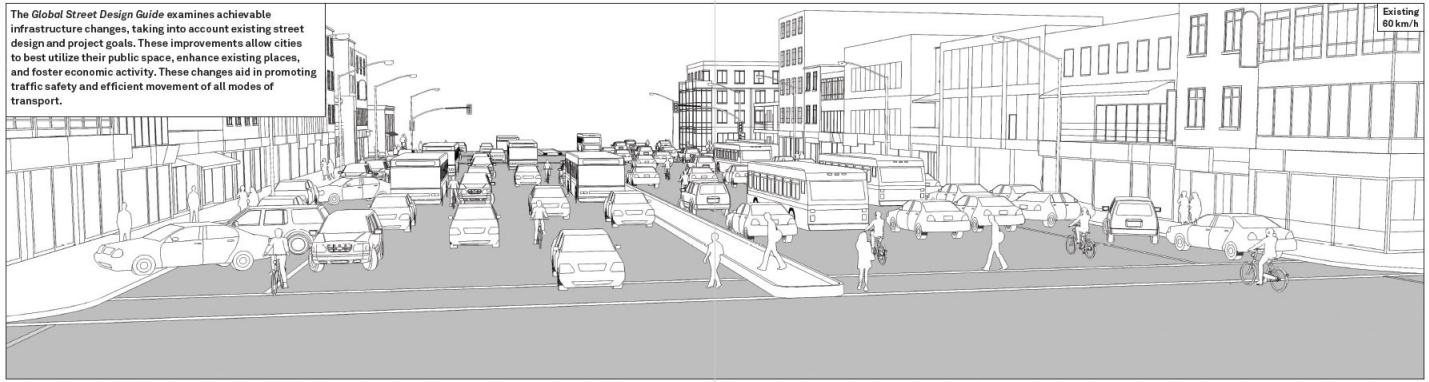
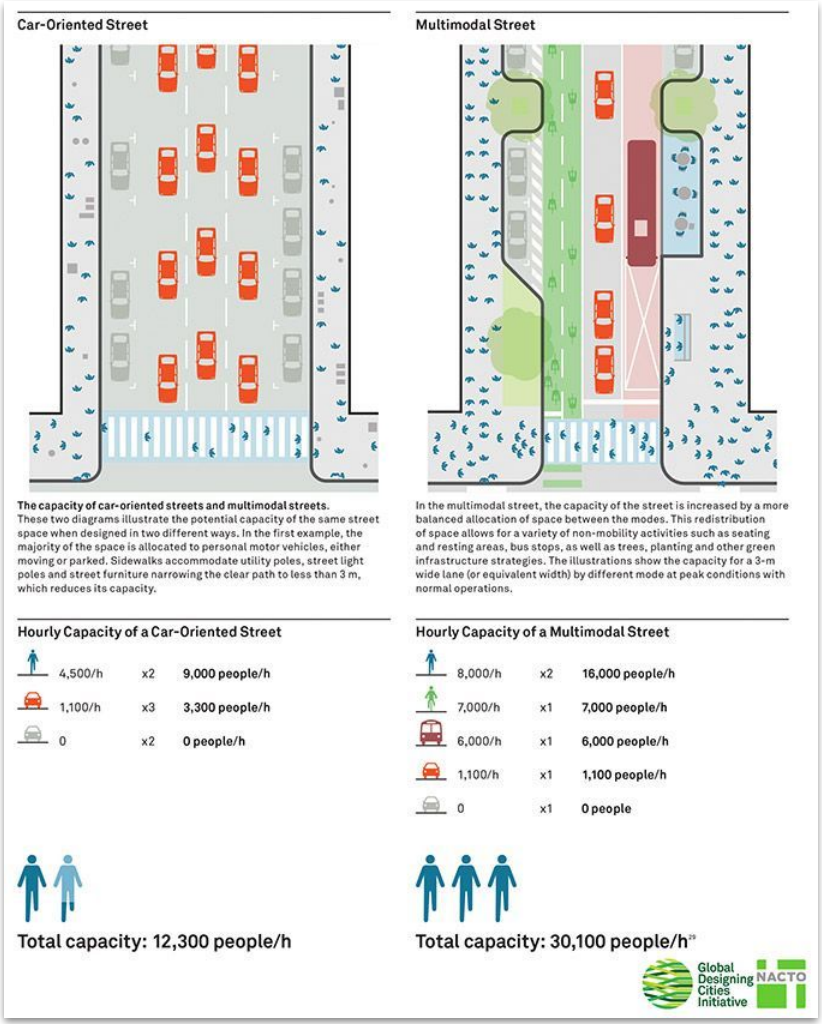


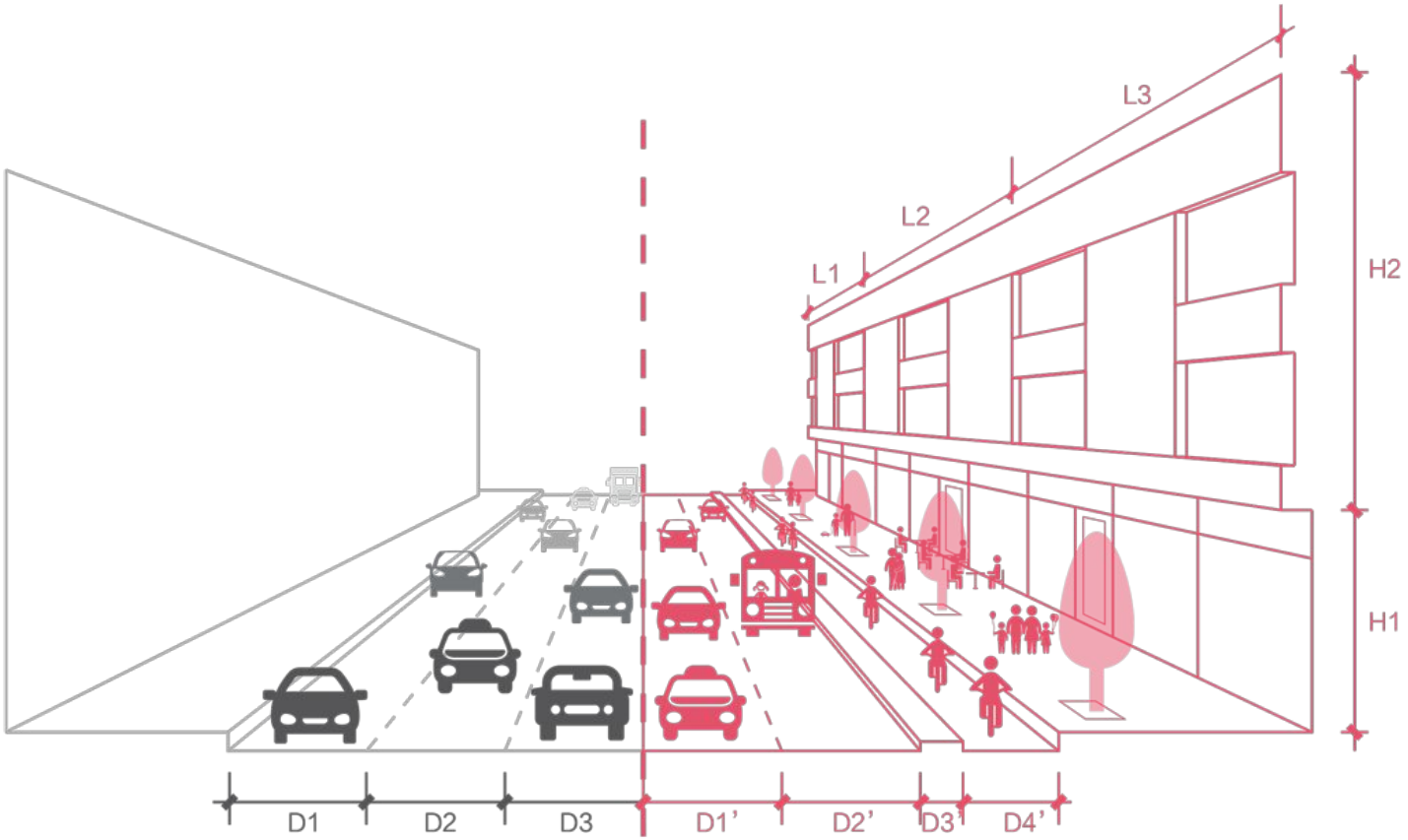
- Invite Street Activity
- Change Street Geometry
- Create Cycle Facilities
- Add Seating
- Add or Improve Pedestrian Crossings
- Add Energy-Efficient Lighting
- Improve Signals
- Enhance Enforcement
- Organize Transit
- Integrate Public Artwork
- Connect Walking Networks
- Upgrade Materials
- Reduce Speed Limits
- Add Green Infrastructure
- Provide Street Furniture
- Include Wayfinding
- Activate Ground Floors
- Provide Climate Protection

Defining Streets
What is Possible

LÄBILASKVUS…

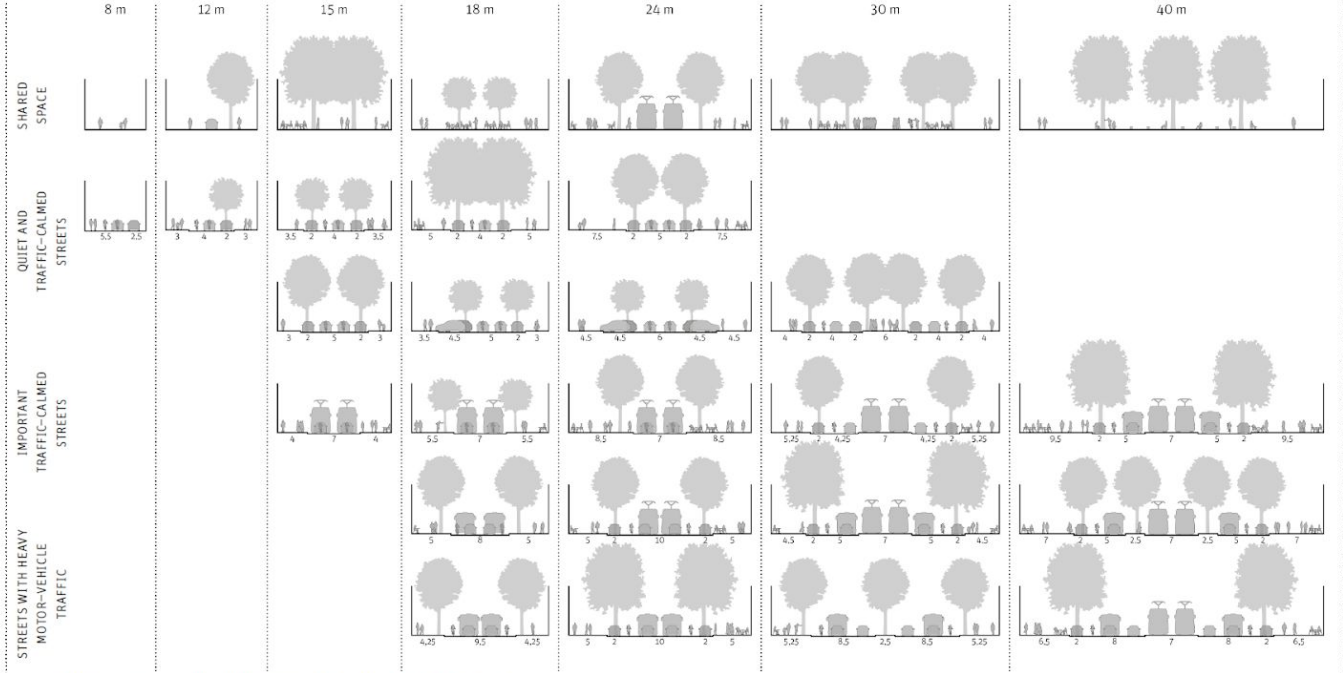


Kontekst



https://gehlpeople.com/blog/street-design-guidelines-for-shanghai/

[DIAGRAM: STREETSCAPES]



s04 EXAMPLES OF STREETSCAPES AND HOW TRAFFIC LAYOUT AFFECTS THEIR CHARACTER
The table below shows possible layouts of streets depending on street width.

A New Approach to Street Design

A new approach to street design, based on people and place, demonstrates the possible transformation of existing streets into great urban places.

Streets are catalysts for urban transformation. The *Global Street Design Guide* presents techniques and strategies currently being pioneered by the world's foremost urban designers and engineers.

The guide is based on the principle that streets are public spaces for people as well as corridors for movement, marking a shift away from a functional classification of streets categorized only according to their ability to move traffic and provide vehicular access. Instead, it embraces an approach based on local context, the needs of multiple users, and larger social, economic, and environmental goals.

Place

Examine how the built, natural, social, cultural, and economic context of a street defines the physical scale and character of the space. Look at how the surrounding land uses, densities, and [illegible] influence mobility and use patterns. *See 5: Designing Streets for Place.*

KOHT

People

Identify the people who use a street today and quantify when and how they use it. Determine the desired breakdown of users and activities for future street conditions and assess the [illegible] needs. *See 6: Designing Streets for People.*

INIMESED

Street Design

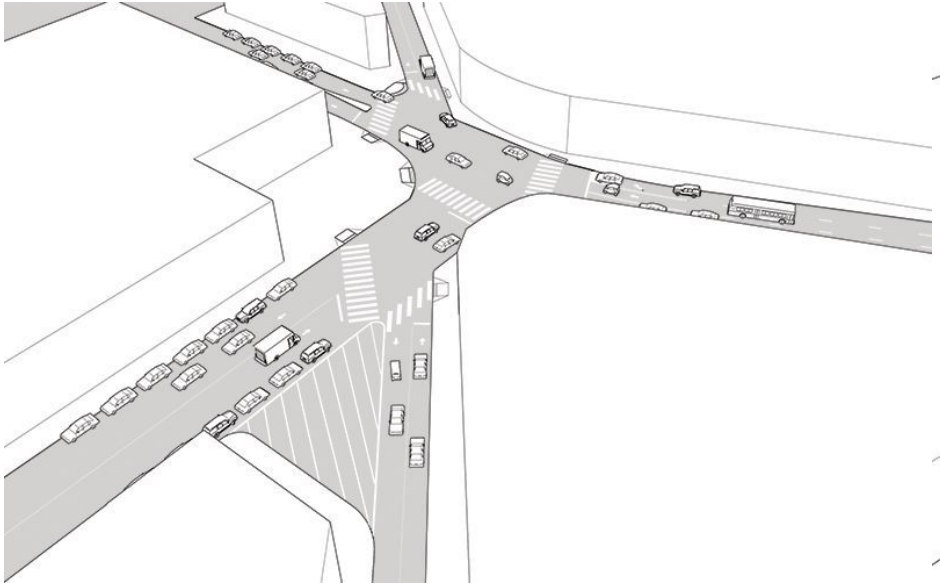
TÄNAVADISAIN

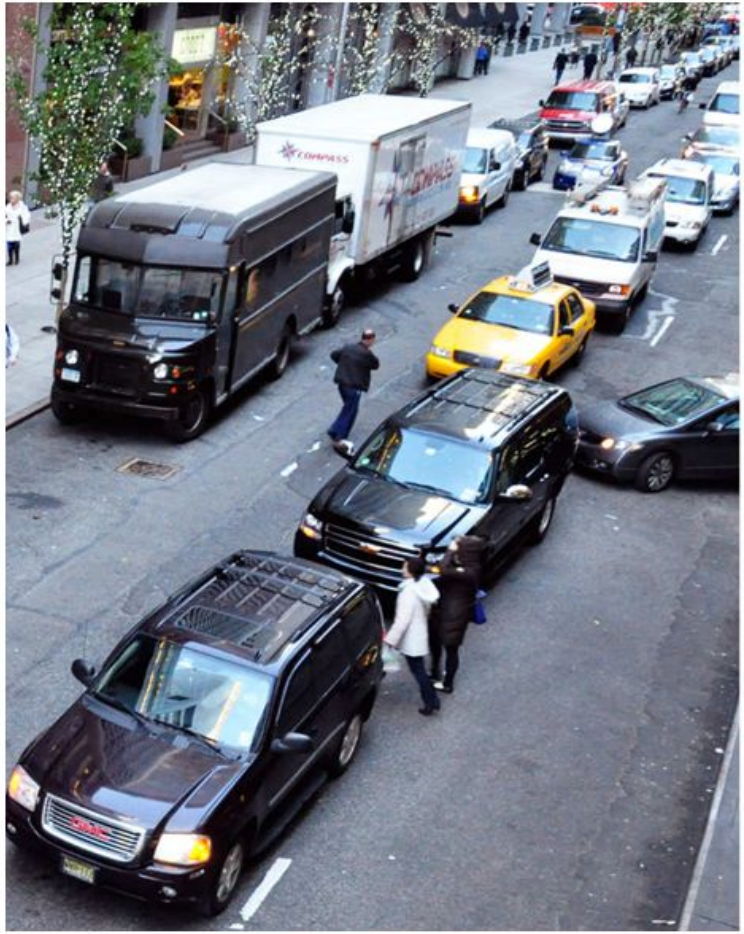
MÕJU

Impact

Urban streets should serve the demands of more people than they do today. They must be designed to support the myriad challenges cities will face in coming years, contributing to citywide goals and desired outcomes in the following areas.

- Public Health and Safety
- Quality of Life
- Environmental Sustainability
- Economic Sustainability
- Social Equity





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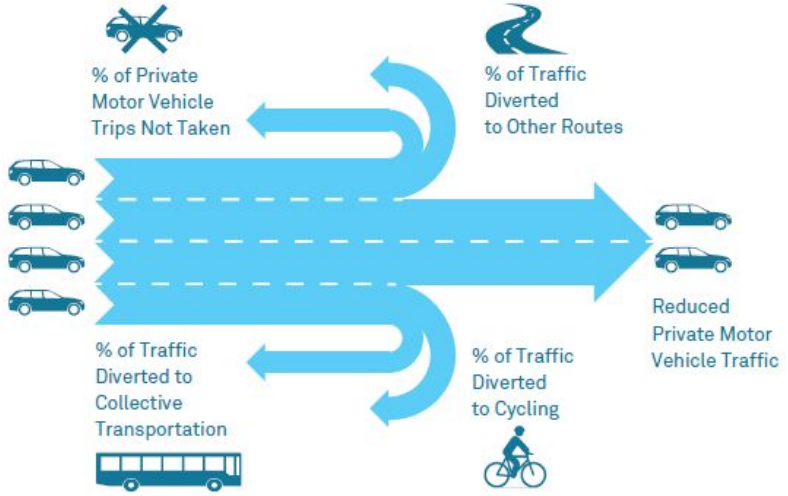

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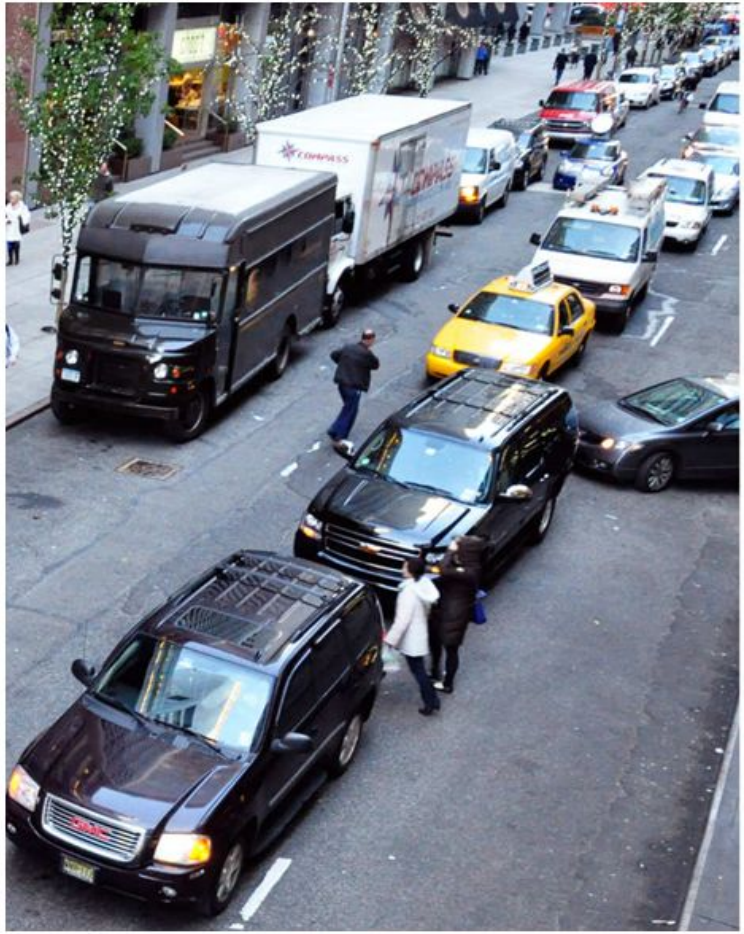
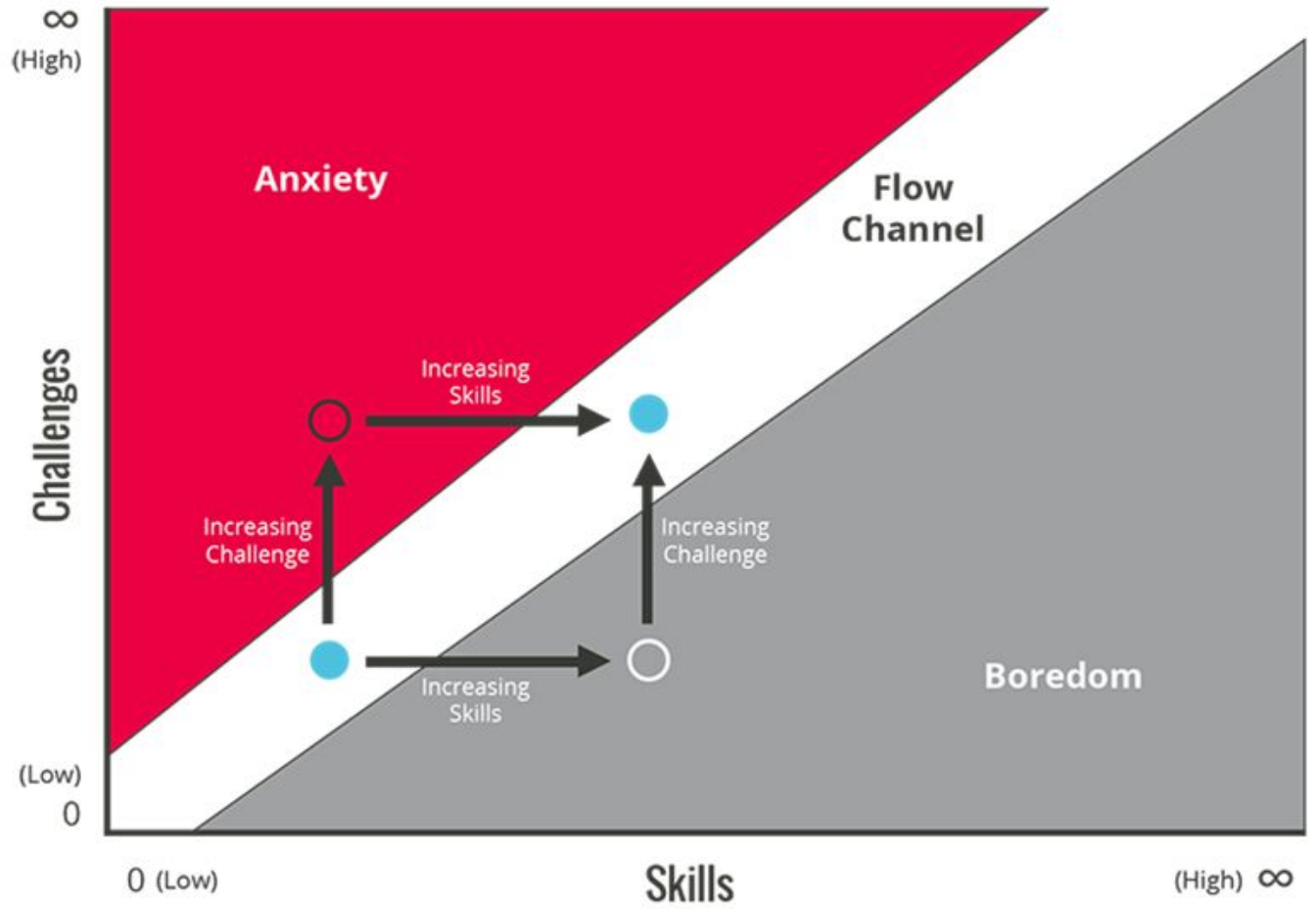
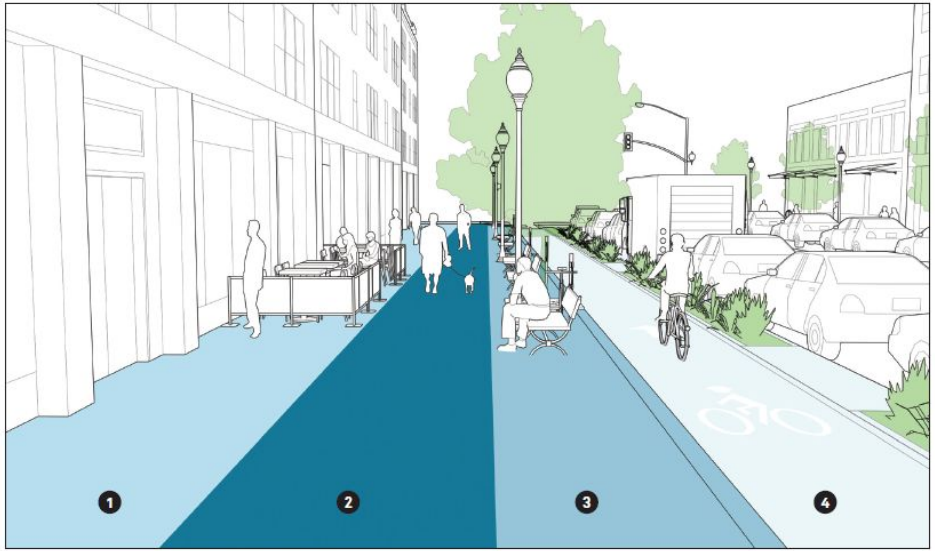
Planeeritud keskkond mõjutab inimeste liikumisotsuseid

Jalgsi liikuja / 8...80 aastane





Mihaly Csikszentmihalyi, Flow Channel, Adapted from 1990 Flow: The Psychology of Optimal Experience



Frontage Zone

1 The frontage zone defines the section of the sidewalk that functions as an extension of the building, whether through entryways and doors or sidewalk cafés and sandwich boards. The frontage zone consists of both the facade of the building fronting the street and the space immediately adjacent to the building.

Clear Path

2 The pedestrian clear path defines the primary, dedicated, and accessible pathway that runs parallel to the street. The clear path ensures that pedestrians have a safe and adequate place to walk and should be **1.8–2.4 m** wide in residential settings and **2.4–4.5 m** wide in downtown or commercial areas with heavy pedestrian volumes.

Street Furniture Zone

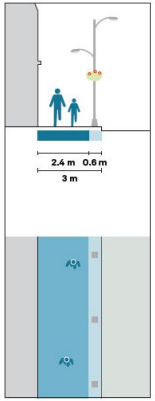
3 The street furniture zone is defined as the section of the sidewalk between the curb and the clear path, in which street furniture and amenities such as lighting, benches, newspaper kiosks, transit facilities, utility poles, tree pits, and cycle parking are provided. The street furniture zone may also contain green infrastructure elements such as rain gardens, trees, or flow-through planters.

Buffer Zone

4 The enhancement or buffer zone is defined as the space immediately next to the sidewalk, and may consist of a variety of different elements. These include curb extensions, parklets, stormwater management features, parking, cycle racks, cycle share stations, and curbside cycle tracks.

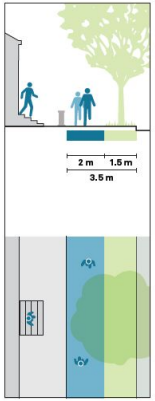

Service zone
Free zone
Transition zone

Geometry



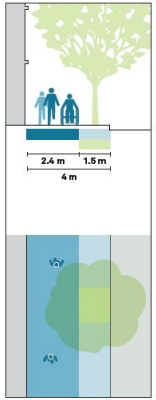
Narrow Sidewalk

Quiet streets in low-density contexts might have too narrow sidewalks. A recommended minimum clear path of **2.4 m** and an absolute minimum of **1.8 m** should be provided. When streets are too narrow for trees, other alternatives to landscaping should be explored. If comfortable sidewalks cannot be provided on both sides of a street, a shared street is preferred. Locate utilities and other obstructions immediately against the curb.



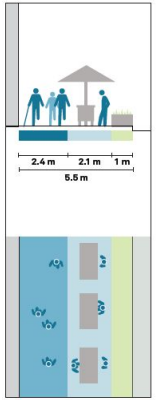
Ribbon Sidewalk

In low-density streets where the sidewalk sits between a planting strip and a set-back building, provide a minimum width of **2 m**. Tree pits should not be less than **1.5 m** wide. Locate utility poles in the planting strip.



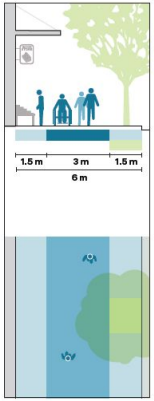
Narrow Sidewalk with Trees

Medium-density residential streets should maintain a clear walking path of **2.4 m** or more. When space allows, trees should be planted between the clear path and the moving or parking lane. Tree pits should be at least **1.5 m** wide.



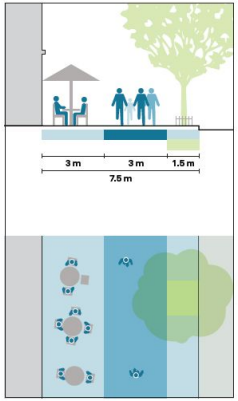
Neighborhood Main Street 1

On small retail streets with low but persistent pedestrian traffic, sidewalks should provide a minimum clear path of **2.4 m** in addition to space for commercial activities. When there is not enough width to plant trees, provide landscaping strips or planters.



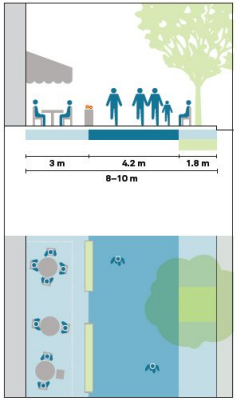
Neighborhood Main Street 2

Neighborhood main streets should provide a clear path of **2.4 m** to allow moderate volumes of people to comfortably pass one another. Space for commercial activity to extend from storefronts should be allocated on the building side. Tree pits, planters, and seating should provide a buffer between pedestrians and moving vehicles or cycles.



Medium Commercial Sidewalk

Commercial corridors should provide a clear path of **3 m** or more to allow a continuous flow and enable people to comfortably pass one another. Ground-floor activities from adjacent buildings can be encouraged to activate the sidewalk by providing flexible and dedicated space on the sidewalk adjacent to the clear path.

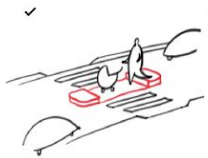


Wide Commercial Sidewalk

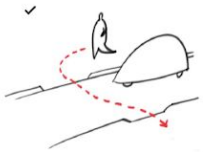
Busy commercial corridors with heavy pedestrian flows and activities should be designed, when possible, with a width of **8–10 m**, allowing for commercial activity, street furniture, transit stops and shelters or queuing spaces, landscaping, and green infrastructure.

[RULES: PEDESTRIAN AND BICYCLE CROSSINGS]

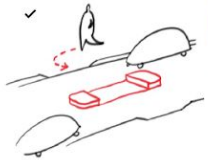
Pedestrian crossings give preference to movement on foot; they are not intended for bikes.



A refuge island should be placed in the crossing to allow pedestrians to cross in stages, especially in cases of heavy traffic or multiple traffic lanes.

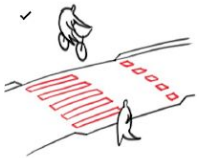


Informal crossings along a street make it easier for pedestrians and cyclists to cross the road, but vehicle traffic has priority.

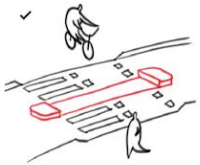


At informal crossings, a refuge island should be added to allow pedestrians to cross in stages, especially in cases of heavy traffic or multiple lanes.

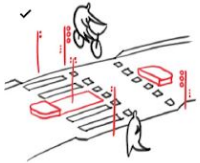
Bicycle crossings make it easier for cyclists to cross the roadway, but motor-vehicle traffic has priority (except if the crossing is regulated by traffic lights). They are not intended for pedestrians.



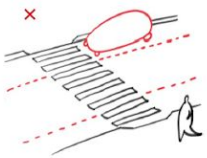
Bicycle crossings can appear together with pedestrian crossings. If it is a signalised crossing, a shared two-colour signal light can be shared by pedestrians and cyclists.



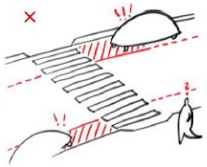
In locations with heavier traffic or multiple lanes, a refuge island should be installed to allow crossing in stages.



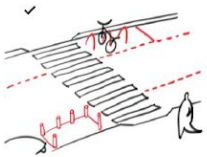
If a signalised bicycle crossing is located beside a signalised pedestrian crossing with a regular refuge island, the bicycle crossing has to be regulated separately and there is only one signal light that applies across the entire roadway, as opposed to the pedestrian crossing where the signal is divided up into the two stages.



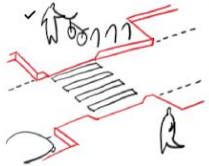
Parking right up to the edge of a pedestrian crossing reduces visibility and thus jeopardises the safety of crossing pedestrians. Extending the crossing across the parking strip is unacceptable in the case of new and rebuilt roads.



Restricting parking using road markings is not a good solution, but can be a temporary one. Without physical elements, such restriction is often not respected.



Bicycle stands or bollards are an appropriate, although temporary, physical solution to ensure visibility at a crossing. Bollards and posts should be used instead of temporary traffic control equipment.
→[D.5.7.2 Bollards and posts/p. 236]
→[D.3.4 Temporary traffic control devices/p. 193]



New pedestrian crossings should be designed to have extended sidewalks and shorter crossing distances. They can be combined with parking for bikes. The design should make sure that the clean geometrical composition of the kerbs is preserved.

Pingipäev Tartus, 2017- foto: Jaanus Tepomees

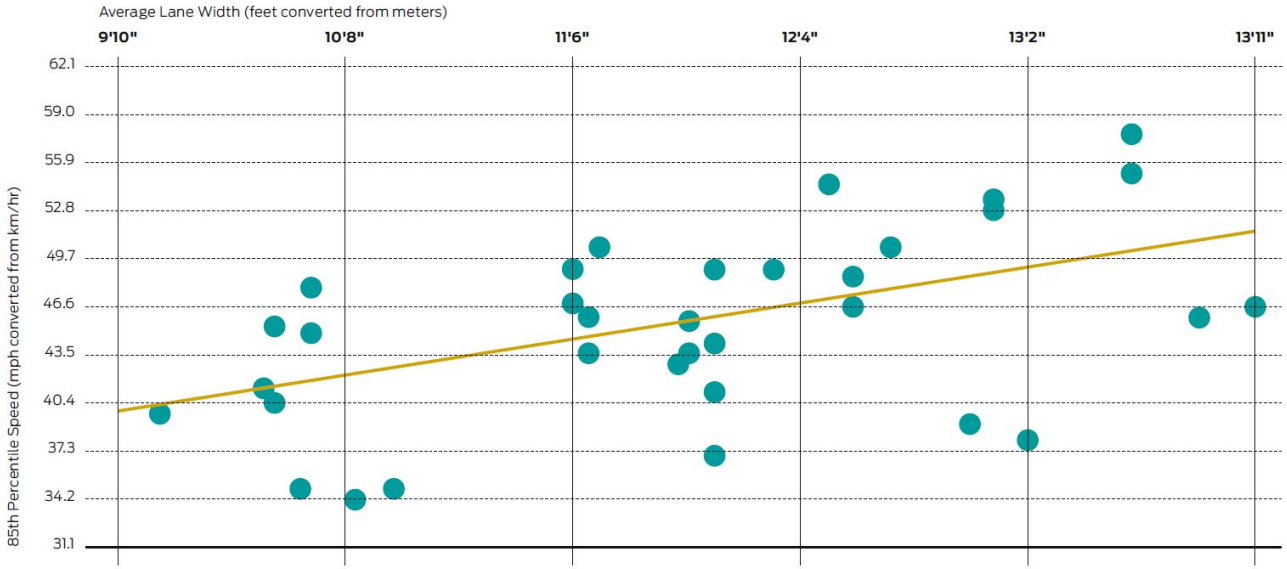
NEWS

Paris introduces citywide 30 kmh speed limit

The French capital has lowered the speed limit for drivers on most streets in a bid to curb the number of cars in the city, reducing noise and fighting climate change.

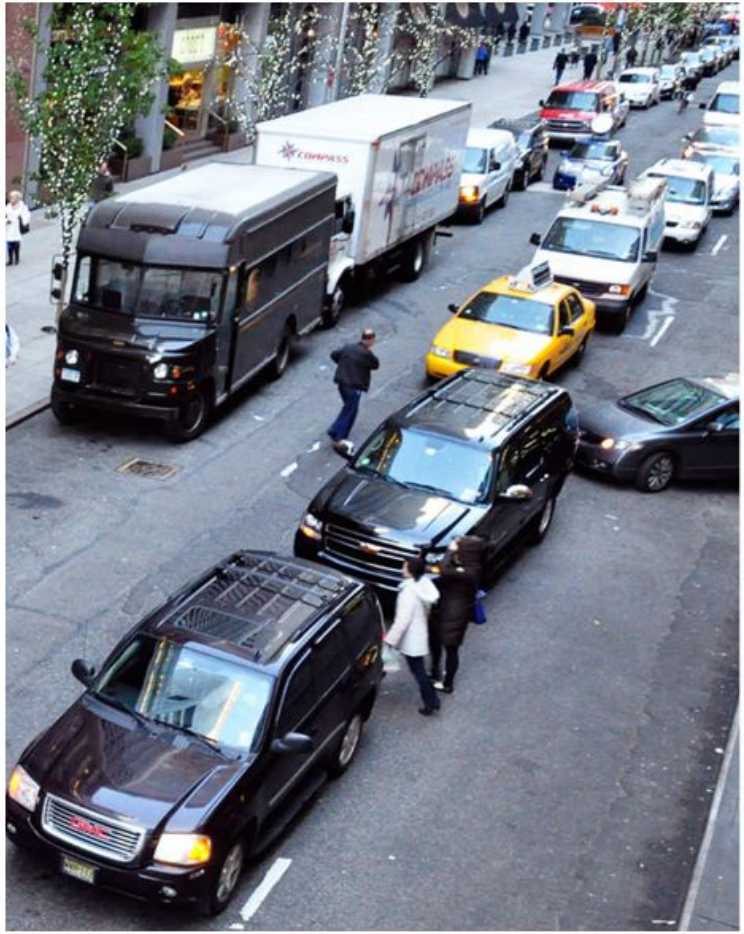
Signs are installed at the entrances of Paris to show the new speed limit

Wider travel lanes are correlated with higher vehicle speeds.



"As the width of the lane increased, the speed on the roadway increased... When lane widths are 1 m (3.3 ft) greater, speeds are predicted to be 15 km/h (9.4 mph) faster."

Chart source: Fitzpatrick, Kay, Paul Carlson, Marcus Brewer, and Mark Wooldridge. 2000. "Design Factors That Affect Driver Speed on Suburban Streets." *Transportation Research Record* 1751: 18–25.



INTERSECTION DESIGN ELEMENTS

TURNING SPEED

The formula for calculating turning speed is:

$$R = \frac{V2}{15\ (.01E + F)}$$

R = Centerline turning radius (effective)

V = Speed in miles per hour (mph)

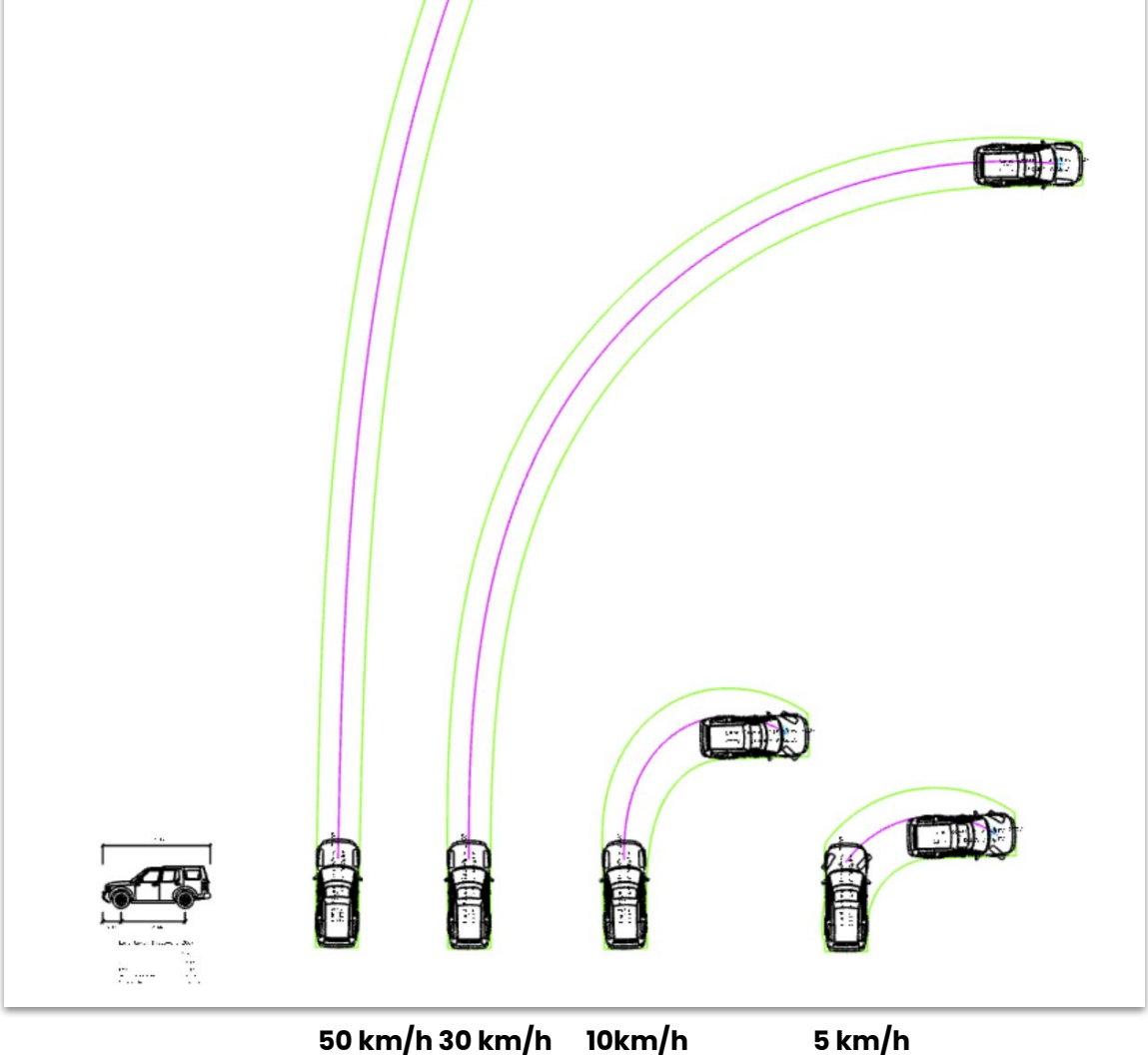
E = Super-elevation. This is assumed to be zero in urban conditions.

F = Side friction factor

Turning Speed & Radius Reference Chart[6]

V (MPH)	E	F	R (FT)
10	0	0.38	18
15	0	0.32	47
20	0	0.27	99
25	0	0.22	174

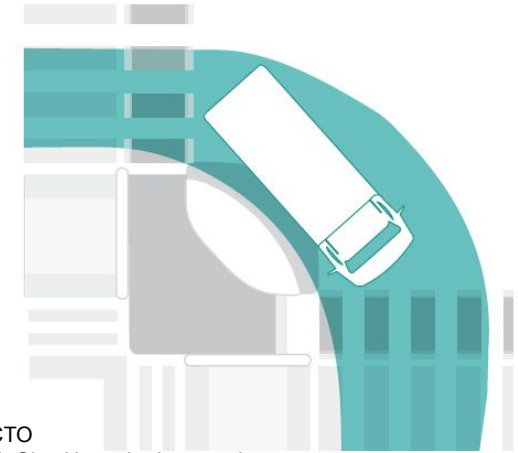
Source: American Association of State Highway and Transportation Officials. *A Policy on Geometric Design of Highways and Streets*. Washington D.C.: 2011; Formula 3-8.



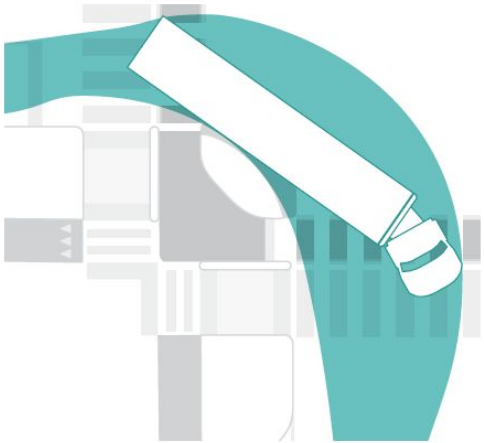
Design, Control, & Managed Vehicles

The selection of the Design, Control, and Managed vehicles informs the design of the corner radius at a protected intersection, as well as the need for any vertical features.

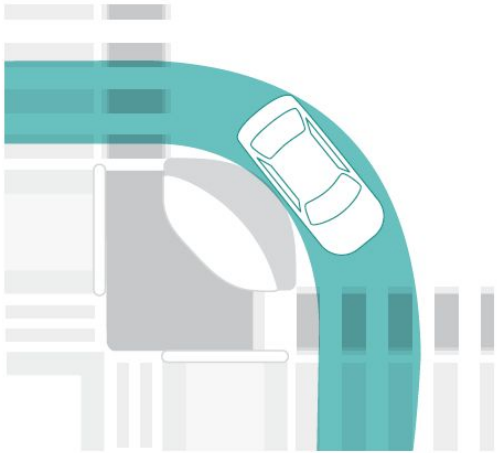
Design Vehicle



Control Vehicle

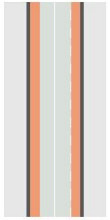


Managed Vehicle



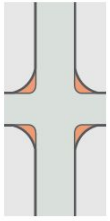
Lane Narrowing

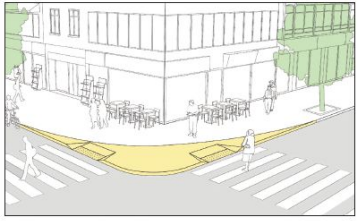
Narrow lanes reduce speeds and minimize crashes on city streets by way of reducing the right-of-way and making drivers wary of traffic and adjacent users. Use the additional space for pedestrian space, cycle facilities, or green infrastructure. *See 6.3.7: Sidewalk Extensions and 8.7: Speed Management.*



Corner Radii

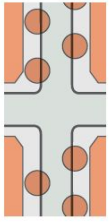
Narrowing corner radii reduce vehicle turning speeds as well as pedestrian crossing distances. Minimizing the size of a corner radius is critical to creating safe and compact intersections. *See 6.6.5: Corner Radii.*





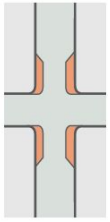
Buildings and Trees

Buildings at the right-of-way with articulated facades and windows indicate that a street is in an urban environment, not a highway. *See 5: Designing Streets for Place.*



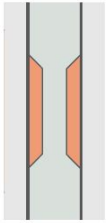
Gateway Treatments

Gateway treatments alert drivers that they are entering a slower area. This treatment may include signage, entry portals, speed tables, raised crossings, and curb extensions.



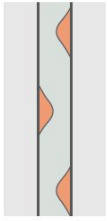
Pinchpoints

Pinchpoints narrow the roadway at a mid-block point. They can be combined with speed tables to create high-quality pedestrian crossings. They can also be used on low-volume, two-way streets to require facing motorists to yield to one another. *See 6.3.7: Sidewalk Extensions.*



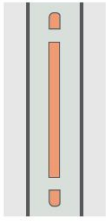
Chicanes and Lane Shifts

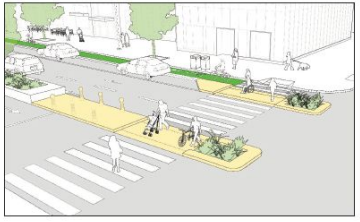
Chicanes and lane shifts use alternating parking, curb extensions, or edge islands to form an S-shaped path of travel which lowers vehicle speeds. *See 6.3.7: Sidewalk Extensions.*



Medians and Refuge Islands

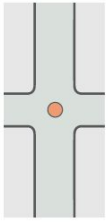
Raised center medians and pedestrian refuge islands can be used to reduce lane width for vehicles, even on relatively narrow streets. They can also be used to organize traffic at intersections or to block access at strategic points. *See 6.3.6: Pedestrian Refuges.*

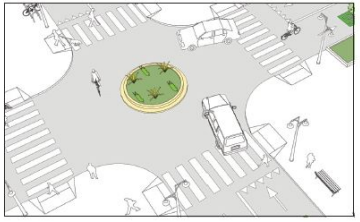




Mini Roundabouts

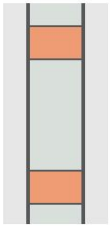
Mini roundabouts are round islands at intersections that serve to both reduce speeds and organize traffic, routing vehicles around the island rather than directly across the intersection. *See 11.4: Mini Roundabout.*

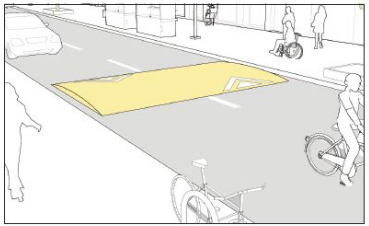




Speed Humps

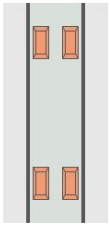
Speed humps are formed by raising sections of the road in a sinusoidal shape, typically **10–15 cm** high and **4–6 m** long. The dimensions can be tailored to match the target speed of the street. They are typically constructed of the same material as the roadway, but can be of different materials.

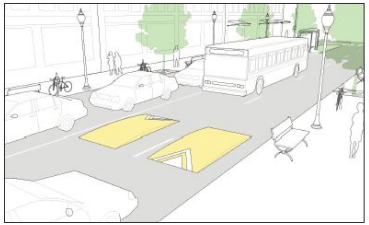




Speed Cushions

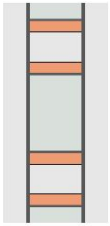
Speed cushions are similar to speed humps, but have wheel cut-out openings to allow large vehicles like buses to pass unaffected while reducing car speeds.





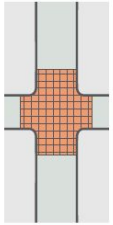
Speed Tables

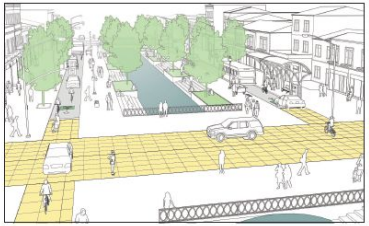
Speed tables are similar to speed humps, but have a flat top, typically **6–9 m** long. When speed tables are combined with pedestrian crossings, at the intersection or mid-block, they are called raised crossings. *See 6.3.5: Pedestrian Crossings.*



Pavement Materials and Appearance

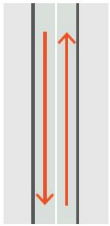
Pavement appearance can be altered through unique treatments that add visual interest, such as colored or pattern-stamped asphalt, concrete, or concrete pavers, which can be used to make other traffic calming techniques more noticeable to drivers. Pedestrian crossings and intersections can be painted to highlight crossing areas.

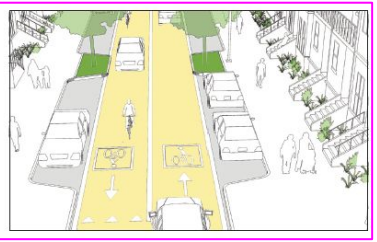




Two-Way Streets

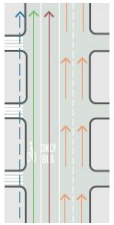
Two-way streets, especially those with narrower profiles, encourage motorists to be more cautious and wary of oncoming traffic. *See 10.6.2: Central Two-Way Streets.*





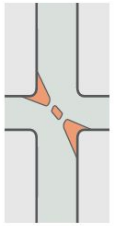
Signal Progression

Signals timed to cycle- and transit-friendly speeds can reduce motorists' incentive to speed and can create lower and safer speeds along a corridor. *See 8.7: Speed Management and 8.8: Signs and Signals.*



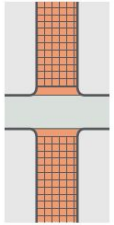
Diverters

Diverters and other volume management strategies, such as restricted movement and restricted access strategies, help in reducing motor vehicle volumes and speeds. Reduced traffic volumes significantly impact cyclist comfort. *See 8.5: Volume and Access Management.*



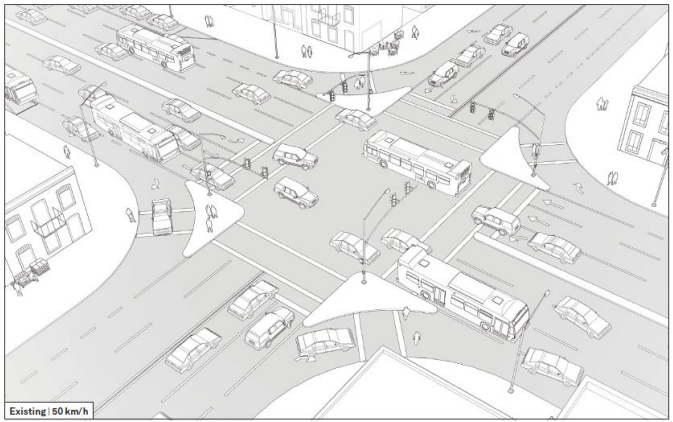
Shared Streets

By removing the physical distinctions between pedestrian, cycle, and vehicular spaces, shared street treatments force all users to share the street, increasing awareness and reducing motor vehicle speeds. *See 10.4: Shared Streets.*



Intersections
Major Intersection

11.10 | Major Intersection: Cycle Protection | Example



Existing Conditions

The above illustration shows the intersection of two large two-way streets, both with three lanes in each direction. This intersection is signalized.

This extremely wide intersection has an unbalanced allocation of space between modes. Wide corner radii and slip lanes prioritize motorists and encourage high-speed turns.

Long pedestrian crossing distances and a lack of refuge islands extend the conflict zone for pedestrians and increase the risk of being hit by a vehicle.

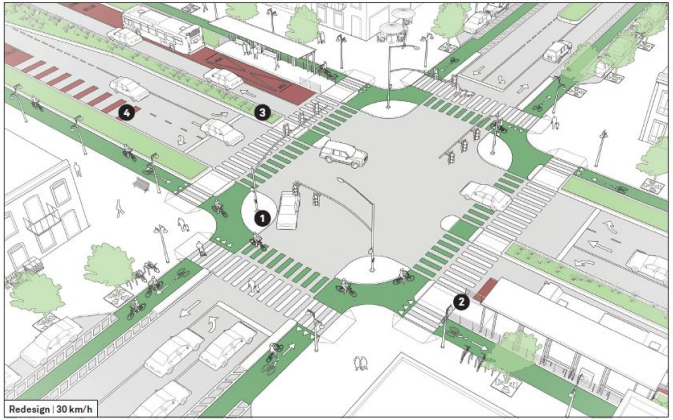
Cycle facilities are nonexistent so cyclists are exposed to unsafe conditions and conflicts with turning vehicles.

A lack of pedestrian ramps at the sidewalks and refuge islands results in an inaccessible intersection.

Vehicles turning across oncoming traffic without a dedicated signal phase present dangerous conditions to pedestrians crossing the street.

Mumbai, India

Bangkok, Thailand



Design Guidance

This reconstruction demonstrates an intersection design which prioritizes safety for all users and not just motorists.

Protected cycle tracks are provided in each direction on one street, and buffered cycle lanes are provided on each side of the street of the other.

1 This protected intersection, also known as a Dutch intersection, provides safe refuge spaces for cyclists where the various cycle facilities meet; all cyclist turns become two-stage turns, and cyclists are given priority position using advanced stop boxes, leading signal priority, and smaller curb radii to slow vehicles turning across the cycle path. *See 6.4: Designing for Cyclists.*

Dedicated transit lanes run adjacent to side-running cycle tracks, with boarding island stops to organize interactions between cyclists, transit vehicles, and transit riders at stop locations.

2 The side-boarding transit island not only eliminates conflict between cyclists and transit vehicles, but provides additional refuge space and shortened crossing distance for pedestrians. Cycle tracks may be raised or at street-level through the boarding island, but must adequately consider strategies to encourage cyclists to yield to pedestrians.

Extend sidewalks and curbs to provide safer and shorter pedestrian and cycle crossings and protect them from motorized traffic.

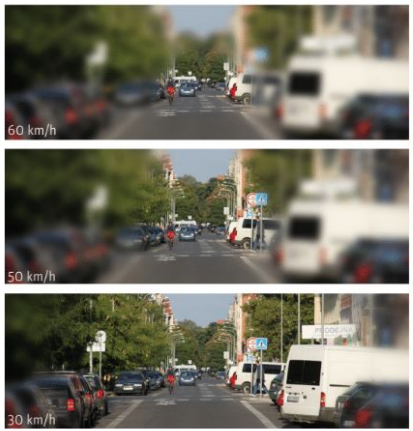
3 Remove slip lanes and add signalized turn lanes for vehicles turning across oncoming traffic. Design turn lanes by recessing the central median.

4 When traffic volumes are relatively low, the transit lane may be shared with near-side turning vehicles. In this case, it is preferable to install a far-side bus stop configuration to minimize turning conflicts, which would impact boarding operations.

Delft, The Netherlands

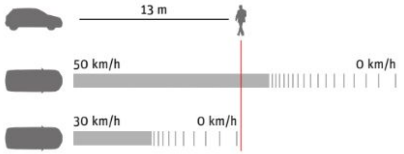
Added medians play an important safety role, but they are also crucial for urban green networks, especially at intersections where the network can be disconnected. Add landscaping and plantings to these elements. *See 7.2: Green Infrastructure.*

[DIAGRAMS: TRAFFIC CALMING]



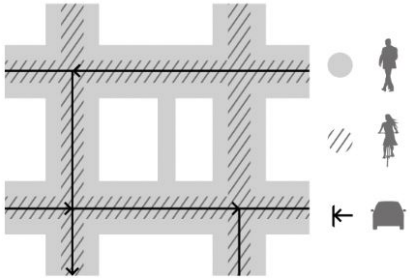
s01 CONNECTION BETWEEN LINE OF SIGHT AND VEHICLE SPEED

A driver's ability to see the surroundings increases as driving speed decreases from 60 km/h to 50 km/h and 30 km/h, respectively.



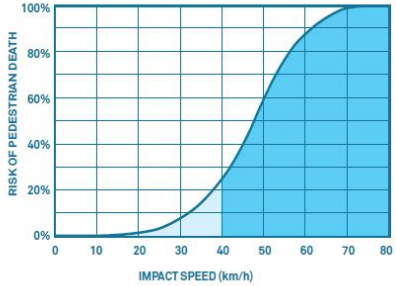
s02 CONNECTION BETWEEN BRAKING DISTANCE AND DRIVING SPEED

At a speed of 30 km/h, a driver can stop — for example if a child runs into the road — at the point where a driver driving at 50 km/h would only begin to brake.

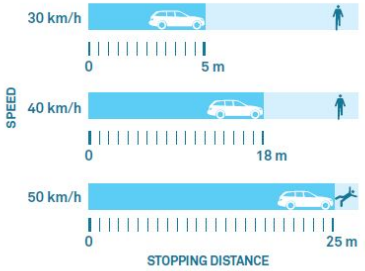


s03 PERMEABLE STREET NETWORK

The less space a type of movement takes up and the less impact it has on its surroundings, the more permeable the area is.



The relationship between impact speed and risk of pedestrian death. Several recent studies (Pasanen 1993, DETR 1998, Rosen and Sanders 2009, and Tefft 2011) show the existence of a clear relationship between vehicular speeds and pedestrian casualties, supporting the idea that speeds over 40 km/h should not be permitted in urban streets. However, most of these studies were conducted in high-income countries and there are reasons to believe this relationship might be even more extreme in low- and middle-income countries.[20]



The relationship between speed and stopping distance. The graphic above depicts minimum stopping distances, including perception, reaction, and braking times. They are based on dry conditions and assume perfect visibility.[21]

EESTI STANDARD EVS 843:2016

Sisaldab värvilisi
lehekülgi

LINNATÄNAVAD

Urban streets

Tabel 4.8 — Liiklusmüra normtasemed

Alam-kategooria	Normtase $L_{pA,eq,T}$, dB							
	Taotlustase I (H)		Taotlustase II (R)		Piirtase (E)		Kriitiline tase	
	päev	öö*	päev	öö*	päev	öö*	päev	öö*
I	50	40	55	45	55	50	65	60
II	55	45	60	50	60 (65)	50 (55)	70	65
III	60	50	60 (65)	50 (55)	65 (70)	55 (60)	75	65
IV	65	55	70	60	75	65	80	70

* Ööks nimetatakse ajavahemikku kella 23.00 kuni 07.00.

MÄRKUS 1 Sulgudes esitatud suurused on lubatud müratundlike hoonete sõiduteepoolsel küljel.

MÄRKUS 2 Alamkategooriad:

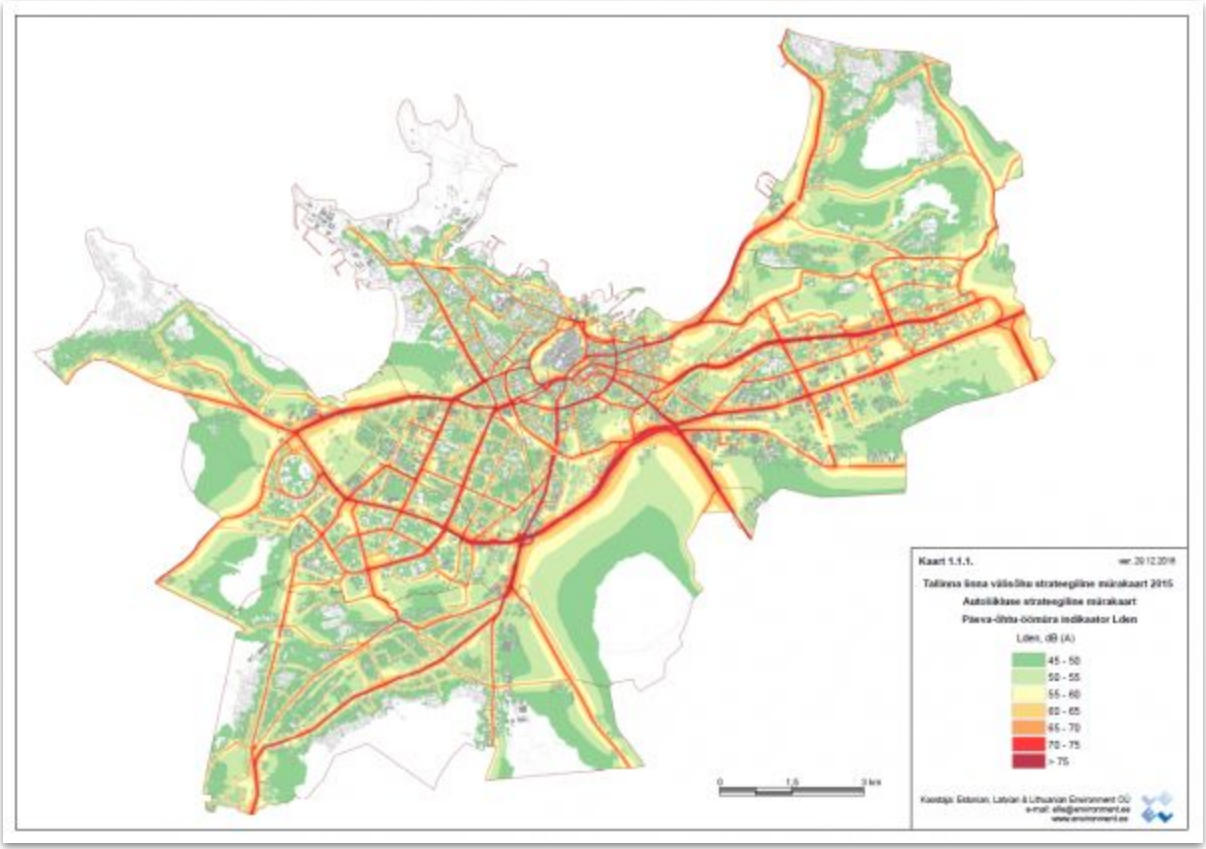
— I kategooria: looduslikud puhkealad ja rahvuspargid, puhke- ja tervishoiuasutuste puhkealad;

— II kategooria: laste- ja õppeasutused, tervishoiu- ja hoolekandeasutused, elamualad, puhkealad ja pargid linnades ning teistes asulates;

— III kategooria: segaala (elamud ja ühiskasutusega hooned, kaubandus-, teenindus- ja tootmisettevõtted);

— IV kategooria: tööstusala.

MÜRA


Kaart 1.1.1.
Tallinna linna välisõhu strateegiline mürakaart 2015
Autoliikluse strateegiline mürakaart
Päeva-õhtu-öömüra indikaator Lden
Lden, dB (A)
45 - 50
50 - 55
55 - 60
60 - 65
65 - 70
70 - 75
> 75
0
1,5
3 km

MÜRA vs KIIRUS

6.1 Müraga kokkupuutuvate inimeste hinnanguline arv

Erinevates müratsoonides elavate inimeste hinnanguline arv on esitatud tabelites 9-11. Elanike arv on ümardatud lähima sajani. Erinevates müratsoonides elavate inimeste arvu määramine on teostatud vastavalt põhimõttele, kus hoone kõik elanikud määratakse müratsooni, mis vastab hoone välispiirdele mõjuvale kõige kõrgemale müratasemele. Erinevatesse müratsoonidesse jäävate elanike hulga arvutused on teostatud Tallinna Linnaplaneerimise Ameti poolt rahvastikuregistri 1.juuni 2016 rahvaarvu andmete põhjal. 01.06.2016 oli Tallinna linnas kokku 440 950 elanikku.

Tabel 9. Müratsoonides elavate inimeste arv müraallikate põhiselt päeva-õhtu-öömüra indikaatori L_{den} alusel

Müratase, dB	Autoliiklus*	Raudteeliiklus	Lennuliiklus	Tööstus
45-50	63500	8000	70800	29000
50-55	70700	4600	18800	11600
55-60	67600	2400	3100	5400
60-65	95400	900	0	900
65-70	68700	0	0	300
70-75	18200	0	0	100
≥75	800	0	0	0
Kokku ≥ 55	250700	3300	3100	6700
% ≥ 55 elanike koguarvust	56,8%	0,75%	0,7%	1,5%

*sh trammiliiklus

Tabel 10. Müratsoonides elavate inimeste arv müraallikate põhiselt öömüra indikaatori L_{night} alusel

Müratase, dB	Autoliiklus*	Raudtee	Lennuliiklus	Tööstus
45-50	77500	4400	7100	10300
50-55	95300	1700	0	2500
55-60	53600	500	0	700
60-65	13000	0	0	100
65-70	100	0	0	100
70-75	0	0	1	0
≥75	0	0	0	0
Kokku ≥ 45	239500	6600	7101	13700
% elanike koguarvust	54,3%	1,5%	1,6%	3,1%

*sh trammiliiklus

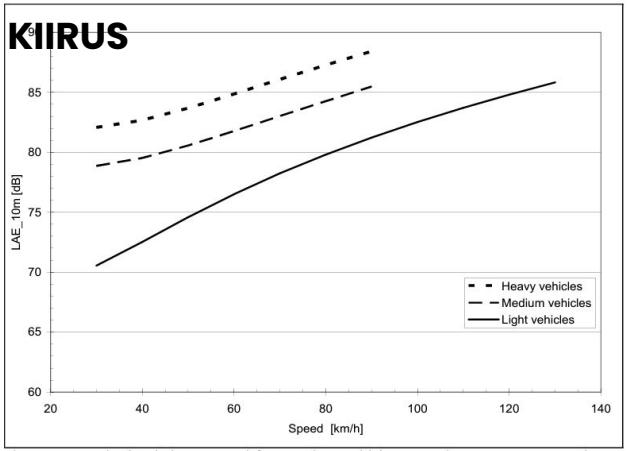


Figure 2.1. Noise levels (L_{AE} at 10 m) from various vehicle categories at constant speed according to Nord2000 Road [Kragh et al, 2006].

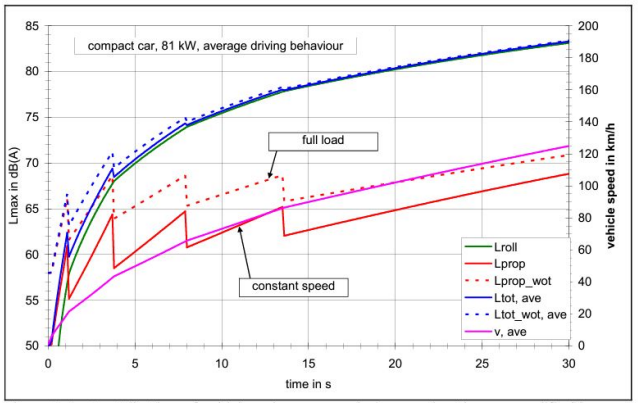


Figure 2.4. Contribution of vehicle noise sources during acceleration, exemplified by a compact car. The dotted lines are the noise from the accelerating car. The fully drawn lines show the noise level as it would be at the given speed without acceleration. The line labeled 'v, ave' shows the vehicle speed. [Steven, 2006].

Peamised tänavatolmu tekkeallikad:

- **75%** naastrehvid:
- Libedusetõrjel kasutatavad puistematerjalid;
- pidurdamisel eralduv „piduritolm“;
- ehitusobjektidelt tekkiv tolm;
- suured parkimisalad (kaubanduskeskused), kus seisvate sõidukite põhjadelt ladestub tolm maapinnale ja kuivades hakkab sealt tuulega levima;

Tallinna Kommunaalamet

Tarmo Sulg
Tallinna Kommunaalamet
2019

NASTA: Naastrehvide kasutamisega seotud mõjud

- Helsingi linna ehitusameti eesvedamisel aastatel 2011-2013 läbi viidud uurimisprogrammi NASTA 2011-2013 „Lamellrehvide kasutamisega parem õhukvaliteet – liiklusohutust halvendamata“ kohaselt on tänavatolm seotud tõsiste tervisekahjustustega. **Naastrehvide kasutamisest tuleneb pool pealinnapiirkonna tänavatolmust** ning tuvastatud on seos õhu tahkete osakeste sisalduse ja tervisemõjude vahel. **Tänavatolmu sissehingamine on tõenäoliselt seotud ka sagenenud hingamisteede- ja südamehaigustest tingitud haiglaravile sattumise ning koguni enneaegse surmaga. Samuti põhjustab tänavatolm silmade ja hingamisteede ärritust**.
- Osakeste määra tõus kuupmeetris õhus 10 mikrogrammi võrra ööpäevas tõstis haiglakülastusi ligikaudu 3% võrra.
- Lisaks leiti viiteid tahkete osakeste mõjust **hingamiselundite haigustest tingitud surmajuhtumitele ja haiglaravile sattumisele ning laste astmale**.
- Naastrehvide põhjustatud teede ja tänavate kulumine halvendab linna õhukvaliteeti ja suurendab ka teekatete uuendamise vajadust. Seni, kuni kasutatakse naastrehve, jätkub tolmu peenosakeste pidev juurdetootmine.

Tarmo Sulg
Tallinna Kommunaalamet
2019

REDUST: Tänava peentolmu tekkimist ja levimist vähendab

- 1.Tolmu sidumine - summutamisega (teepinna ja rentsli kastmine - töötlemine kloriidide lahustega) - Tolmu sidumine – see on kogu sõiduteele, selle osale või piirnevatele aladele vedeliklahuse suunatud pihustamine, lahustena kasutatakse NACL või $CaCl_2$ vedeliklahuseid.
2. Tänavate koristamine erinevate meetoditega, sh tänavapesu.
3. Naastrehvide kasutamise piiramine või keelustamine;
4. Sõidukite sõidukiiruse vähendamine:

Lubatud sõidukiiruse vähendamisel 60 –lt 40 –ni väheneb tänavatolmu osakaal 31 %

Lubatud sõidukiiruse vähendamisel 50 –lt 30 –ni väheneb tänavatolmu osakaal 37 %.

Tarmo Sulg
Tallinna Kommunaalamet
2019

Fig. 2.

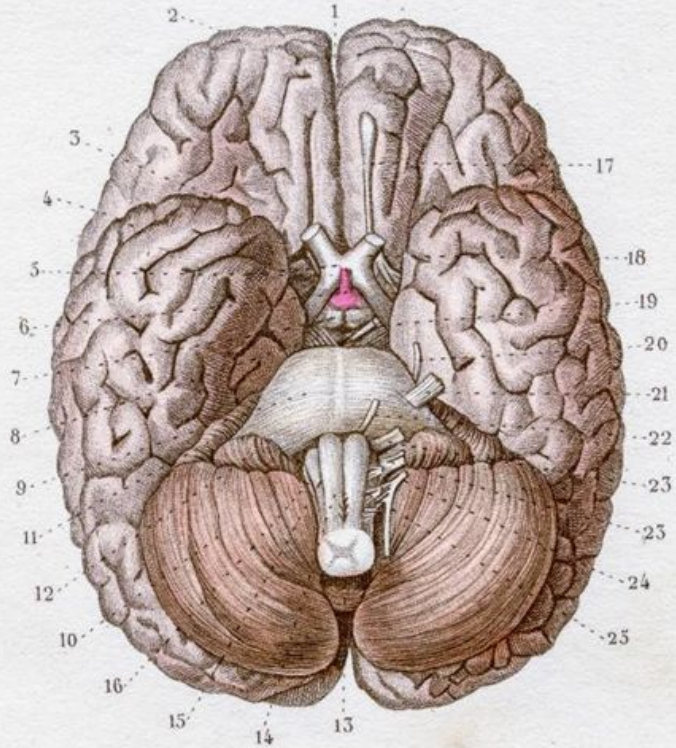
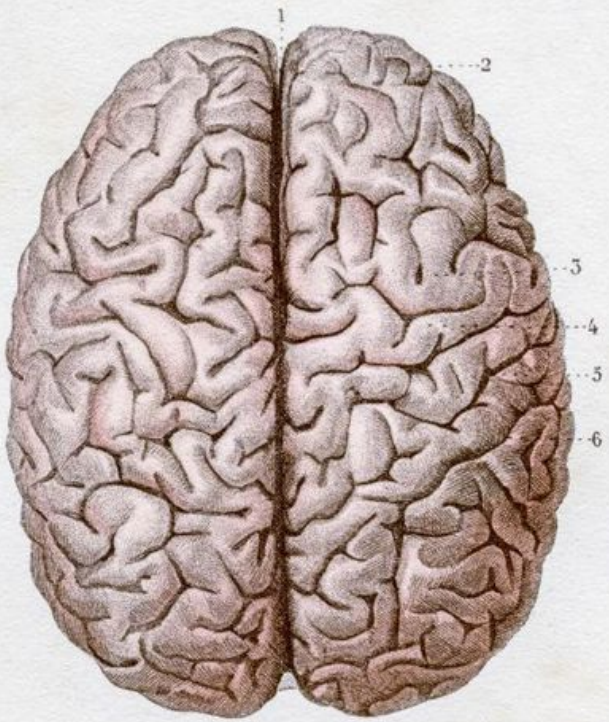


Fig. 1.



RIIA


mego
mego
8-22


22 Brusinieku iela
Riia, Riga
Google
Tänavavaade
Google


45 Rue de Rivoli
Pariis, Île-de-France
Google
Tänavavaade – aug 2020
PARIIS
Foot Locker
undiznochire
YVES ROCHER
ANDRE
Rue de Rivoli
Google


PARIIS
103 Rue Vieille-du-Temple
Paris, Île-de-France
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Tänavavaade – apr 2021
Rue Vieille-du-Temple
Gili's
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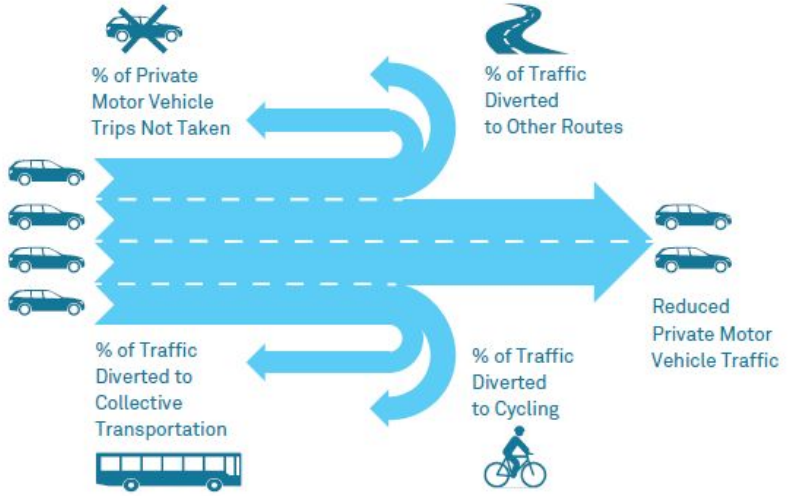
https://www.wri.org/research/safe-bicycle-lane-design-principles


FAEHLMANNI KOHVIK

Cities must make investments that consider the life of major infrastructure investment and account for anticipated future growth and development. Yet, traditional traffic forecasting substantially overestimates traffic growth. Even as trends show otherwise, many transportation models still assume an upward trend in traffic demand, accepting more vehicle kilometers traveled as inevitable. Instead, cities must link design capacity for each mode to the desired mode split and activity on a street. Capacity should be measured based on total person capacity rather than vehicle level of service, using vehicle capacity to understand operational decisions.



Traffic Evaporation. Research shows that when road capacity is shifted to other modes, some peak-period traffic disappears from the network. Drivers shift to other modes, make trips at other times, or shift destinations.

Planeeritud keskkond mõjutab inimeste liikumisotsuseid


Tänav on meie kõigi ühine eluruum

Linn on loodud inimestele!

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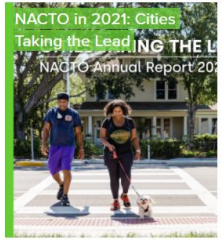


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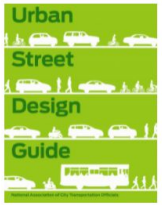
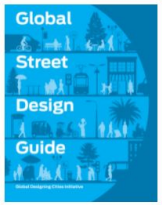
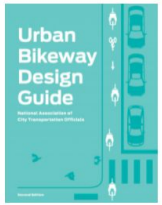
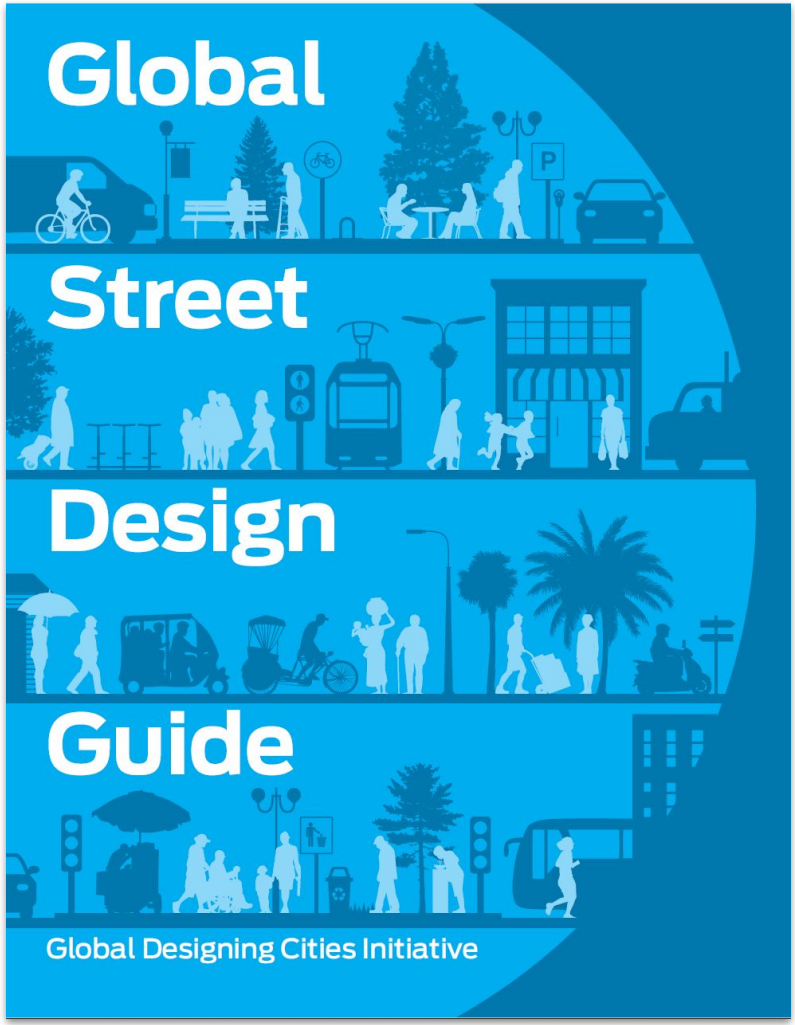
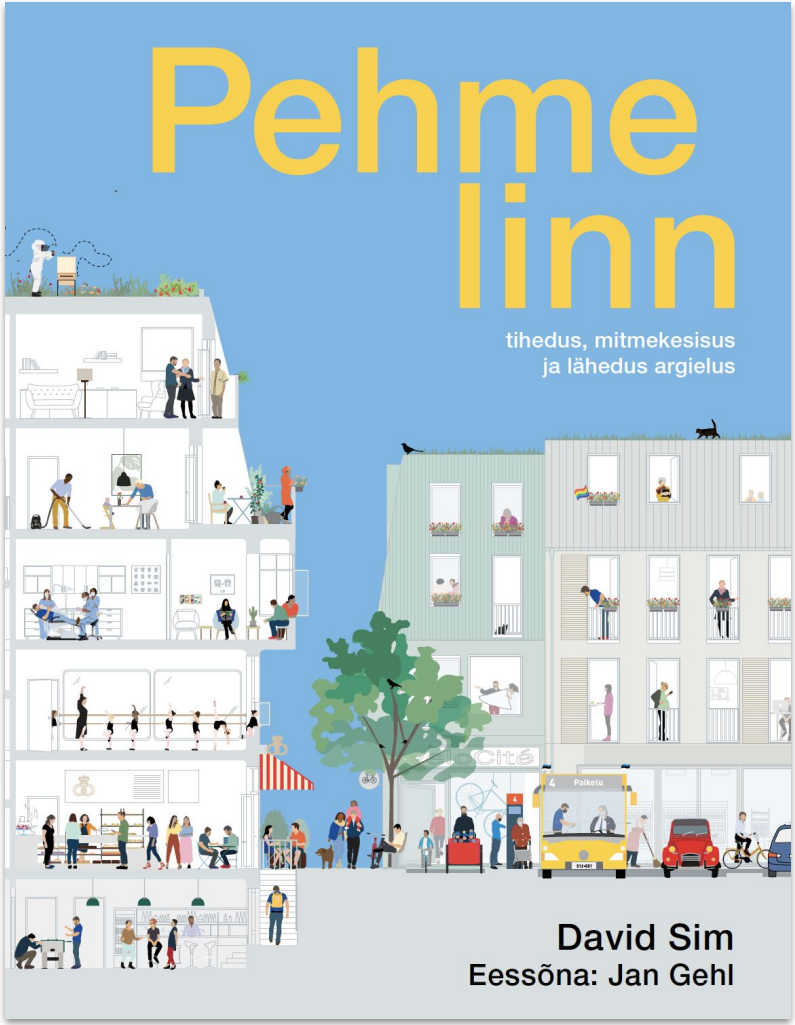




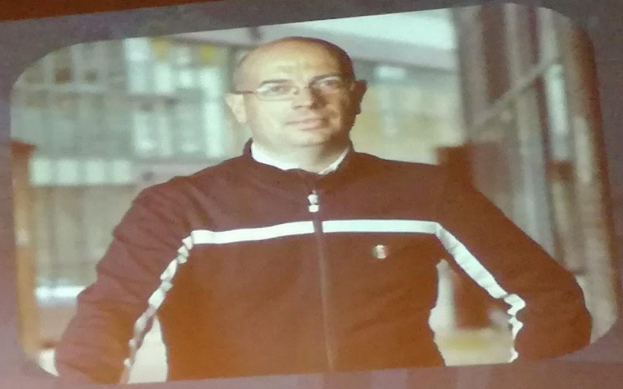





Linnad
inimestele
Jan Gehl


Pehme
linn
tihedus, mitmekesisus
ja lähedus argielus
David Sim
Eessõna: Jan Gehl

"There will always be a very vocal, very loud, minority of people who *genuinely*, *passionately* believe that their lives are going to be ruined because they have to **wait 10 minutes in traffic"**



Andrew Gilligan

Mayor of London's Cycling Commissioner