

To: City of Bend Citywide Transportation Advisory Committee
Attn: Nick Arnis, Susanna Julber and Eric King
From: Steve Porter, Resident of Bend
Date: April 12, 2018

Re: Public Comments, City of Bend Citywide Transportation Advisory Committee Meeting

Dear Bend Citywide Transportation Advisory Committee (CTAC):

Thank you for your work on the important and complicated matter of improving transportation in Bend and planning how Bend's future transportation needs will be met. As a resident, I am pleased to see such energetic involvement addressing these issues from so many people in our community.

I observed your April 10 meeting and, following reflection of several matters brought up during that gathering, I thought I would humbly submit a handful of comments for your consideration. The following may be considered my public comments in advance of your upcoming third meeting.

First, during the April 10 meeting's discussion, the importance of "benchmarking" Bend's transportation development, funding models and other related considerations against those of other cities was raised. This point makes good sense to me and, in the spirit of contributing to the formation of knowledge on this front, I would like to suggest two resources.

- The first is a book entitled *Happy City: Transforming Our Lives Through Urban Design*, by Charles Montgomery. The book, copies of which are available via the Deschutes Public Library system, provides a sampling of urban planning, transportation design and community development models that have, and have not, worked well in cities around the world. The book elaborates on issues at the nexus of transportation, economics, social well-being and sustainable growth, and is a worthy guidebook for those charged with the CTAC's mission, particularly as a benchmarking reference.
- The second resource relates to what is known as the TOD Standard for development (i.e., the "Transit-Oriented Design Standard"). The TOD Standard outlines various city development practices that collectively build healthy, sustainable and efficient communities. Several components of the TOD Standard bear on the CTAC's mission and may be useful in informing the particulars of CTAC's vision, goals, policies and action items.

The TOD Standard pulls its recommendations from case studies represented by developments undertaken around the world and thus can serve a general benchmarking role for the CTAC as it seeks best practices to incorporate into Bend's transportation system. Although the TOD Standard can be used to "score" developments for purposes of recognizing transportation and urban systems that best represent its ideals, that is not its only function: It can also be used as a template or starting-point framework for molding development plans that are not attempting to adhere explicitly to all elements of the standard but rather would like to incorporate some of the teachings of successful designs in other cities. It is this role that I envision the TOD Standard as serving for the CTAC. Please find attached to this letter the TOD Standard 3.0 reference booklet.

Second, I would like to emphasize a point that I believe should be incorporated into the thinking of the CTAC funding subcommittee as funding sources and uses are explored. The so-called "commons problem" or "tragedy of the commons" explains the depleted state of Bend's transportation system; therefore, the design of efficient funding mechanisms to support infrastructure maintenance and improvements should recognize and address this problem.

- A commons problem arises when a finite public good is allocated without regard for the public costs and/or the resource's depletion associated with individuals' use of the good. As pertains to Bend's transportation network, the principal funding sources are essentially unrelated to individuals' usage patterns, resulting in the tragedy of the commons effect under which roadways are inefficiently "over-consumed" by personal automobiles.
 - All else equal, a resident of Bend who drives a vehicle non-stop, year-round through Bend's streets pays roughly the same for that usage as a resident of Bend who solely walks, despite their vastly different impacts on direct costs to the transportation system (such as road depreciation, paid by the City) and externalities (such as pollution, paid in kind by the public) associated with their usage.
 - Thus, high-intensity users are essentially subsidized by low-intensity users of the roadways in Bend. For instance, someone who trucks commercial materials across the city is able to profit from an artificially low operating cost since their business costs do not include the excess depreciation of the roads used or the costs of excess pollution, noise, etc. In effect, their high-intensity use is compensated for by those who limit their driving and instead walk, cycle or use mass transit to traverse the city and conduct business, since this latter group pays roughly the same amount for access to roadways, despite much lower usage. That is, the current arrangement of funding and usage is inequitable.

- Commons problems generally cannot be resolved by increasing supply growth of the over-consumed resource because the underlying drivers of over-consumption will persist and grow at a rate approximately equal to that of the supply. This leads to spiraling consumption, increasing costs and negative externalities, and no relief of the oversubscription problem that gave rise to the supply intervention in the first place.
 - The effect is explained by the simple interplay of supply and demand. Since, as pertains to Bend's roads, individuals' cost of incremental road usage is roughly zero, any additional outward shift in lane-mile supply of roads will be met with an approximately equal increase in consumption demand.
 - Unfortunately, this increase in supply and equal increase in consumption leaves us worse off than we were prior to the supply intervention. This is because of the existence of substantial negative externalities associated with automotive usage, including air pollution, noise pollution, loss of pedestrian and cyclist life (i.e., as automotive road-miles traveled increase, more pedestrians and cyclists are killed), etc. A related, and more pernicious, problem is that additional automobile-oriented road supply crowds out existing cyclist and pedestrian activity and retards growth in non-automotive modes of transit by making these modes relatively less appealing than prior.
 - Automotive over-consumption of the roadways thus recalibrates following a supply intervention to equal the rate of prior oversubscription, and society generally is made worse off due to the resulting increase in externalities costs, the increase in taxes required to pay for substantial increases in road supply, the higher ongoing increased taxes to pay for the greater maintenance costs associated with a larger roadway system, as well as the reduction in pedestrian and cyclist activity. Accordingly, in the commons problem context, approaches other than simply adding lane-miles of automobile roads are required to relieve traffic congestion and achieve the safe and efficient movement of people and materials around Bend.
- Resolving commons problems typically involves two steps. The first is a quantification of the direct costs and externalities costs associated with different levels of usage of the resource. The second is devising taxation and/or rebate schemes that align what users of the resource "pay" with how much of the resource they use. That is, allocation of the resource is made equitable.

- The gasoline tax proposed for Bend a couple years ago was, from an economic perspective, an especially elegant means of addressing the commons problem. Nevertheless, the failure of that tax at the ballot tells us that a scheme framed as a “punitive” one on heavy road users is unlikely to curry sufficient voter favor.
- I would accordingly encourage the CTAC funding subcommittee to explore the possibility of a two-phase approach to funding. For example, the first phase could be a blanket incremental tax applied to all users of Bend’s roads (perhaps applied to all Bend residents, as a proxy for road users). And the second phase could be a rebating system under which light users of Bend’s transportation infrastructure qualify for and receive tax rebates based upon their non-usage of automobile transit and/or their usage of non-automotive transit. Technologies similar to those used in fitness wearables and by automobile insurance companies that monitor drivers’ habits (e.g. Allstate Drivewise) could be readily employed for this purpose. Those seeking rebates would simply have to opt-in, submit to certain data-sharing requirements and file the necessary paperwork with the City. Such a scheme would remove the perceived burden of compliance away from heavy road users (thus improving political palatability), while light users would be rewarded for their actions to reduce traffic congestion, improve environmental quality and decrease road wear.
- Such a scheme, or something like it, would be compatible with additional funding mechanisms, such as taxes or user fees associated with the use of road-damaging studded winter tires, or taxation of tourists who visit Bend and use its transportation infrastructure, etc.
- The resulting funds could then be allocated toward further improvements in inexpensive non-automotive infrastructure (e.g., sidewalks, bike lanes, crosswalks, pathways, etc.) to accelerate the virtuous cycle of reducing future costly automotive infrastructure growth and maintenance costs while rewarding those individual whose actions are responsible for the decrease in road congestion and costs. This virtuous cycle would additionally serve to bolster Bend’s “green” credentials and help it meet the established Climate Action goal of reducing community-wide fossil fuel use by 40% by the year 2030.

Finally, I would like to applaud the CTAC for the forward-looking nature of many of its goals. Emphasizing multi-modal transit, improving pedestrian and cyclist safety and access, securing our environmental resources and de-emphasizing automotive transportation are laudable aims that, if achieved, will improve Bend for everyone for the long term. Detractors who suggest that more spending to support greater

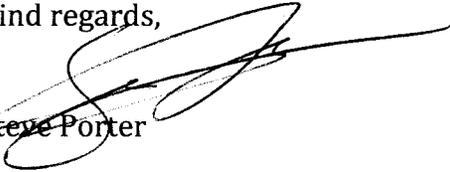
automobile use in the future is warranted simply because many people have transited Bend in personal automobiles in the past are ignoring two key facts.

- First, there are lessons in our history indicating, without ambiguity, that our continued heavy reliance on personal automobiles is unsustainable, and attempting to unduly sustain such reliance is not economically feasible.
 - Large-scale automotive usage places significant burdens on road maintenance costs, road improvement expenses, environmental recovery, etc. It is precisely these sorts of costs that have given rise to increased emphasis on alternative transportation options such as walking, cycling and mass transit – because these alternatives are less costly to sustain and embody positive externalities rather than the negative externalities associated with personal auto usage.
 - If the CTAC were to embrace policies that envision maintaining the unsustainably heavy reliance on personal automobiles, it would amount to nothing more than “kicking the can down the road” for others, in the near future, to resolve much more expensively and much less effectively than can be done now. Maintaining the status quo is not a feasible choice, and suggesting that the CTAC and Bend’s City Council can elect to maintain the status quo amounts to nothing more than advocating for a false option. I thank the CTAC for its wisdom in recognizing this reality and reflecting it in the goals it has outlined for itself.
- Second, there always has been a prescriptive charge for government to guide society, particularly in instances when embedded habits are not sustainable and/or they generate significant negative externalities that are not controlled by market forces, as is the case with continued large-scale reliance on personal automobiles.
 - To look backward and suggest we must only service a past version of Bend, rather than to envision a better future that can then guide our policies, is a miscarriage of good governance and serves as nothing other than a sentencing of Bend’s community to forgo the promise of the future. Simply to react to past conditions, rather than to proactively mold the foundation for improved future conditions, is not appropriate for the CTAC or any governmental body. I encourage the CTAC to continue to seek and enact the creative, forward-looking and proactive goals that it has been.
 - Moreover, ignoring the capabilities of new technologies, the state of current scientific knowledge, the realities of environmental conservation and the unique appeal of Bend as a great place to live

would not be appropriate for the CTAC, and I am pleased the CTAC's goals reflect clear thinking about these foundational issues as it considers what the future of Bend's transportation and city should look like.

Thank you again for your dedication to improving Bend's transportation system and preparing it for the future of our community. My hope is that the foregoing comments will be helpful in some way as you proceed with your work.

Kind regards,



Steve Porter

TOD STANDARD

ENDORSED BY:



INSTITUTE FOR TRANSPORTATION AND DEVELOPMENT POLICY
TOD Standard, 3rd ed. New York: ITDP, 2017.
WWW.ITDP.ORG

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BRIEF DESCRIPTION OF THE PROJECT SITE

CATEGORY		MAXIMUM POINTS	SCORE	NOTES / DATA
OBJECTIVE A. Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.				
5.A.1 Complementary Uses	Residential and nonresidential uses within same or adjacent blocks.	8		
5.A.2 Access to Local Services	Percentage of buildings that are within walking distance of an elementary or primary school, a healthcare service or pharmacy, and a source of fresh food.	3		
5.A.3 Access to Parks and Playgrounds	Percentage of buildings located within a 500-meter walking distance of a park or playground.	1		
OBJECTIVE B. Diverse demographics and income ranges are included among local residents.				
5.B.1 Affordable Housing	Percentage of total residential units provided as affordable housing.	8		
5.B.2 Housing Preservation	Percentage of households living on site before the project that are maintained or relocated within walking distance.	3		
5.B.3 Business and Services Preservation	Percentage of pre-existing local resident-serving businesses and services on the project site that are maintained on site or relocated within walking distance.	2		
		25	MIX SCORE:	
OBJECTIVE A. High residential and job densities support high-quality transit, local services, and public space activity.				
6.A.1 Nonresidential Density	Nonresidential density in comparison with best practice in similar projects and station catchment areas.	7		
6.A.2 Residential Density	Residential density in comparison with best practice in similar projects and station catchment areas.	8		
		15	DENSIFY SCORE:	
OBJECTIVE A. The development is in, or next to, an existing urban area.				
7.A.1 Urban Site	Number of sides of the development that adjoin existing built-up sites.	8		
OBJECTIVE B. Traveling through the city is convenient.				
7.B.1 Transit Options	Number of different transit options that are accessible within walking distance.	2		
		10	COMPACT SCORE:	
OBJECTIVE A. The land occupied by motor vehicle is minimized.				
8.A.1 Off-Street Parking	Total off-street area dedicated to parking as a percentage of the development area.	8		
8.A.2 Driveway Density	Average number of driveways per 100 meters of block frontage.	1		
8.A.3 Roadway Area	Total road bed area used for motor vehicle travel and on-street parking as percentage of total development area.	6		
		15	SHIFT SCORE:	
		100	TOTAL POINTS:	

MIX

DENSIFY

COMPACT

SHIFT

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WALK

Principle 1 | 15 points

OBJECTIVE A.
The pedestrian realm is safe, complete, and accessible to all.

Metric 1.A.1 Walkways
Percentage of walkway segments with safe, all-accessible walkways. **3 points**

Metric 1.A.2 Crosswalks
Percentage of intersections with safe, all-accessible crosswalks in all directions. **3 points**

OBJECTIVE B.
The pedestrian realm is active and vibrant.

Metric 1.B.1 Visually Active Frontage
Percentage of walkway segments with visual connection to interior building activity. **6 points**

Metric 1.B.2 Physically Permeable Frontage
Average number of shops, building entrances, and other pedestrian access per 100 meters of block frontage. **2 points**

OBJECTIVE C.
The pedestrian realm is temperate and comfortable.

Metric 1.C.1 Shade and Shelter
Percentage of walkway segments that incorporate adequate shade or shelter elements. **1 point**

CYCLE

Principle 2 | 5 points

OBJECTIVE A.
The cycling network is safe and complete.

Metric 2.A.1 Cycle Network
Access to a safe cycling street and path network. **2 points**

OBJECTIVE B.
Cycle parking and storage are ample and secure.

Metric 2.B.1 Cycle Parking at Transit Stations
Ample, secure, multi-space cycle parking facilities are provided at all transit stations. **1 point**

Metric 2.B.2 Cycle Parking at Buildings
Percentage of buildings that provide ample, secure cycle parking. **1 point**

Metric 2.B.3 Cycle Access in Buildings
Buildings allow interior access and storage within tenant-controlled spaces for cycles. **1 point**

CONNECT

Principle 3 | 15 points

OBJECTIVE A.
Walking and cycling routes are short, direct and varied

Metric 3.A.1 Small Blocks
Length of longest pedestrian block. **10 points**

OBJECTIVE B.
Walking and cycling routes are shorter than motor vehicle routes

Metric 3.B.1 Prioritized Connectivity
Ratio of pedestrian intersections to motor vehicle intersections. **5 points**

TRANSIT

Principle 4 | ^{TOD} REQUIREMENT

OBJECTIVE A.
High quality transit is accessible by foot.

Metric 4.A.1 Walking Distance to Transit
Walking distance to the nearest transit station.



MIX

Principle 5 | 25 points

OBJECTIVE A.
Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.

Metric 5.A.1 Complementary Uses
Residential and nonresidential uses within same or adjacent blocks. **8 points**

Metric 5.A.2 Access to Local Services
Percentage of buildings that are within walking distance of an elementary or primary school, a healthcare service or pharmacy, and a source of fresh food. **3 points**

Metric 5.A.3 Access to Parks and Playgrounds
Percentage of buildings located within a 500-meter walking distance of a park or playground. **1 points**

OBJECTIVE B.
Diverse demographics and income ranges are included among local residents.

Metric 5.B.1 Affordable Housing
Percentage of total residential units provided as affordable housing. **8 points**

Metric 5.B.2 Housing Preservation
Percentage of households living on site before the project that are maintained or relocated within walking distance. **3 points**

Metric 5.B.3 Business and Services Preservation
Percentage of pre-existing local resident-serving businesses and services on the project site that are maintained on site or relocated within walking distance. **2 points**

DENSIFY

Principle 6 | 15 points

OBJECTIVE A.
High residential and job densities support high-quality transit, local services, and public space activity.

Metric 6.A.1 Nonresidential Density
Nonresidential density in comparison with best practice in similar projects and station catchment areas. **7 points**

Metric 6.A.2 Residential Density
Residential density in comparison with best practice in similar projects and station catchment areas. **8 points**

COMPACT

Principle 7 | 10 points

OBJECTIVE A.
The development is in, or next to, an existing urban area.

Metric 7.A.1 Urban Site
Number of sides of the development that adjoin existing built-up sites. **8 points**

OBJECTIVE B.
Traveling through the city is convenient.

Metric 7.B.1 Transit Options
Number of different transit options that are accessible within walking distance. **2 points**

SHIFT

Principle 8 | 15 points

OBJECTIVE A.
The land occupied by motor vehicles is minimized.

Metric 8.A.1 Off-Street Parking
Total off-street area dedicated to parking as a percentage of the development area. **8 points**

Metric 8.A.2 Driveway Density
Average number of driveways per 100 meters of block frontage. **1 point**

Metric 8.A.3 Roadway Area
Total road bed area used for motor vehicle travel and on-street parking as percentage of total development area. **6 points**



FOREWORD

The TOD Standard stands for the rights of all to access the city: to walk and cycle safely, to easily and affordably reach the most distant destination through rapid and frequent transit, and to live a good life free of dependence on cars. It stands for access to opportunity, education, services, and all the resources available via no- or low-cost mobility options.

At the Ford Foundation, many decades of work on urban poverty reduction and a focus on social justice have taught us that the combined cost of housing and transport is by far the heaviest burden on poor urban households' finances and time budgets. These costs are too often the main barrier to a true share in human development and well-being in prosperous cities for low-income and marginalized communities. We know we will not make meaningful progress on urban poverty without tackling the spatial inequities built in to our land use, housing, and transport systems that are exacerbating inequality and deepening poverty for the most vulnerable.

This new version of the TOD Standard gives us a stepping stone to defining urban development that integrates not just land use and transport but people, activities, and opportunities. It raises the bar for buildings and infrastructure to proactively meet the needs of all, regardless of age, ability, demographics or income, at all scales of development. It promotes inclusionary housing, as well as the provision of safe streets, local parks, playgrounds, primary schools, and health facilities for all neighborhoods, not just the wealthiest. It specifically acknowledges informal and sub-standard housing upgrading as fully fledged TOD projects worthy of investment and attention. It addresses the displacement of people through redevelopment as contrary to a balanced and inclusive development policy and incompatible with the highest TOD recognition.

The TOD Standard can help governments devise their plans, policies, regulations, legislation, and investment priorities to promote access for all as a basic common good, a source of freedom and dignity, and an important pillar to create Just Cities. This standard is also an instrument of inclusive and equitable civic engagement, calling on governments to set high standards for engaging the public in planning, regulating, decision making, and allocating resources.

The core principles and objectives enshrined in this standard have seen increasing recognition and adoption since ITDP started up in this field in 2010 with the Principles of Transport in Urban Life and the Our Cities Ourselves campaign. International, multilateral, national, and municipal institutions have been embracing the concept of inclusive transit-oriented development. High-level decision makers and practitioners support the idea, though there is still a long road ahead to achieve a global shift away from inequitable sprawl to more equitable and inclusive forms of urbanization. Wide and rapid adoption of the TOD Standard as urban planning and policy principles and benchmarks will have direct and immense potential benefits over time and across the globe. As we expect implementation to scale up rapidly in the next few years, it is important that unfair forms of redevelopment do not magnify unequal opportunity and outcomes. Inclusionary objectives need to be embedded in policies and in planning and design processes to actively protect and bring along people and social groups who might otherwise be excluded, marginalized, or not afforded the same full privileges as others.

The Ford Foundation has been a supporter of ITDP's efforts to develop frameworks and metrics to measure access and inclusion in cities. The TOD Standard is the result, and this new version will help citizens in all capacities find the right tools for creating inclusive transit-oriented communities. Now we all collectively need to work to get there.

AMY KENYON

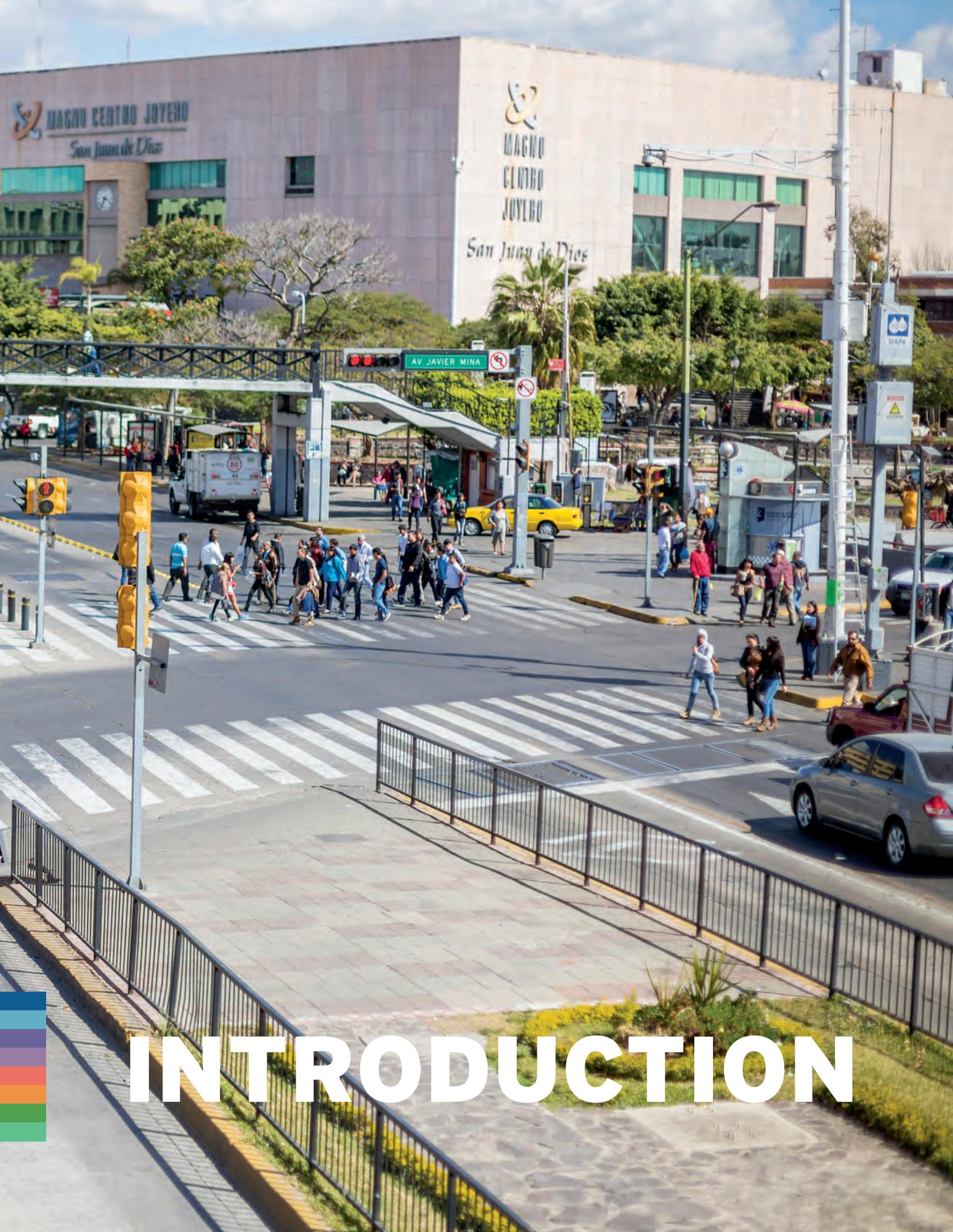
Program Officer, Equitable Development
FORD FOUNDATION

Amy Kenyon works on the Equitable Development team at the Ford Foundation. Her grant making has supported integrated approaches to equitable development through improving access to permanently affordable housing and transit choices and deepening community engagement in land use planning processes. Amy has been a program officer at the foundation since 2013. She has more than 15 years of experience in the nonprofit and public sector, with an emphasis on developing and implementing finance and community development solutions for low-income communities.



Friendly pedestrian and cyclist environment around the BRT and LRT San Juan de Dios station in Guadalajara City in México.





INTRODUCTION

INTRODUCTION

TOD, or *transit-oriented development*, means integrated urban places designed to bring people, activities, buildings, and public space together, with easy walking and cycling connection between them and near-excellent transit service to the rest of the city. It means inclusive access for all to local and citywide opportunities and resources by the most efficient and healthful combination of mobility modes, at the lowest financial and environmental cost, and with the highest resilience to disruptive events. Inclusive TOD is a necessary foundation for long-term sustainability, equity, shared prosperity, and civil peace in cities.

With few exceptions, inclusive TOD is, however, not the way cities are being built at fast pace around the world. Instead, roads and suburbs are expanding endlessly. Precious arable land is paved over, natural systems are compromised, and social segregation and isolation are exacerbated by drivable distances. Cities are choking in deadly traffic congestion, and tailpipe emissions turn the air into toxic smog and help climate change reach catastrophic levels. Day after day, a bankrupt, sprawling model of urban growth is locking the urbanizing masses into equally unsustainable and inequitable patterns of car dependency or access deprivation, at a time when cities are projected to grow by over two billion residents within the next three decades.^[1]

A global shift from urban sprawl to inclusive TOD is a most urgent matter. It is, however, more easily conceptualized than executed. Multiple, complex and interdependent elements must be aligned and brought together. They range from infrastructure, street, and building planning and design, to codes, regulation reform, and finance. Diverse participants with disparate world views and interests are involved: decision and policy makers from many institutions, professional technicians of various disciplines, developers and investors, future tenants and residents, people attached to car-based suburban lifestyles, people in communities set to be transformed by redevelopment and densification, and grassroots and civic organizations. In this context, a large-scale shift to TOD must begin with the building of a common understanding and a conceptual framework for collaboration.

The purpose of the *TOD Standard* is to facilitate and expedite these processes. It provides an accessible reference, with clear definitions, simple standards, and a rapid assessment tool, to be shared by all parties as a basis for the implementation of inclusive TOD.



^[1] United Nations, Department of Economic and Social Affairs, Population Division, *World Urbanization Prospects: The 2014 Revision* (New York: United Nations, 2015).

WHAT IS THE TOD STANDARD?

The *TOD Standard* is, first, a condensed policy brief. It lays out the core principles of inclusive TOD, based on ITDP's *Principles of Urban Development for Transport in Urban Life*,^[2] and identifies the key concrete objectives that are essential to implementing these principles in urban development.

Second, the *TOD Standard* is a unique assessment tool available to score the plans and products of urban development according to their adherence to the TOD principles and implementation objectives. A simple scoring system distributes 100 points across 25 quantitative metrics that are designed to measure the implementation of the eight principles and their 14 specific objectives. This point distribution approximately reflects the level of impact of each element in creating an inclusive TOD, as approved by the *TOD Standard*'s international technical committee of experts (see the *Governance* section). The metrics are quantitative and data based whenever possible. Some—such as *cycle access to buildings*—are based on applicable rules and regulations. The metrics are designed for simplicity of assessment and for usability in situations where data is scant or unavailable. Most of the metrics measure project characteristics that can be independently, objectively, and reasonably easily observed and verified. Research and interviews of knowledgeable parties will only be necessary in rare cases. Metric characteristics have been selected and defined to reflect the implementation objective as closely as possible. The *TOD Standard* strives to be inclusive of the widest variety of shapes, sizes, styles, and configurations that projects may take while performing well toward the TOD objectives. No particular design solutions are prescribed. Project designs should reflect the local climate and culture, as well as the creativity and innovation of their developers and designers in lowering costs, improving performance, and heightening the appeal of compact, car-independent urban development.

Finally, the *TOD Standard* includes a recognition system that awards bronze, silver, and gold status to built development projects that have strong performance toward the TOD objectives and embody the TOD principles.

WHO SHOULD USE THE TOD STANDARD?

As a reference that maps the most essential TOD principles, implementation objectives, and concrete attributes that a development should have, the *TOD Standard* is a resource for all actors engaged in, or affected by, the processes of urban development. These actors include civic leaders, decision makers, legislators, regulators, and policy makers; government agencies and technical staff; developers and investors; professional planners; engineers and designers; grassroots groups; equitable and sustainable development advocates; and interested citizens.

^[2] Institute for Transportation and Development Policy, *Our Cities Ourselves: Principles of Transport in Urban Life* (New York: ITDP, 2010).



Developers and designers can use the *TOD Standard* scoring system on projects in the planning or design phases to identify gaps and opportunities for TOD improvement. Planners can use it to help identify priority areas for investment and densification or for corrective action. Citizens and civil society organizations can make use of the *TOD Standard* to rate existing conditions or redevelopment proposals and advocate for higher-standard transit-oriented communities in the places where people live and work.

VERSION 3.0 UPDATES IN BRIEF

This third version of the *TOD Standard* is structured by the same eight principles as the previous two versions, published in 2013 and 2014, and—except one revision—the same implementation objectives. Many metrics have received minor updates to clarify instructions, improve the experience of the assessors, and correct occasional gaps in proxy metric performance.

The most substantial revisions were made to the MIX Principle, which has been significantly reinforced from 15 to 25 points, and particularly to its second objective, which focuses on the mix in *demographics and income ranges* (Objective 5.B). The *affordable housing* metric under this implementation objective has doubled its maximum points, to a total of eight, and two new metrics were added to examine and score the protection of pre-existing households and small businesses and services on a redevelopment project site. The upgrading of slums and informal settlements is now explicitly mentioned as a legitimate TOD project. Finally, to be eligible for TOD Gold Standard status, TOD projects are now required to accrue full points under the new *housing preservation* metric and at least two points under the *affordable housing* metric.

Other adjustments include five points transferred from each of the COMPACT and SHIFT Principles to the MIX Principle, so as to maintain the 100-point total of the scoring scale. The COMPACT and SHIFT Principles now have 10 and 15 points, respectively. The DENSIFY Principle's metric is now divided into separate residential and non-residential density metrics, and its measurement method is more focused on people density (households, jobs, and visitors). Minor changes were made to the gold, silver, and bronze status thresholds: each now requires one additional point. This version also has a revised metric numbering system designed to clearly convey both the principle and the objective that a particular metric serves. For example, the *shade and shelter* metric, formerly numbered Metric 1.5, is now numbered Metric 1.C.1 (Principle 1, Objective C, Metric 1). This numbering system reinforces the primacy of implementation objectives over the proxy metrics, as the latter may, in some cases, fail to adequately reflect performance toward the objective, and TOD assessors would then be asked to assign points according to actual objective attainment.

Chapter 2 contains further discussion of the approach to each principle, objective, and metric, and Chapter 3 has the full details and calculation methods for the metrics.

KEY CHANGES FOR SOCIAL AND DEMOGRAPHIC INCLUSIVITY IN THE TOD STANDARD 3.0:

- strengthened requirements for all-accessible walkways and infrastructure.
- recognition of local public amenities and services important to vulnerable residents (parks, healthcare, elementary or primary schools);
- better recognition of inclusionary affordable housing,
- new acknowledgement of informal housing upgrading as legitimate TOD project, and of upgrades to substandard units in par with new affordable housing.
- recognition of projects that avoid displacing households and local businesses and services;
- no TOD Gold Standard recognition for projects that fail to score full points under the Housing Preservation metric and at least two points under the Affordable Housing metric.

SCORING NEW DEVELOPMENT PROJECTS AND EVALUATING STATION CATCHMENT AREAS

The *TOD Standard's* assessment tool and its metrics were primarily established to measure development projects as the basic building blocks of urban expansion and the main objects of investment decisions, concerted plans, land use and design codes, and other processes and frameworks of urban development. A complementary method is nonetheless offered that allows the TOD Standard metrics to be used to evaluate the catchment areas of existing transit stations and enable planners and stakeholders to understand existing land use characteristics and see where opportunities and challenges exist.

ELIGIBILITY CRITERIA FOR PROJECT RECOGNITION

To be considered for **TOD Standard recognition**, a development project must:

Be built

Planners and designers are encouraged to use the TOD Standard for guidance and interim evaluation purposes, but a development will not be recognized until built.

Be a single project

i.e., the product of a concerted planning or design effort.

There is no upper limit to the size of eligible projects other than the 500 and 1,000 m transit access requirements (see light blue box below).

Have no block or area over 2.5 hectares off limit for public access

(as defined in the purple box). Gated compounds publicly accessible to all every day for a minimum of 15 hours are eligible if they are no larger than 5 hectares.

Be located within walkable distance of a high-quality transit station

that may be either:

- A station on a rapid transit line, defined as bus rapid transit, rail, or ferry.^[3] *Walking distance* is preferably a distance of less than 500 meters, extended, in this case, to a maximum of 1,000 meters to the building entrance in the project farthest from the station.
- A station on a non-rapid transit service that connects directly to rapid transit within 5 kilometers. The maximum acceptable walking distance is then strictly limited to 500 meters.

Transit stations in either case must be accessible to all by design and have frequent service (defined as 15 minutes or less) between 7 a.m. and 10 p.m. at a minimum. (See Metric 4.A.1).

Affect a minimum of two adjacent pedestrian blocks,

separated by one or more publicly accessible walking paths or streets.

The blocks may be either newly created, partially redeveloped, or upgraded in the case of substandard housing blocks. A project that breaks a single pre-existing block into two smaller blocks by adding a new through publicly accessible pedestrian passage is eligible. New streets and passages on private property are admissible but must be open daily to the public for a minimum of 15 hours and offer a safe and complete walkway in accordance with Metric 1.A.1.

Have a complete, all-accessible walkway network

i.e., all destinations connected to each other and to the stations by publicly accessible walkways protected from vehicular traffic. See Metric 1.A.1.

^[3] Institute for Transportation and Development Policy, *BRT Standard* (New York: ITDP, 2017). Provides specifications of minimal BRT service.

GUIDELINES FOR STATION CATCHMENT AREA EVALUATION

The existing catchment area of a station can be scored by the *TOD Standard*, but is not eligible for recognition as such. Specific metric details for station areas are offered when project-oriented metrics would not apply. This tool may be of use in analyzing and evaluating the potential and the challenges in the existing built area around transit stations. It can help prioritize action to mend gaps or to focus investment on the areas promising shorter-term success at the transportation corridor, city, or metropolitan urban area level. The *TOD Standard* should only be used in conjunction with other tools for full analysis and planning at these levels, which are beyond its scope.

The useful walkable time or distance for the analysis of a station catchment area is at the discretion of users, as it may depend on context and purpose. We recommend 500 meters as optimum, and no more than 1 kilometer of actual walking distance, including all detours. A distance of 500 meters represents about a 10-minute walk, and a distance of 1,000 meters represents about a 20-minute walk at an average urban speed of approximately 3 kilometers per hour, including wait time at intersections.



TOD STANDARD 2017 RANKINGS



GOLD STANDARD 86 - 100 POINTS

Gold-standard TOD rewards urban development projects that are global leaders in all aspects of inclusive walking-, cycling-, and transit-oriented urban development.

Achieving the gold standard requires a minimum *affordable housing* score of two points, and full score for *housing preservation*.



SILVER STANDARD 71 - 85 POINTS

Silver-standard TOD marks projects that meet most of the objectives of best practice.



BRONZE STANDARD 56 - 70 POINTS

Bronze-standard TOD indicates projects that satisfy a majority of the objectives of best practice.

GOVERNANCE

The *TOD Standard* is governed by the Technical Committee, composed of globally renowned experts on the integration of land use, urban design, and sustainable transport planning and convened by the Institute for Transportation and Development Policy (ITDP).

The committee guides, reviews, and validates the technical elements of the *TOD Standard* and recommends revisions as needed.

Technical Committee members solely nominate built development projects and validate their scores and *TOD Standard* recognition status in accordance with the official metrics and scoring scale.

The *TOD Standard* Technical Committee members include:

B.R. Balachandran
ALCHEMY URBAN SYSTEMS

Robert Cervero,
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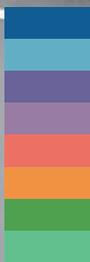
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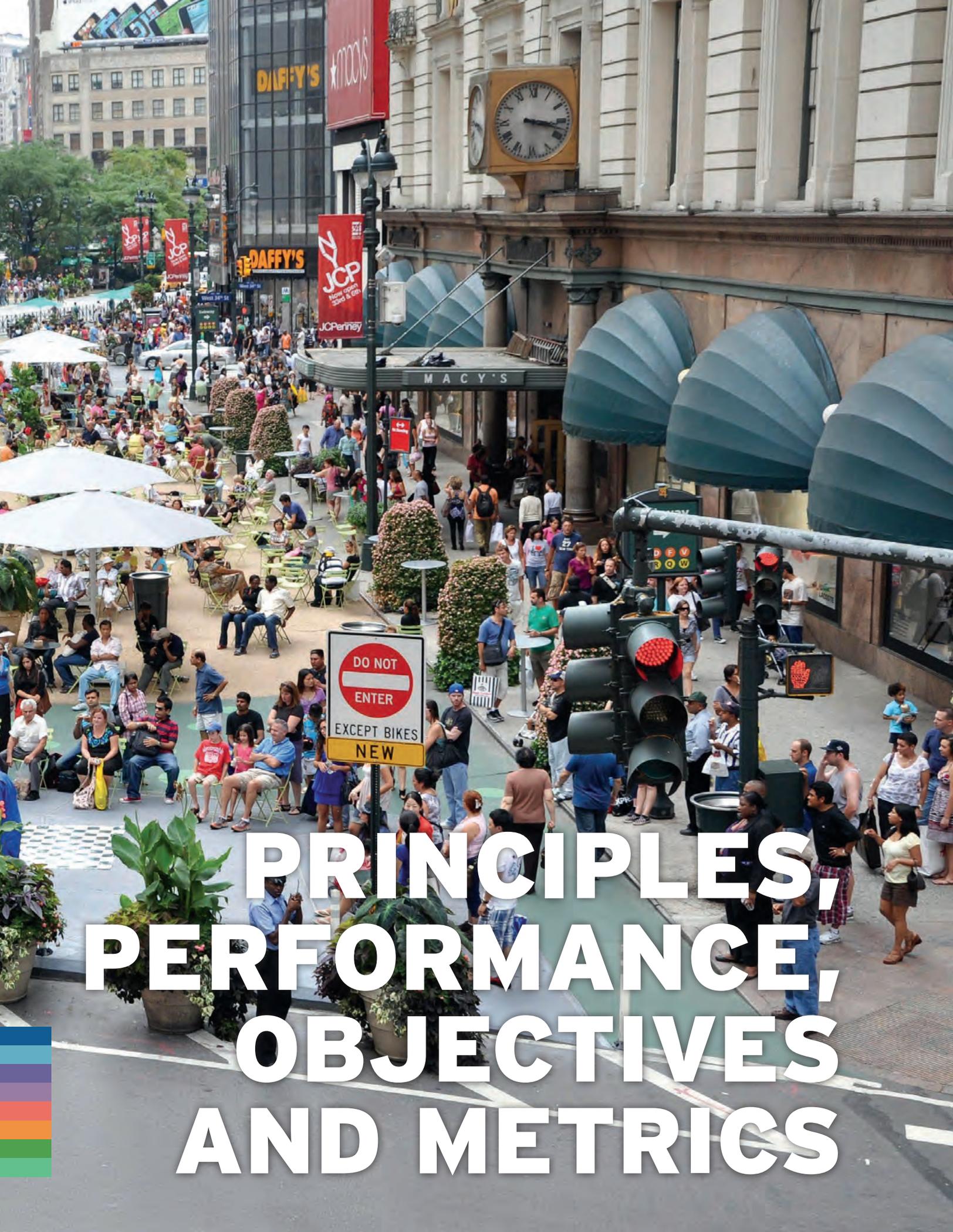
Hiroaki Suzuki,
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For further information regarding the TOD Standard, the process of scoring, and the verification of projects, please contact: todstandard@itdp.org.

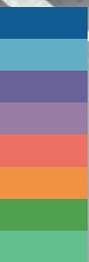


Vibrant street
plaza at
Broadway and
Herald Square,
New York City,
USA.





PRINCIPLES, PERFORMANCE, OBJECTIVES AND METRICS



ITDP'S PRINCIPLES OF URBAN DEVELOPMENT FOR TRANSPORT IN URBAN LIFE & TOD STANDARD KEY IMPLEMENTATION OBJECTIVES

WALK

DEVELOPING NEIGHBORHOODS THAT PROMOTE WALKING

- OBJECTIVE A.** The pedestrian realm is safe, complete, and accessible to all.
- OBJECTIVE B.** The pedestrian realm is active and vibrant.
- OBJECTIVE C.** The pedestrian realm is temperate and comfortable.

CYCLE

PRIORITIZE NONMOTORIZED TRANSPORT NETWORKS

- OBJECTIVE A.** The cycling network is safe and complete.
- OBJECTIVE B.** Cycle parking and storage is ample and secure.

CONNECT

CREATE DENSE NETWORKS OF STREETS AND PATHS

- OBJECTIVE A.** Walking and cycling routes are short, direct, and varied.
- OBJECTIVE B.** Walking and cycling routes are shorter than motor vehicle routes.

TRANSIT

LOCATE DEVELOPMENT NEAR HIGH-QUALITY PUBLIC TRANSPORT

- OBJECTIVE A.** High-quality transit is accessible by foot. (TOD Requirement)

MIX

PLAN FOR MIXED USES, INCOME, AND DEMOGRAPHICS

- OBJECTIVE A.** Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.
- OBJECTIVE B.** Diverse demographics and income ranges are included among local residents.

DENSIFY

OPTIMIZE DENSITY AND MATCH TRANSIT CAPACITY

- OBJECTIVE A.** High residential and job densities support high-quality transit, local services, and public space activity.

COMPACT

CREATE REGIONS WITH SHORT TRANSIT COMMUTES

- OBJECTIVE A.** The development is in, or next to, an existing urban area.
- OBJECTIVE B.** Traveling through the city is convenient.

SHIFT

INCREASE MOBILITY BY REGULATING PARKING AND ROAD USE

- OBJECTIVE A.** The land occupied by motor vehicle is minimized.

8 TOD Standard Principles



WALK

DEVELOPING NEIGHBORHOODS THAT PROMOTE WALKING

WALKING IS THE MOST NATURAL, HEALTHFUL, CLEAN, EFFICIENT, AFFORDABLE, AND INCLUSIVE MODE OF TRAVEL TO DESTINATIONS WITHIN SHORT DISTANCES, AND IT IS A NECESSARY COMPONENT OF VIRTUALLY EVERY TRANSIT TRIP. As such, walking is the foundation for sustainable and equitable access and mobility in a city. Restoring it or maintaining it as the primary mode of travel is fundamental to the success of inclusive TOD.

Walking is also potentially the most enjoyable, safe, and productive way of getting around, if paths and streets are attractive, populated, secure, uninterrupted, well protected from vehicular traffic, and if useful services and destinations are conveniently located along the way.

Walking requires moderate physical efforts that are beneficial for most people within reasonable distances but can be challenging or infeasible to some when body ability combines with obstacles, steps, or steep ramps to form barriers. In the *TOD Standard*, the terms “walking” and “walkability” should always be understood to be inclusive of users of walking or carrying aids, such as wheelchairs, white canes, baby strollers, and shopping carts. Complete walkways and crossings must fully support all users in compliance with locally applicable or international standards.

Making walking accessible and appealing motivates three key implementation objectives under this principle. (The related factors of shortness and directness are addressed under the separate CONNECT Principle.)



Improvements of the pedestrian infrastructure enabled safe and convenient walking in Chennai, India.

OBJECTIVE A. The pedestrian realm is safe, complete, and accessible to all.

The most basic feature of urban walkability and inclusivity is the existence of a complete, continuous, and safe walkway network including safe crossings at desire lines that links origins and destinations together and to the local public transit station. The network must be accessible to all persons, including older people and people with disabilities, and well protected from motor vehicles. A variety of configurations and designs of paths and streets are appropriate to the safety and completeness objective. Protected walkways separate from roadways are needed when vehicular speeds exceed 15 km/h (or 10mph). The completeness and safety of walkways and road-crossing systems are measured by Metrics 1.A.1 (*Walkways*) and 1.A.2 (*Crosswalks*).

OBJECTIVE B. The pedestrian realm is active and vibrant.

Activity feeds activity. Walking is attractive and secure and can be highly productive when sidewalks are populated, animated, and lined with useful ground-floor activities and services, such as storefront retail and restaurants. In turn, high foot traffic increases the exposure of local retail outlets and services and improves the vitality of the local economy. Visual interior–exterior interactions promote security in the pedestrian realm through passive and informal observation and surveillance. All types of land uses are relevant to street activation and informal observation—not only shops and restaurants but also informal vending, workplaces and residences. The provision of a wireless information technology connection is an increasingly important element of public space activation and security. Metric 1.B.1 (*Visually Active Frontage*) measures the visual connection between walkways and the interior of adjacent buildings. Metric 1.B.2 (*Physically Permeable Frontage*) measures active physical connections through the block’s frontage via entrances and exits to and from storefronts, building lobbies, hallways, and passageways.

OBJECTIVE C. The pedestrian realm is temperate and comfortable.

The general willingness to walk, and the inclusion of people of all bodily abilities, can be significantly improved by the provision of shade and other forms of shelter from harsh climate conditions—such as street trees, arcades and awnings—or by street orientation that mitigates sun, wind, dust, rain, and snow exposure. Trees are the simplest, most effective, and most durable way of providing shade in most climates, and they have well-documented environmental and psychological co-benefits. This objective is measured by Metric 1.C.1 (*Shade and Shelter*). Highly recommended, but not measured in this standard, for the sake of simplicity, are amenities such as benches, public toilets, drinking fountains, pedestrian-oriented lighting design, wayfinding signage, landscaping, and other street furniture and streetscape-enhancing elements.

CYCLE

PRIORITIZE NONMOTORIZED TRANSPORT NETWORKS

CYCLING IS THE SECOND-MOST HEALTHFUL, AFFORDABLE, AND INCLUSIVE MODE OF URBAN MOBILITY.

It combines walking door-to-door travel convenience and route and schedule flexibility with ranges and speeds similar to local transit services. Bicycles and other means of people-powered transport, such as pedicabs, also activate streets and greatly increase the ridership catchment area of transit stations. They are highly efficient and consume little space and few resources. Cycling friendliness is therefore a fundamental principle of TOD. Cyclists, however, are among the road users most vulnerable to crashes with vehicular traffic. Their bicycles are also vulnerable to theft and vandalism and require secure parking and storage. The key factors in promoting cycling are thus the provision of safe street conditions for cycling and the availability of secure cycle parking and storage at all trip origins and destinations and at transit stations. Electric-assist bicycles are considered in the *Standard* along with pedal-powered bicycles as long as maximum speed is similar.

OBJECTIVE A. The cycling network is safe and complete.

A safe cycling network connecting buildings and destinations by the shortest routes through developments and station catchment areas is a basic feature of TOD. This objective is measured by Metric 2.A.1 (*Cycle Network*). Various types of cycle-safe configurations can be part of the network, depending on vehicular speeds. Separated cycle paths are required when the vehicular speed is to exceed 30 km/h (20 mph). Shared roadway markings (“sharrows”) are recommended when the allowed vehicular speed is between 15 and 30 km/h. (10 and 20 mph) Shared streets and plazas with allowed vehicular (including cycling) speeds under 15 km/h (10 mph) can remain unmarked.

OBJECTIVE B. Cycle parking and storage is ample and secure.

Cycling can be an attractive everyday travel option only to the extent that bicycles can be securely parked at all destinations and stored within private premises at night and for longer periods. These elements are addressed with the secure parking features of well-anchored cycle racks by Metrics 2.B.1 (*Cycle Parking at Transit Stations*), 2.B.2 (*Cycle Parking at Buildings*), and 2.B.3 (*Cycle Access in Buildings*).



This cycling and pedestrian street in Newport Beach, California, USA, prioritizes connectivity for non-motorized travel. Crossings of vehicular streets are made highly visible and beautiful.

CONNECT

CREATE DENSE NETWORKS OF STREETS AND PATHS

SHORT, DIRECT WALKING AND CYCLING REQUIRE DENSE, WELL-CONNECTED NETWORKS OF PATHS AND STREETS AROUND SHORT CITY BLOCKS. Walking in particular can be easily discouraged by detours and is particularly sensitive to network density. A tight network of paths and streets that offers multiple routes to many destinations, frequent street corners, narrower rights of way, and slow vehicular speed make walking and cycling trips varied and enjoyable and invigorate street activity and local commerce. An urban fabric that is more permeable to pedestrians and cyclists than to cars also encourages the use of nonmotorized and transit modes with all the associated benefits. The shorter the city blocks, the better—from a strict walkability perspective. However, a balance must be struck between public right of way efficiency (denser networks mean more land devoted to rights of way) and the capacity to accommodate larger development plots for land uses that require them. Both have ramifications for the economic viability and vitality of development and, eventually, for pedestrian activity. Research shows that blocks of about one hectare and block faces averaging about 100 meters (m) present the optimum trade-off. Such blocks are highly walkable, potentially land efficient (depending on the average street width), and offer plot size options adequate for most uses.

OBJECTIVE A. Walking and cycling routes are short, direct, and varied

The simplest proxy for the connectivity of the pedestrian walkway is the size of *city blocks*, defined as sets of contiguous properties that prevent public pedestrian passage. This block definition might be distinct from the blocks defined by mapped streets, since open pedestrian paths can exist through superblocks and buildings, regardless of public or private property status. The shortness and directness Metric 3.A.1 (*Small Blocks*) rewards development projects in which the longest block faces are between 110 and 150 m, keeping in mind that most city blocks are not square.

OBJECTIVE B. Walking and cycling routes are shorter than motor vehicle routes

High pedestrian and cycling connectivity is an important feature of TOD, but roadway connectivity that enhances motor vehicle travel is not. Metric 3.B.1 (*Prioritized Connectivity*) compares the two categories and rewards higher ratios of nonmotorized travel path connectivity to car-accessible roadway connectivity.



Short blocks and streets in the Center of Copenhagen, Denmark, provide direct and vibrant routes and an environment favorable to pedestrians and cyclists.

TRANSIT

LOCATE DEVELOPMENT NEAR HIGH-QUALITY PUBLIC TRANSPORT

WALKABLE ACCESS TO RAPID AND FREQUENT TRANSIT, DEFINED AS RAIL TRANSIT OR BUS RAPID TRANSIT (BRT), IS INTEGRAL TO THE TOD CONCEPT AND A PREREQUISITE FOR TOD STANDARD RECOGNITION.^[4] Rapid transit service connects and integrates pedestrians with the city beyond walkable and cycling ranges and is critical for people to access the largest pool of opportunities and resources. Highly efficient and equitable urban mobility and dense and compact development patterns mutually support and reinforce each other.

Transit comes in various modes, ranging from low- to high-capacity vehicles, from bicycle taxis and rickshaws, to bi-articulated buses and trains. Rapid public transit plays an important role not only in providing quick and efficient travel along its lines but also as a backbone for other transit options serving the entire spectrum of urban transport needs.

The single implementation objective for this principle is locating urban development within a short walking distance of high-quality transit: ideally, 500 meters (m) or less and no more than 1,000 m of actual walking distance (about a 20-minute walk), including all detours, from rapid, frequent, and well-connected BRT, rail, or ferry service.

OBJECTIVE A. High-quality transit is accessible by foot

For TOD Standard status, the maximum acceptable walking distance to the nearest rapid transit station is defined as 1,000 m and 500 m for a frequent local bus service that connects to a rapid transit network within less than 5 kilometers. The transfer station should be designed for short, convenient and all-accessible connections with the rapid transit service.

Metric 4.A.1 (Walking Distance to Transit) compliance is a requirement, and no scoring points are given.



San Juan de Dios Macrobus BRT and LRT Station connected with the Bike Shared System, MiBici in Guadalajara, Mexico.

^[4] ITDP, *BRT Standard*.

MIX

PLAN FOR MIXED USES, INCOME, AND DEMOGRAPHICS

WHEN THERE IS A BALANCED MIX OF COMPLEMENTARY USES AND ACTIVITIES WITHIN A LOCAL AREA (I.E., A MIX OF RESIDENCES, WORKPLACES, AND LOCAL RETAIL COMMERCE), MANY DAILY TRIPS CAN REMAIN SHORT AND WALKABLE. Diverse uses peak at different times and keep local streets animated and safe. They encourage walking and cycling activity, support extended hours of transit service, and foster a vibrant and complete human environment where people want to live. People of all ages, genders, income levels, and demographic characteristics can safely interact in public places. A mix of housing options makes it more feasible for workers of all income levels to live near their jobs and helps prevent lower-income residents dependent on lower-cost public transit from being systematically displaced to poorly-served outlying areas. Inbound and outbound commuting trips are more likely to be balanced during peak hours and throughout the day, resulting in more-efficient transit systems and operations. The two performance objectives for the MIX Principle therefore focus on the provision of a balance of complementary activities and land uses and on a diverse mix of resident income levels and demographic attributes.

OBJECTIVE A. Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours

To allow many daily trips to be short and walkable, inbound and outbound transit trips to be balanced, and neighborhoods to be active and secure day and night, Metric 5.A.1 (Complementary Uses) rewards developments that support a balance of mostly nocturnal residential household activities versus mostly diurnal work and visiting activities. A project's contribution to an adequately balanced area is most beneficial if it is internally balanced, in the form of mixed-use development. If an area has only one type of use, or a heavily dominant use such as office buildings in a business district, the best contribution is to bring new uses and activities that help counterbalance that dominance. Metric 5.A.2 (Access to Local Services) rewards development for locating in, or contributing to, complete neighborhoods. The metric focuses on availability for all to local sources of fresh food, primary schools, and healthcare facilities or pharmacies. Fresh food is not only a necessity of daily life, but—equally importantly—a reasonably simple-to-assess and reliable litmus test for the wider availability of basic supplies because it has more rigorous supply chain requirements than nonperishable necessities. Very different processes govern the provision of primary schools and local healthcare services, which are essential local services especially important to poor households. Being able to walk to school, of course, carries health and cost benefits for all.

Public parks and playgrounds have multiple benefits—from improved air quality, to reduced heat island effects, to the increased physical and mental health and comfort of residents. Access to parks and playgrounds is particularly important to the urban poor, who have little access to private facilities and few opportunities to break away temporarily from urban life. Metric 5.A.3 (Access to Parks and Playgrounds) rewards the project for providing a publicly accessible recreation area of at least 300 square meters or locating near to such an area.

OBJECTIVE B. Diverse demographics and income ranges are included among local residents

Social equity is no less important to long-term sustainability than reduced environmental footprints. Mix of incomes is as important to mix of activities and uses to achieve more

equitable and sustainable communities and cities. The *TOD Standard* promotes social equity not only through inclusive access and mobility but also through inclusionary housing and its equitable distribution over the different areas of the city. The *Standard* also promotes upgrading substandard informal housing in situ, where safe, and generally promotes the protection of residents and communities from involuntary displacement caused by redevelopment.

METRIC 5.B.1 (Affordable Housing) rewards developments that includes specific provisions to improve the local mix in household income. In the general case, the scoring method rewards housing projects that include affordable housing priced lower than market rates. Any level of inclusionary housing yields 1 point. Points increase as percentage grows, peaking at a 50% affordable units mix (8 points). Two variants to the general case address contexts of strong high-income and low-income predominance. The higher-income area variant is designed to promote counteract the social imbalance by rewarding infill projects with up to 100% affordable housing units. Conversely, to avoid reinforcing concentration in zones of poverty, the low-income area variant does not reward any addition of affordable units but only grants points for the upgrading or replacement of existing substandard housing units. In all scenarios, the upgrading of substandard housing units is counted as new affordable housing provision. Development projects must accrue at least two points on this metric to be eligible for *Gold TOD Standard* recognition.

METRIC 5.B.2 (Housing Preservation) discourages the displacement of families present on site before redevelopment, the disruption of their community ties, destruction of social capital and networks, and loss of access to familiar resources and local employment opportunities. The metric rewards the maintenance on site or rehousing within walking distance of these households. Development projects must accrue full points on this metric to be eligible for *Gold TOD Standard* recognition.

METRIC 5.B.3 (Business and Services Preservation) rewards development projects that protect pre-existing businesses and services on the development site as part of the social fabric of the pre-existing community.



Pedestrian street in Monterrey, Mexico is active even after sunset due to vibrant commercial uses.

DENSIFY

OPTIMIZE DENSITY AND MATCH TRANSIT CAPACITY

A DENSE MODEL OF DEVELOPMENT IS ESSENTIAL TO SERVING FUTURE CITIES WITH TRANSIT THAT IS SUFFICIENTLY RAPID, FREQUENT, WELL CONNECTED, AND RELIABLE AT MOST HOURS TO ENSURE A SATISFACTORY LIFE FREE OF DEPENDENCE ON CARS AND MOTORCYCLES. Urban density is needed to both accommodate growth within the inherently limited areas that can be served by quality transit and to provide the ridership that supports and justifies the development of high-quality transit infrastructure. From this perspective, urban areas must be designed and equipped not only to accommodate more people and activities per hectare than is usually the case in this age of vehicle-oriented sprawl but also to support highly desirable lifestyles.

Transit-oriented density results in well-populated, lively, active, vibrant, and secure places, where people want to live. It delivers the customer base and the foot traffic that makes local commerce thrive and supports a wide choice of services and amenities. Densification should generally be encouraged to the full extent that it is compatible with daylighting and the circulation of fresh air, access to parks and recreational spaces, the preservation of natural systems, and the protection of historic and cultural resources. As many of the most well-loved neighborhoods in great cities around the world attest, high-density living can be highly attractive. The challenge is to generalize the best aspects of urban density at an affordable cost, mobilize the resources to make it happen with appropriate infrastructure and services, and reform the frequent bias of land use codes and other development policy frameworks toward low densities. The performance objective under this principle emphasizes a combination of residential and nonresidential density in support of high-quality transit, local services, and vibrant public spaces.

OBJECTIVE A. High residential and job densities support high-quality transit, local services, and public space activity

Metric 6.A.1 (Nonresidential Density) rewards projects for achieving equal or higher densities by comparing them contextually to local best practice of successful recent and similar projects in the same city. Depending on data availability, a choice of indicator is available: (1) jobs and daily visitors per hectare, which more closely reflects actual performance, or (2) the built floor to land area ratio (FAR), which is usually easier to obtain or to estimate from visual assessment. Increasing densities within a 500 m walking distance of a transit station is the preferred approach, and only projects located in that zone are now eligible for full points in this metric. Metric 6.A.2 (Residential Density) similarly rewards dwelling unit density as a proxy for residential density.



Mixed uses and prioritized connectivity for pedestrians are demonstrated in the high-profile development of Jianwai Soho in Beijing, China.

COMPACT

CREATE REGIONS WITH SHORT TRANSIT COMMUTES

THE BASIC ORGANIZATIONAL PRINCIPLE OF TOD IS COMPACTNESS: HAVING ALL NECESSARY COMPONENTS AND FEATURES FITTED CLOSE TOGETHER, CONVENIENTLY AND SPACE-EFFICIENTLY. With shorter distances, compact cities require less time and energy to travel from one activity to another, need less extensive and costly infrastructure (though higher standards of planning and design are required), and preserve rural land from development by prioritizing the densification and redevelopment of previously developed land. The COMPACT Principle can be applied on a neighborhood scale, resulting in spatial integration by good walking and cycling connectivity and orientation toward transit stations. On the scale of a city, compact means the city is covered and integrated spatially by public transit systems. The two performance objectives for this principle focus on the proximity of a development to existing urban activity and short travel times to the major trip generators in the central and regional destinations.

OBJECTIVE A. The development is in, or next to, an existing urban area

To promote densification and the efficient use of previously developed vacant lots, such as brownfields, Metric 7.A.1 (Urban Site) rewards development on sites within or immediately adjacent to an urbanized area.

OBJECTIVE B. Traveling through the city is convenient

Metric 7.B.1 (Transit Options) encourages project locations in areas with multiple transport options, including different rapid and local transit services and para-transit options serving the diverse needs and destinations of residents and encouraging more people to use transit.



The BRT corridors spurred further development along the compact urban area of Zhongshan Road, Guangzhou, China.

SHIFT

INCREASE MOBILITY BY REGULATING PARKING AND ROAD USE

IN CITIES SHAPED BY THE ABOVE SEVEN PRINCIPLES, THE USE OF PERSONAL MOTOR VEHICLES IN DAY-TO-DAY LIFE BECOMES UNNECESSARY FOR MOST PEOPLE, AND THE VARIOUS DETRIMENTAL SIDE EFFECTS OF SUCH VEHICLES CAN BE DRASTICALLY REDUCED. Walking, cycling, and the use of high-quality transit are easy, safe, and convenient, and car-free lifestyles can be supported by a variety of intermediary transit modes and hired vehicles as needed. Scarce and valuable urban space resources can be reclaimed from unnecessary roadways and parking and reallocated to more socially and economically productive uses. Conversely, a gradual but proactive reduction of roadways and parking space availability in urban space is needed to lead to a shift in transport mode shares from private motor vehicles to the more sustainable and equitable modes, if matched by sufficient walking, cycling, public transit, and occasional support vehicles. The implementation objective below focuses on the minimization of the space given over to motor vehicles, on which urban development practices and policies have specific leverage. However, a wide array of other policies, including fiscal and regulatory, need to be mobilized to de incentivize reliance on cars and motorcycles.

OBJECTIVE A. The land occupied by motor vehicles is minimized

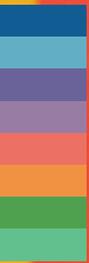
Metric 8.A.1 (*Off-Street Parking*) rewards a low provision of parking space within development boundaries. Metric 8.A.2 (*Driveway Density*) measures the frequency of driveways breaching the protected status of walkways and rewards driveway minimization. Metric 8.A.3 (*Roadway Area*) measures the total area of street space occupied by private motor vehicles either in the form of road area or on-street parking. Transit-dedicated lanes are not to be counted in the measurement.



The Central St. Giles mixed-use development in London, UK, only includes a few car parking spaces. This well-connected development is dense with small block footprints with active and permeable frontage, and provides easy access for pedestrians and cyclists.

Safe cycleways enhance the multimodal transportation options as well as enable a sustainable way of moving around Buenos Aires, Argentina.





SCORING IN DETAIL



Objective A:

The pedestrian realm is safe, complete, and accessible to all

Metric 1.A.1 Walkways

Percentage of walkway segments with safe, all-accessible walkways. **3 points**

Metric 1.A.2 Crosswalks

Percentage of intersections with safe, all-accessible crosswalks in all directions. **3 points**

Objective B:

The pedestrian realm is active and vibrant

Metric 1.B.1 Visually Active Frontage

Percentage of walkway segments with visual connection to interior building activity. **6 points**

Metric 1.B.2 Physically Permeable Frontage

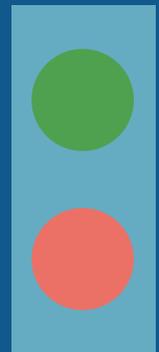
Average number of shops, building entrances, and other pedestrian access per 100 meters of block frontage. **2 points**

Objective C:

The pedestrian realm is temperate and comfortable

Metric 1.C.1 Shade and Shelter

Percentage of walkway segments that incorporate adequate shade or shelter elements. **1 point**



DEVELOP
NEIGHBORHOODS THAT
PROMOTE WALKING

PRINCIPLE
1



WALK



OBJECTIVE 1.A. The pedestrian realm is safe, complete, and accessible to all.

3
POINTS

1.A.1

WALKWAYS

- ▶ Percentage of walkway segments with complete, all-accessible walkways.

DETAILS

- A project has complete, *all-accessible walkways* when all blocks and all building and property entrances are served by safe, continuous walkways, connected in all possible directions to the adjacent pedestrian network. This is a core attribute of TOD and should be achieved by all new TOD projects.
- A block's *walkways* are measured as segments in the pedestrian network. *Segments* are stretches of walkways between two adjacent intersections in the network and can be of any of the following types:
 - (a) dedicated sidewalks protected from vehicular traffic by a curb or other adequate device.
 - (b) shared streets designed for safe sharing between pedestrians, cyclists, and vehicles (i.e., with speeds capped at 15 km/h [10 mph]).
 - (c) pedestrian paths or pedestrian–cyclist shared paths.
- Acceptable complete walkway segments must meet all the following criteria:
 - (a) be designed for easy pedestrian access to all abutting buildings and properties on the block frontage segment,
 - (b) be unobstructed and barrier-free for people with disabilities, including wheelchair users and people with low vision, according to local regulations or international standards,^[5] and
 - (c) receive street lighting at night that is adequate for pedestrian safety and security.
- Temporary walkway obstructions caused by works or other situations should not be penalized if a safe, all-accessible detour of the shortest possible distance is available to all destinations.

MEASUREMENT METHOD

- 1 Quantify the total walkway segments abutting the block. (*Blocks* are areas impermeable to public pedestrian traffic and circumscribed by public-accessible pedestrian walkways, including through-building passages; see Glossary).
- 2 Quantify the qualifying walkway segments (see details above).
- 3 Divide the second measure by the first to calculate the percentage of walkway network completeness.



Well-accessible pedestrian walkways with street furniture and elements of shade in Centro Histórico in Mexico City, Mexico.

^[5] United Nations, *Accessibility for the Disabled*.



Sidewalks and crossings should be all-accessible in the pedestrian network like here in Guadalajara, Mexico

DATA SOURCES

Plans and designs; maps; up-to-date, high-definition aerial/satellite photography; site survey.

SCOPE

Within the development’s boundaries and immediately adjacent within the public right of way.



WALKWAYS

Percentage of the walkway network that is complete:

100%	▶	3 POINTS
Less than 100%	▶	0 POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area (guidelines found in the eligibility criteria or in the How to Use the TOD Standard section).



WALKWAYS

Percentage of the walkway network that is complete:

100%	▶	3 POINTS
90% or more	▶	2 POINTS
80% or more	▶	1 POINTS
Less than 80%	▶	0 POINTS

OBJECTIVE 1.A. The pedestrian realm is safe, complete, and accessible to all.

3
POINTS

1.A.2

CROSSWALKS

▶ Percentage of intersections with safe, all-accessible crosswalks in all directions.

DETAILS

- Completeness of the all-accessible pedestrian access network is a core attribute of TOD.
- Safe, all-accessible crosswalks are required at intersections of roadways where vehicular speed exceeds 15 km/h (10 mph).
- In very dense street networks, a qualifying crosswalk through the larger roadway is only required at intervals of 200 meters (m) or less.
- To qualify as safe and all-accessible, crosswalks must be compliant with all of the below:
 - (a) are barrier-free for people with disabilities, including wheelchair users and people with low vision, according to local regulations or international standards,^[6]
 - (b) measure 2 m or more in width and are demarcated,
 - (c) feature all-accessible refuge islands if crossing more than two traffic lanes, and
 - (d) receive adequate street lighting at night for safety and security.

MEASUREMENT METHOD

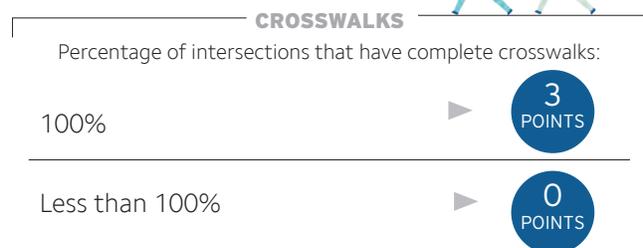
- 1 Quantify the number of intersections that require pedestrian crossing facilities.
- 2 Quantify the number of these intersections with qualifying crossing facilities (see details above).
- 3 Divide the second measure by the first to calculate the percentage of complete intersections.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; site survey.

SCOPE

Within development boundaries.



^[6] United Nations, *Accessibility for the Disabled*.



STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.

CROSSWALKS

Percentage of intersections that have complete crosswalks:

100% ▶ 3 POINTS

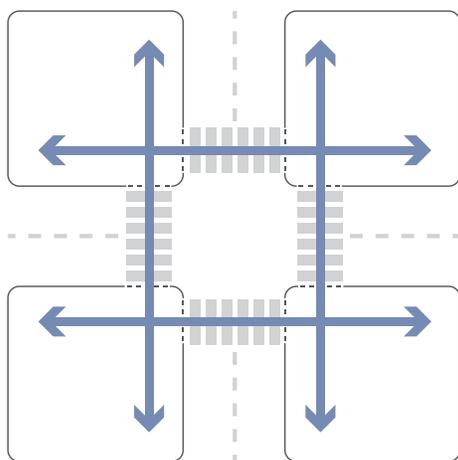
90% or more ▶ 2 POINTS

80% or more ▶ 1 POINTS

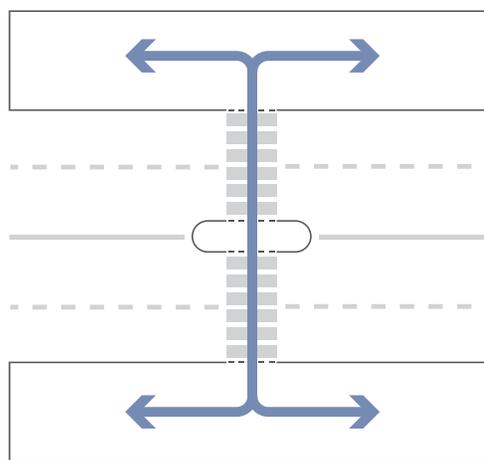
Less than 80% ▶ 0 POINTS



This pedestrian intersection in Greenwich Village, New York City, USA, is marked for rebuilding with a sidewalk bulb out that shortens crossing distance for pedestrians



Crosswalks should be provided in all directions to create a complete pedestrian network



Crosswalks that cross two or more traffic lanes have a wheelchair-accessible pedestrian refuge.

OBJECTIVE 1.B. The pedestrian realm is active and vibrant.

6

POINTS

1.B.1

VISUALLY ACTIVE FRONTAGE

- ▶ Percentage of walkway segments with visual connection to interior building activity.

DETAILS

- A *walkway segment*, defined as a length of frontage between two adjacent intersections in the pedestrian network, is considered *visually active* if 20% or more of the length of its abutting building frontage is visually active.
- *Visually active frontage* is defined as the length of ground-floor building frontage abutting public walkways that is visually penetrable.
- *Visually penetrable frontage* comprises partially or completely transparent windows and materials along the length of frontage at any point between ground level and 2.5 meters (m) above ground. In this definition, residential building windows with ledges just above pedestrian eye level are acceptable.
- Accessible open space such as playgrounds, parks, porches, and patios is included, but landscaping not designed to be routinely used by people is not.
- Windows with operable interior or exterior curtains or shutters are included as visually active.
- Garage entrances and other vehicle-only access points are not included as visually active frontage and count as blank walls.
- Undeveloped plots (plots farmed, fallow, vacant, or used as park and gardens) are not included in the measurement.
- Alleyways that dead-end and have no main pedestrian entrance need not be counted as public walkway segments.

MEASUREMENT METHOD

- 1 Quantify the total number of public walkway segments.
 - (a) For narrow streets with a right of way from building line to building line of less than 20 m, both sidewalks can be counted as one public walkway segment.
 - (b) For streets with a right of way from building line to building line of 20 m or more, each sidewalk must be counted as one walkway segment.
- 2 Quantify the number of public walkway segments that qualify as visually active (see details above).
- 3 Divide the second measure by the first to calculate an active frontage percentage.

DATA SOURCES

Plans and designs; maps; site survey.

SCOPE

Within the development and its periphery.



VISUALLY ACTIVE FRONTAGE



Percentage of walkway segments with visually active frontage:

90% or more



6
POINTS

80% or more



5
POINTS

70% or more



4
POINTS

60% or more



3
POINTS

50% or more



2
POINTS

Less than 50%



0
POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.



Visually active frontage within residential district of Liuyun Xiaoqu in Guangzhou, China.

OBJECTIVE 1.B. The pedestrian realm is active and vibrant.

2
POINTS

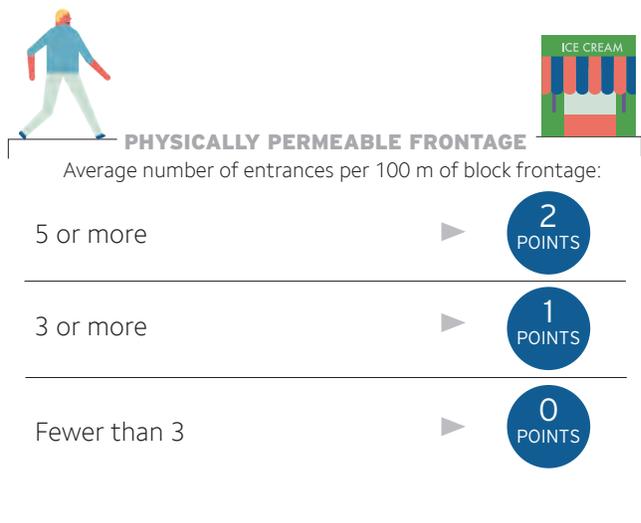
1.B.2

PHYSICALLY PERMEABLE FRONTAGE

► Average number of shops, building entrances, and other pedestrian access per 100 meters (m) of block frontage.

DETAILS

- Qualifying entrances include openings to storefronts, restaurants and cafés, building lobbies, active service entrances, pedestrian passageways, park gates, and corner plaza access.
- Nonqualifying entrances include emergency-only exits, storage, motor vehicle garages, and driveway entrances.
- Undeveloped plots (plots still farmed, fallow, vacant, or used as parks and gardens) are not included in the measurement.
- Alleyways that dead-end and do not lead to a main pedestrian entrance need not be counted as public walkway segments.



MEASUREMENT METHOD

- 1 Quantify the total length of block frontage that abuts public walkways and divide by 100 m.
- 2 Quantify the number of entrances along public walkways.
- 3 Divide the second measure by the first to calculate the average number of entrances per 100 m of block frontage.

DATA SOURCES

Plans and designs; maps; site survey.

SCOPE

Within the development.

Multiple shop and building entrances at the ground level create a highly permeable and welcoming street frontage in Pune, India.

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:

Same as above.

SCOPE:

Within the defined station catchment area.





OBJECTIVE 1.C. The pedestrian realm is temperate and comfortable.

1
POINT

1.C.1 SHADE AND SHELTER

▶ Percentage of walkway segments that incorporate adequate shade of shelter amenities.

DETAILS

- *Walkway segments* are the parts of walkways that lie between two adjacent intersections in the pedestrian network, including nonmotorized network intersections.
- *Shade and shelter* can be provided through various amenities, as locally appropriate. Such amenities include trees, buildings (e.g., arcades, awnings, cast shadows), freestanding structures (e.g., shade shelters at intersections and public transport shelters), and vertical wind and solar screens (e.g., walls and lattices).
- *Shaded walkways* are walkways that provide appropriate shading over the clear pedestrian path in the hottest season.
- Streets with more than two traffic lanes must be adequately shaded on both sides to qualify as shaded walkway segments.
- In hot climates, walkway segments in narrow streets that are adequately shaded by buildings other than for a short time at peak sun qualify as shaded walkways.



In Dakar, Senegal, the natural foliage protects pedestrians from direct sun.

MEASUREMENT METHOD

- 1 Quantify the number of walkway segments.
- 2 Quantify the number of segments that incorporate climate-adequate shade or shelter elements.
- 3 Divide the second measure by the first to calculate the percentage of adequately shaded and sheltered walkways.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; site survey.

SCOPE

Within development boundaries.



SHADE AND SHELTER

Percentage of all walkway segments that have adequate shade and shelter amenities:

75% or more



1
POINTS

Less than 75%



0
POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.

Objective A:

The cycling network is safe and complete.

Metric 2.A.1 Cycle Networks

Access to a safe cycling street and path network
2 points

Objective B:

Cycle parking and storage are ample and secure

Metric 2.B.1 Cycle Parking at Transit Stations

Ample, secure, multi-space cycle parking facilities are provided at all transit stations. 1 point

Metric 2.B.2 Cycle Parking at Buildings

Percentage of buildings that provide ample, secure cycle parking. 1 point

Metric 2.B.3 Cycle Access in Buildings

Buildings allow interior access and storage within tenant-controlled spaces for cycles. 1 point



PRIORITIZE NONMOTORIZED TRANSPORT NETWORKS

PRINCIPLE
2



CYCLE





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EL 2017

PDI



A safe cycling network promotes the use of bicycles for transportation in Santiago de Chile.



OBJECTIVE 2.A: The cycling network is safe and complete.

2
POINTS

2.A.1

CYCLE NETWORK

► Access to a safe cycling street and path network.

DETAILS

- Complete cycling network segments with safe conditions are defined as:
 - (a) street segments with speeds above 30 km/h (20 mph) with exclusive or protected cycleways, spatially segregated from vehicles in both directions (e.g., painted or physically separated cycle lanes),
 - (b) slow street segments with a vehicular speed of 30 km/h (20 mph) or slower (exclusive or protected cycleways are not required, but sharrow stencils are recommended),
 - (c) pedestrian-priority street segments, or shared streets, with 15 km/h (10 mph) vehicular speed limit (no segregation of either pedestrians or cyclists is required), or
 - (d) paths restricted to pedestrians and cyclists.

MEASUREMENT METHOD

- 1 Identify any street and path network segment that does not qualify for safe cycling (see details above).
- 2 Identify any building entrance that opens onto an unsafe cycling segment and is farther than 200 meters (m) from the safe network.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; local government transport data; site survey.

SCOPE

Within the development.



CYCLE NETWORK

100% of street and path segments are open and safe for cycling	►	2 POINTS
No building entrance is more than a 200 m walking distance from a safe cycling network segment	►	1 POINT
One or more building entrance are more than a 200 m walking distance from a safe cycling network segment	►	0 POINTS



A high capacity cycle way has physical protection, turning lanes and an advanced stop line for cyclists in Hangzhou, China.

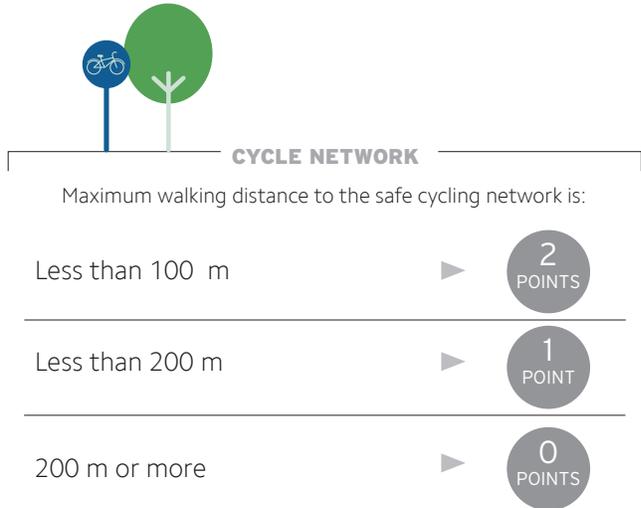
STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:

- 1 Identify all street and path network segments in the area that qualify for safe cycling (see details above) and connect to a qualifying transit station.
- 2 Identify the building the farthest (walking distance) from the safe cycling network. Exclude any extreme outliers. Measure the walking distance from the building to the safe cycling network.

SCOPE:

Within the defined station catchment area.



Traffic calmed, low speed streets are safe for cycling without segregated cycleways; Mexico City, Mexico



OBJECTIVE 2.B: Cycle parking and storage is ample and secure.

1
POINT

2.B.1

CYCLE PARKING AT TRANSIT STATIONS

▶ Ample, secure, multispace cycle parking facilities are provided at all transit stations.

DETAILS

- *Secure cycle parking* requires the provision of fixed facilities at which to lock bicycles and other nonmotorized vehicles. These facilities include multispace outdoor racks and weather-protected storage.
- Cycle parking facilities should be located clear of pedestrian or vehicle circulation paths and within 100 meters (m) of a transit station entrance.

MEASUREMENT METHOD

- 1 Identify all transit stations within the scope defined below.
- 2 Identify any station that does not provide multispace, secure cycle parking facilities (see details above).

DATA SOURCES

Plans and designs; maps; public transport map; local government transport data; site survey.

SCOPE

All transit stations within 1 kilometer of the development.



A large parking facility at Pantitlán transit hub in México City, makes cycle storage secure and combining cycling and transit modes convenient.



CYCLE PARKING AT TRANSIT STATIONS

Multispace cycle racks are provided within 100 m of all transit stations



1
POINT

Multispace cycle racks are not provided or are only provided at some transit stations



0
POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
All transit stations within the defined station catchment area.

OBJECTIVE 2.B: Cycle parking and storage is ample and secure.

1
POINTS

2.B.2

CYCLE PARKING AT BUILDINGS

► Percentage of buildings that provide ample, secure cycle parking.

DETAILS

- Applies to buildings with a floor area larger than 500 square meters (m²) or six residential units.
- Qualifying cycle parking at buildings:
 - (a) is located clear of pedestrian or vehicle circulation areas within 100 m of the entrance, and
 - (b) provides ample racks or other fixed facilities to securely lock bicycles and other nonmotorized vehicles.
- Cycle parking facilities in public streets and public garages within 100 m qualify if ample and secure enough.



Bike storage station for local residents at Hammarby Sjöstad, Stockholm, Sweden.

MEASUREMENT METHOD

- 1 Quantify all applicable buildings.
- 2 Quantify all applicable buildings with qualifying cycle parking (see details above).
- 3 Divide the second measure by the first to calculate a percentage for cycle parking provision.

DATA SOURCES

Plans and designs; maps; public transport map; local government bicycle parking data; site survey.

SCOPE

All buildings within the development.



STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
All buildings within the defined station catchment area.

CYCLE PARKING AT BUILDINGS

Percentage of buildings that provide qualifying cycle parking:

95% or more



1
POINT

Less than 95%



0
POINTS

CYCLE PARKING AT BUILDINGS

Percentage of buildings that qualifying cycle parking:

25% or more



1
POINT

Less than 25%



0
POINTS



OBJECTIVE 2.B: Cycle parking and storage is ample and secure.

1
POINT

2.B.3

CYCLE ACCESS IN BUILDINGS

► Buildings allow interior access and storage within tenant-controlled spaces for cycles.

DETAILS

- Cycle access via common hallways and elevators into residential and nonresidential tenant-controlled spaces must be allowed by building code or bylaws or by long-term lease agreement.

MEASUREMENT METHOD

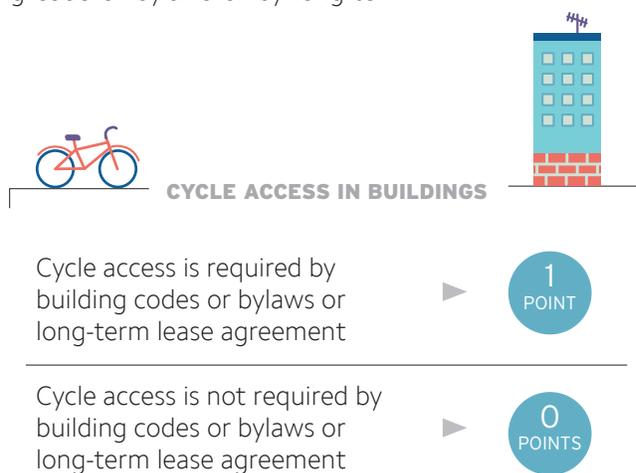
- ① Review applicable codes and bylaws or a tenant handbook.

DATA SOURCES

Applicable codes or bylaws; available tenant information.

SCOPE

All buildings constructed as part of the development.



STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
All buildings within the defined station catchment area.

A cycle parking area near the elevator of an office in New York City, USA.



Objective A:

Walking and cycling routes are short, direct, and varied.

Metric 3.A.1 Small Blocks

Length of longest pedestrian block.

10 points

Objective B:

Walking and cycling routes are shorter than motor vehicle routes

Metric 3.B.1 Prioritized Connectivity

Ratio of pedestrian intersections to motor vehicle intersections.

5 points



CREATE DENSE NETWORKS
OF STREETS AND PATHS

PRINCIPLE
3



CONNECT





Revived old streets and alleyways of the Insadong district create a diverse network of interesting and convenient walking routes in Seoul, South Korea.



OBJECTIVE 3A: Walking and cycling routes are short, direct, and varied.

10
POINTS

3.A.1

SMALL BLOCKS

► Length of longest pedestrian block

DETAILS

- *Pedestrian blocks* are defined in this *Standard* by pedestrian connectivity, as opposed to vehicular connectivity. A block is a continuous set of adjoining enclosed properties impermeable to pedestrian public passage. A block is demarcated by the *block line* separating these adjoining properties from the publicly accessible pedestrian passages and the right of way around it. For instance, a building or property with a through passage open to the public counts as two pedestrian blocks.
- *Public accessibility* is defined as unrestricted passage for all for at least 15 hours a day.
- Blocks are measured by the length of the longest block face or *block frontage*. The block line is measured corner to corner between two adjacent intersections in the pedestrian network.
- Blocks located along pre-existing linear infrastructures that are permanently impermeable to pedestrians, such as at-grade railroads and motorways, need not be counted.



MEASUREMENT METHOD

- 1 Quantify the number of blocks that lie fully within the development.
- 2 Measure or estimate the length of each block.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography.

SCOPE

All pedestrian blocks within the development.

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
All blocks within the defined station catchment area.

SMALL BLOCKS	
All blocks within the development are:	
Shorter than 110 meters (m)	▶ 10 POINTS
Shorter than 130 m	▶ 6 POINTS
Shorter than 150 m	▶ 2 POINTS
Some blocks within the development are longer than 150 m	▶ 0 POINTS

SMALL BLOCKS	
90% of blocks within the catchment area are:	
Shorter than 110 m	▶ 10 POINTS
Shorter than 130 m	▶ 8 POINTS
Shorter than 150 m	▶ 6 POINTS
Shorter than 170 m	▶ 4 POINTS
Shorter than 190 m	▶ 2 POINTS
More than 10% of blocks within the catchment area are longer than 190 m	▶ 0 POINTS

OBJECTIVE 3.B: Walking and cycling routes are shorter than motor vehicle routes.

5

POINTS

3.B.1

PRIORITIZED CONNECTIVITY

▶ Radio of pedestrian intersections to motor vehicle intersections.

DETAILS

- *Pedestrian intersections* are intersections in the all-accessible and publicly accessible pedestrian network, as defined in Metrics 1.A.1 (Walkways) and 1.A.2 (Crosswalks). The *network* includes streets with appropriate sidewalks and crosswalks, pedestrian-priority (shared) streets, and pedestrian paths and passages.
- Motor vehicle intersections are defined as intersections in the vehicular roadway network, excluding pedestrian-priority (shared) streets.
- Intersections at plazas and open spaces permeable to pedestrians and cyclists, but without defined paths, are counted as four-way intersections.
- Cul-de-sacs and dead ends with no throughway or pedestrian exit connecting back to the pedestrian network do not count toward an intersection's connection count. Therefore, a four-way intersection for which one of the ways is a cul-de-sac is counted as a three-way intersection.

MEASUREMENT METHOD

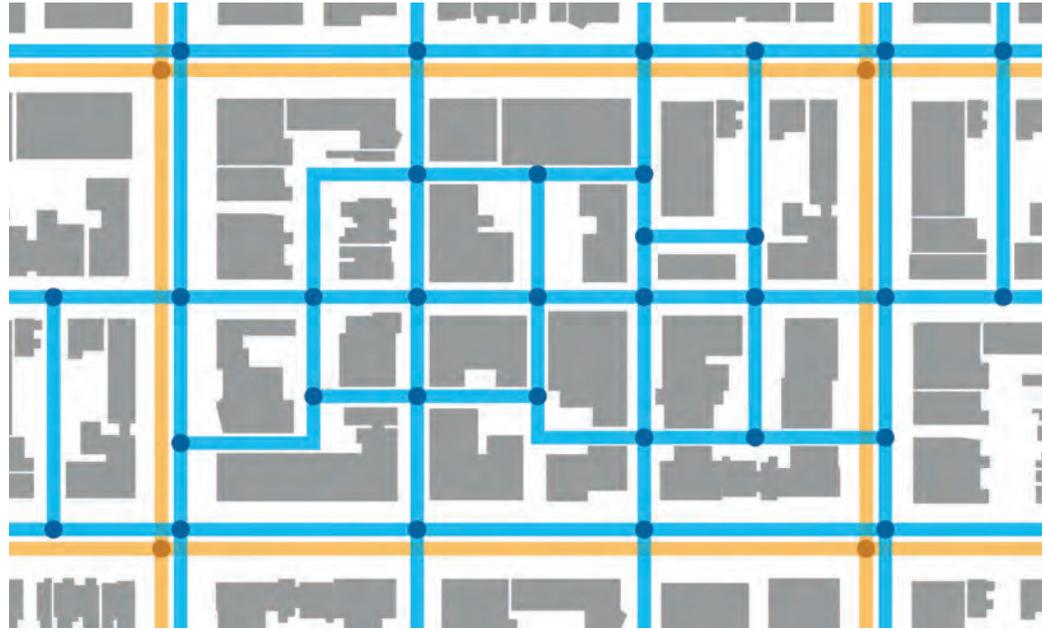
- 1 Map all motor vehicle intersections within the development and to the centerline of peripheral streets.
- 2 Map all pedestrian intersections within the development and to the centerline of peripheral streets. Count all motor vehicle intersections with appropriate walkways and crosswalks as pedestrian intersections in this step.
- 3 Quantify all intersections as follows:
 - (a) A four-way intersection = 1 intersection
 - (b) A three-way, or "T", intersection = 0.75 intersections
 - (c) A five-way intersection = 1.25 intersections
- 4 Divide the second measure by the first to calculate a prioritized connectivity ratio.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; site survey.

SCOPE

Within the development and to the centerline of peripheral streets.



Blue lines indicate the pedestrian and cycling network with multiple intersections and direct access to the core. Orange lines indicate streets with separate vehicular roadway, keeping cars just outside the core.



PRIORITIZED CONNECTIVITY

Prioritized connectivity ratio is:

2 or higher



5
POINTS

1.5 or higher



3
POINT

Higher than 1



1
POINT

1 or lower



0
POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.



Pedestrian streets with limited access for vehicles make walking attractive in downtown Santiago de Chile.

Objective A:
High-quality transit is accessible by foot.

Metric 4.A.1 Walking Distance to Transit
Walking distance to the nearest transit station

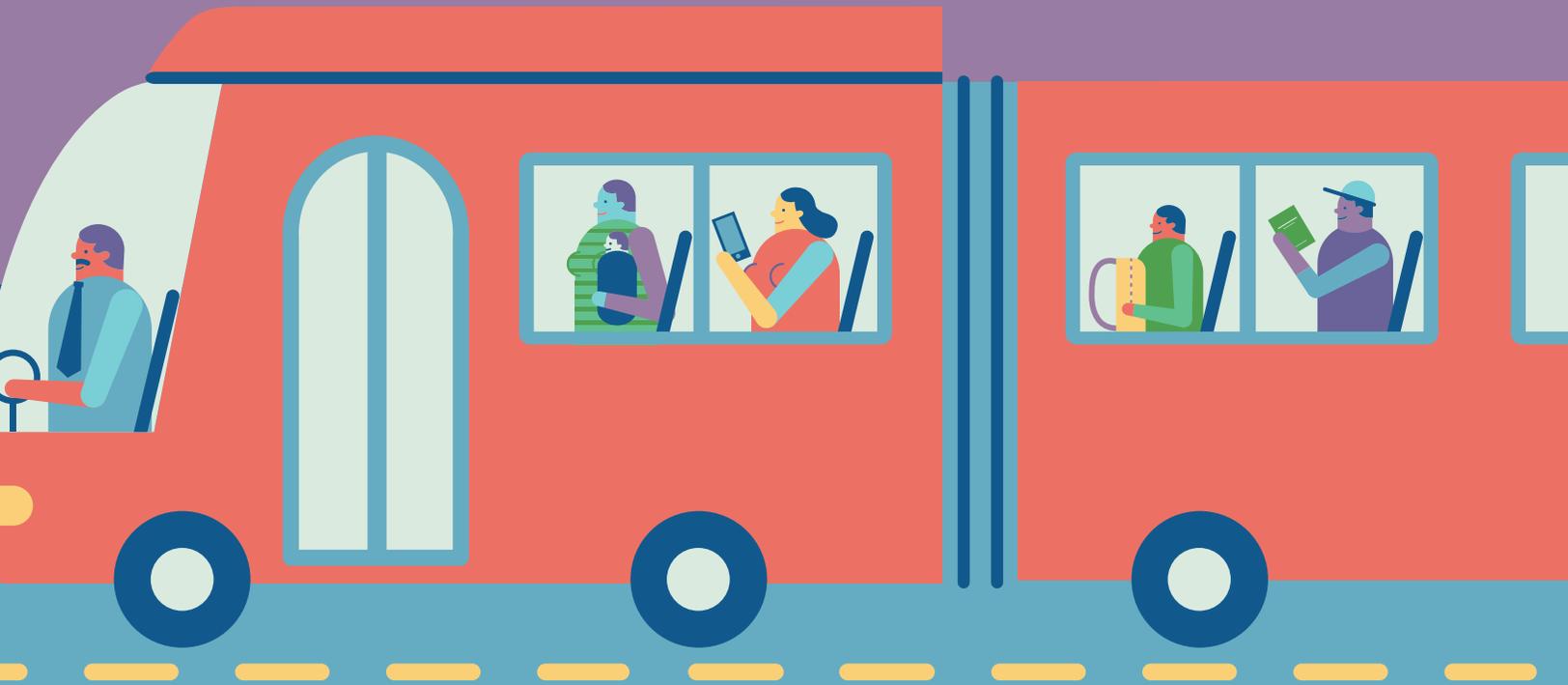


LOCATE DEVELOPMENT
NEAR HIGH-QUALITY
PUBLIC TRANSPORT

PRINCIPLE
4



TRANSIT



OBJECTIVE 4.A: High-quality transit is accessible by foot.

TOD
REQUIREMENT

4.A.1

WALKING DISTANCE TO TRANSIT

► Walking distance to the nearest transit station.

DETAILS

- Applicable transit stations are accessible to all by design, have a minimum 15-minute service frequency between 7 a.m. and 10 p.m., and may be:
 - (a) a *rapid transit* station (defined as bus rapid transit, rail, or ferry), or
 - (b) a station on a nonrapid transit service that connects to rapid transit within 5 kilometers.
- Buildings in the development must all be within a 1,000-meter (m) all-accessible walking distance of a rapid transit station or within a 500 m walking distance of a qualified nonrapid direct service.
- The actual walking distance between the entrance to the farthest building and a transit station is measured via all-accessible walkways and crosswalks in public areas (not a straight line).
- All-accessible stations and walkways are defined as barrier-free for people with disabilities, including wheelchair users and people with low vision, according to local regulations or international standards.^[7]



Accessible pedestrian infrastructure around the Metrobús BRT Station in Buenos Aires, Argentina, provides safe and easy access to transit

MEASUREMENT METHOD

- 1 Identify the building entrances that are farthest from applicable transit stations.
- 2 Quantify the longest walking distance to the nearest station.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; site survey.

SCOPE

All buildings within the development; nearby transit stations.



MAXIMUM WALKING DISTANCE TO TRANSIT

The longest walking distance to a transit station is 1,000 m or less for rapid transit or 500 m or less for a direct service

MEETS TOD
STANDARD
REQUIREMENT

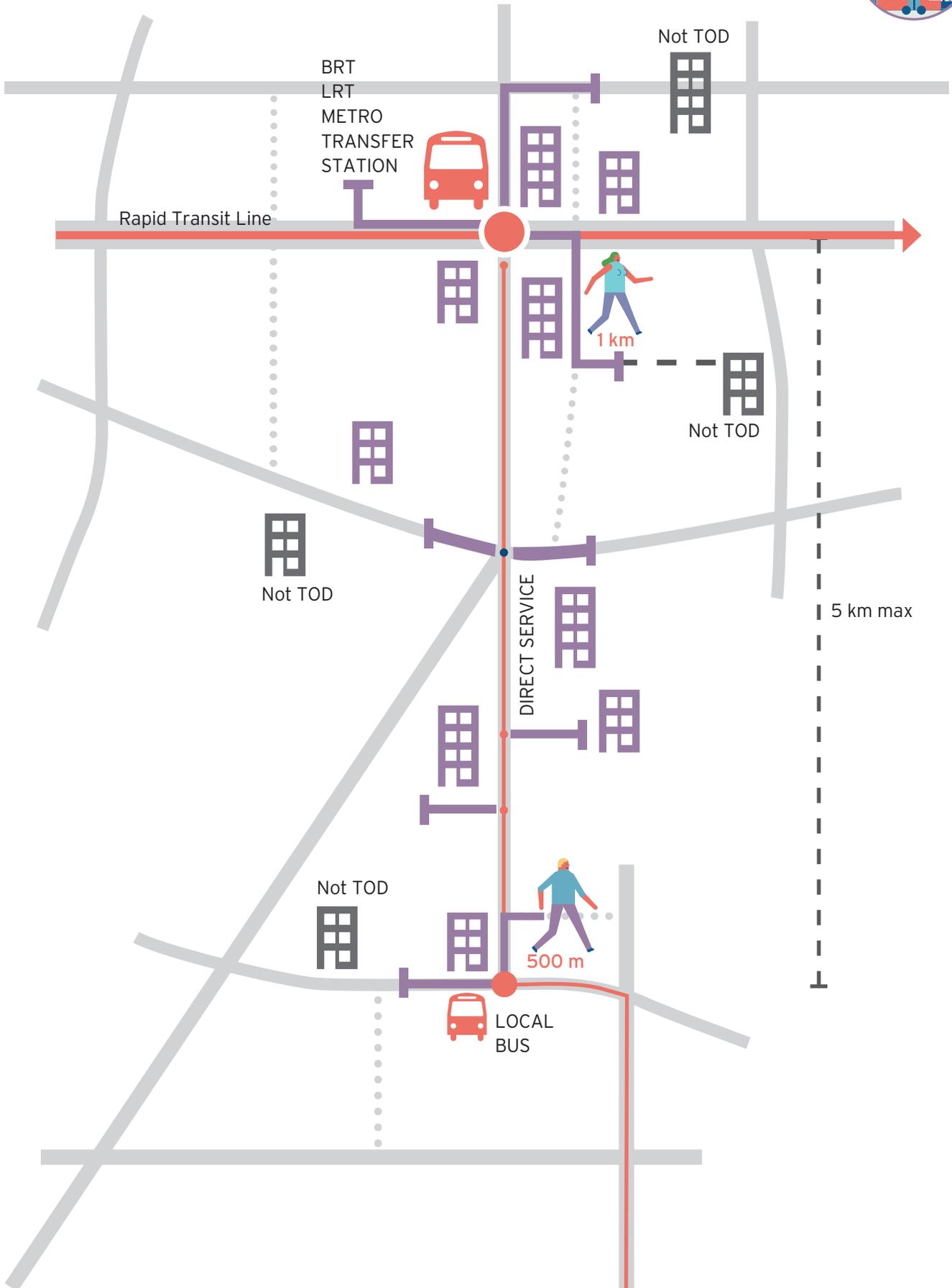
The longest walking distance is more than 1,000 m or 500 m, as applicable

DOES NOT
MEETS TOD
STANDARD
REQUIREMENT

STATION CATCHMENT AREA EVALUATION

Use the above definition or any locally acceptable maximum walking distance to transit to define the station catchment area as needed.

^[7] United Nations, *Accessibility for the Disabled*.



Objective A:

Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.

Metric 5.A.1 Complementary Uses

Residential and nonresidential uses within same or adjacent blocks. **8 points**

Metric 5.A.2 Access to Local Services

Percentage of buildings that are within walking distance of an elementary or primary school, a healthcare service or pharmacy, and a source of fresh food. **3 points**

Metric 5.A.3 Access to Parks and Playgrounds

Percentage of buildings located within a 500-meter walking distance of a park or playground. **1 point**

Objective B:

Diverse demographics and income ranges are included among local residents.

Metric 5.B.1 Affordable Housing

Percentage of total residential units provided as affordable housing. **8 points**

Metric 5.B.2 Housing Preservation

Percentage of households living on site before the project that are maintained or relocated within walking distance. **3 points**

Metric 5.B.3 Business and Services Preservation

Percentage of pre-existing local resident-serving businesses and services on the project site that are maintained on site or relocated within walking distance. **2 points**



PLAN FOR MIXED USES,
INCOME, AND
DEMOGRAPHICS

PRINCIPLE
5



MIX



88
品城
五金 配匙

士禧燒臘肉食公司



Vibrant market located within a residential zone in Hong Kong.



OBJECTIVE 5.A: Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.

8
POINTS

5.A.1

COMPLEMENTARY USES

- ▶ Residential and nonresidential uses combined within the same or adjacent blocks.

DETAILS

- Two types of land use mix are distinguished:
 - (a) *internally complementary*: residential and nonresidential uses form a complementary mix within the development, and
 - (b) *contextually complementary*: the project's predominant share of floor area is dedicated to uses complementary to the uses predominant in the surrounding station catchment area.
- A development is defined as *internally complementary* if residential uses account for no less than 15% and no more than 85% of the total developed floor area.
- A development is defined as contextually complementary if either:
 - (a) more than half of its floor area is dedicated to uses that balance the category of uses predominant in the station catchment area, or
 - (b) the development is internally complementary and located in a station area with a residential use balance between 40% and 60%.
- A station catchment area is defined as balanced when the residential to nonresidential uses ratio of floor area is between 50%/50% and 40%/60%. (See the station catchment area measurement method below.)

MEASUREMENT METHOD

- 1 Determine the complementary mix ratio (balance of residential and nonresidential uses) within the development. Do not include any floor area dedicated to car parking in the calculations.
- 2 Determine the complementary mix ratio of the surrounding station catchment area. (Follow the station catchment area measurement below.)
- 3 Determine if the proposed development would improve or support the balance of residential and nonresidential uses in the station catchment area.

DATA SOURCES

Plans and designs; local government building data and zoning regulations; site survey.

SCOPE

Within the development (internally complementary) and within the station catchment area (contextually complementary).



COMPLEMENTARY USES

Development provides an internally and contextually complementary mix	▶	8 POINT
Development is internally complementary	▶	5 POINTS
Development is contextually complementary (improves or supports balance of station catchment area)	▶	3 POINTS
Development does not provide a mix of uses either internally or in relation to the area	▶	0 POINT

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:

Identify the residential and nonresidential land uses and the proportion of each category within the station catchment area.

- ① Identify zones with distinct typologies in the catchment area of the station (if any).
- ② Select a typical block sample from each of the zones.
- ③ Calculate the percentage of predominant uses in each sample.

- ④ Calculate the weighted average of the predominant use in the area by factoring the results by the area of each zone.

SCOPE:

Within the defined station catchment area.



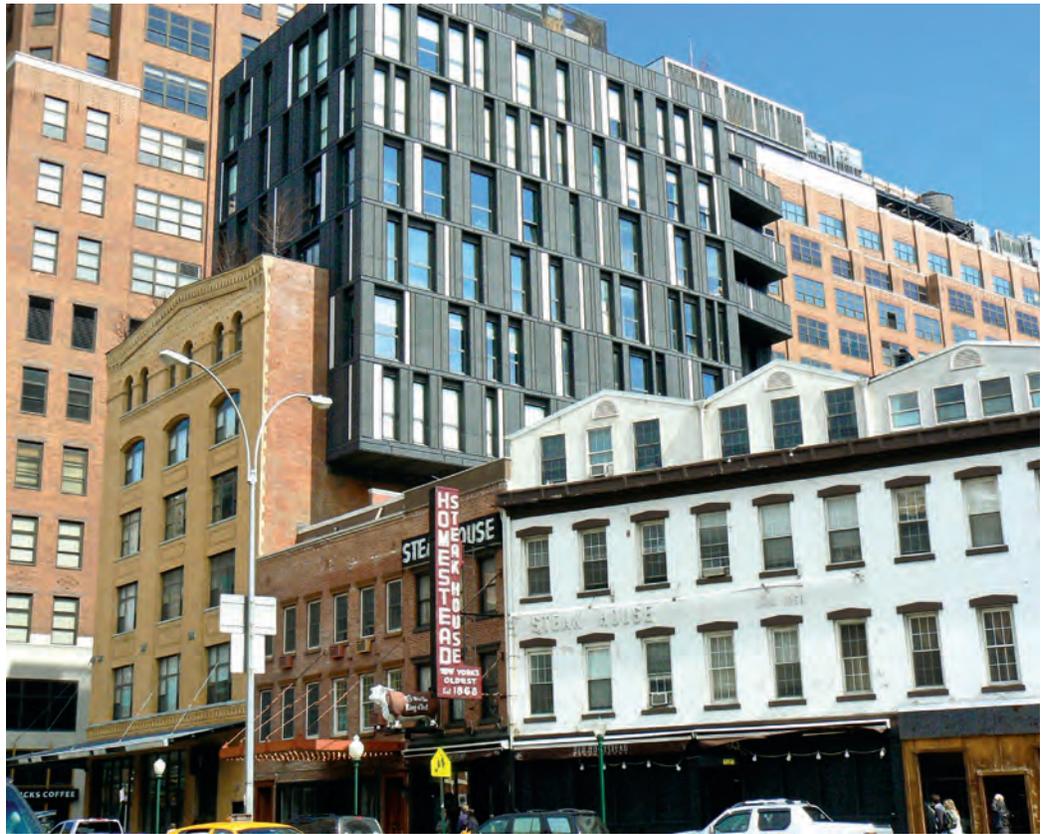
COMPLEMENTARY USES

The predominant use category in the station catchment area occupies:

50% to 60% of the total floor area	▶	8 POINT
61% to 70% of the total floor area	▶	6 POINTS
71% to 80% of the total floor area	▶	4 POINTS
More than 80% of the floor area	▶	0 POINT



Residential, commercial and working spaces are combined within the same or adjacent blocks in the Chelsea district, New York City, USA



Ground floor residential units in this formerly single use housing complex in the Liuyun Xiaoqu area of Guangzhou, China, were converted into shops, restaurants and cafes.

MIX **OBJECTIVE 5A:** Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.

OBJECTIVE 5.A: Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.

3
POINTS

5.A.2

ACCESS TO LOCAL SERVICES

- ▶ Percentage of buildings that are within walking distance of an elementary or primary school, a healthcare service or pharmacy, and a source of fresh food.

DETAILS

- *Fresh food* includes any of the following: fresh fruits and vegetables, dairy products, or meat and seafood.
- Eligible sources of fresh food include small and large commercial grocery stores, public markets and street vendors, or any documentable weekly or more frequent local source of fresh food.
- If these sources do not currently exist in the development but are planned, they can be scored.
- Sources of fresh food outside the station catchment area but within a 500-meter (m) walking distance of all development buildings are also eligible.
- Eligible elementary or primary schools include public and private institutions located within a 1,000 m walking distance of the farthest building entrance in the development and open to all local children, regardless of gender, religion, ethnicity, or capacity to pay fees according to their income level.
- Eligible healthcare facilities or pharmacies are open to all and located within a 1,000 m walking distance of the farthest building entrance in the development.

MEASUREMENT METHOD

- 1 Map all buildings and primary building entrances.
- 2 Map all sources of fresh food.
- 3 Map all qualifying elementary schools and healthcare services.
- 4 Mark all buildings with entrances within a 500 m walking distance of fresh food sources and a 1,000 m walking distance of primary or elementary schools and a healthcare service or a pharmacy.



This ground floor kindergarten facility at Shinanome, Tokyo, Japan, is conveniently accessible to the parents and children living above and around.



DATA SOURCES

Plans and designs; maps and listings; site survey.

SCOPE

Within the development, and a designated walking distance from the development.

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.



ACCESS TO LOCAL SERVICES

80% or more of the buildings are within the specified walking distance to defined types of local services

3 types ▶ 3 POINTS

2 types ▶ 2 POINTS

1 type ▶ 1 POINT

Fewer than 80% of the buildings are within the specified walking distance to defined types of local services ▶ 0 POINTS



Fresh food market in Pune, India.

OBJECTIVE 5.A: Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours.

1
POINT

5.A.3

ACCESS TO PARKS AND PLAYGROUNDS

▶ Percentage of buildings located within a 500-meter (m) walking distance of a park or playground.

DETAILS

- A park or playground must be at least 300 m² in area and publicly accessible 15 hours or more per day. If the park or playground has shared use as school yard or physical education facility, school time can be deducted from the opening hours.
- Parks outside of the station catchment area but within a 500 m walking distance of the project are also eligible.

MEASUREMENT METHOD

- 1 Map all buildings and primary building entrances.
- 2 Map all eligible parks and playgrounds.
- 3 Mark all buildings with entrances within a 500 m walking distance of eligible parks and playgrounds.

DATA SOURCES

Plans and designs; maps and listings; site survey.

SCOPE

Within the development and within a 500 m walking distance of the main entrance of the farthest residential building.



The badminton courts at Whampoa Garden, Hong Kong, are accessible to the public.



ACCESS TO GREEN OR OPEN SPACES

Percentage of buildings within walking distance of a publicly accessible park or playground:

80% or more



1
POINT

Less than 80%



0
POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.



OBJECTIVE 5.B: Diverse demographics and income ranges are included among local residents.

8
POINTS

5.B.1

AFFORDABLE HOUSING

▶ Percentage of total residential units provided as affordable housing.

DETAILS

- Use affordable housing standards as defined by the relevant municipal, regional, or national government. If unavailable, use the following definition: *Affordable housing rent* is below 30% of the mean income in the relevant income category.
- Pre-existing substandard housing units on site that are upgraded to local housing standards as part of the project count as new affordable housing units.
- Use locally applicable standards to define community income level (low, high, middle). If inapplicable, define high household income as twice the national median or more after adjustment for household size, and define low household income as two-thirds or less of the national median after adjustment.
- No points are accrued for adding affordable housing units to already predominantly low-income residential areas.
- Affordable housing status and pricing must be guaranteed for at least 10 years or according to applicable regulations.
- *Infill projects* are no more than 1 hectare (ha) in land area or a full block, whichever is smaller. Projects larger than 1 ha or a full block, whichever is larger, are defined as *large projects*.

MEASUREMENT METHOD

- 1 Quantify the number of residential units created. If there are no residential units in the development, then the score is 8, and no further measurement is needed.
- 2 Quantify the number of affordable residential units created (see details above).
- 3 Divide the second figure by the first to obtain the ratio.
- 4 Apply the general case or the variant that best fulfills Objective 5.B. If a variant is being applied, justify the decision in the notes.

DATA SOURCES

Plans and designs; local government housing data; third-party reports; field surveys.

SCOPE

Residential units within the development and pre-existing on site.



In Medellín, Colombia, the low income, informal settlements of Comuna 13 benefit from infrastructure improvements.

General Case: Applies to all projects in medium- and mixed- income communities and only to large projects in high-income communities.

AFFORDABLE HOUSING IN PROJECT

Percentage of housing that is affordable:

50% or more	▶	8 POINTS
35% to 49%	▶	6 POINTS
20% to 34%	▶	4 POINTS
10% to 19%	▶	2 POINTS
1% to 9%	▶	1 POINT
Less than 10%	▶	0 POINTS



This development in the Soma district of San Francisco, California, USA, includes affordable housing and commercial uses with active frontage.



Variant 1:

Infill projects in high-income communities.



AFFORDABLE HOUSING IN PROJECT

Percentage of new residential units that are affordable:

100%	▶	8 POINTS
75% to 99%	▶	6 POINTS
50% to 74%	▶	4 POINTS
20% to 49%	▶	2 POINTS
10% to 19%	▶	1 POINT
Less than 1%	▶	0 POINTS

Variant 2:

Applies to all projects in low-income communities.

SUBSTANDARD HOUSING UPGRADED

Percentage of substandard residential units on the project site that have been upgraded:

100%	▶	8 POINTS
80 to 99%	▶	6 POINTS
60% to 79%	▶	5 POINTS
40% to 59%	▶	3 POINTS
20% to 39%	▶	2 POINTS
Less than 20%	▶	0 POINTS

STATION CATCHMENT AREA EVALUATION

Ratio of housing units priced below 30% of the metropolitan median prices.

MEASUREMENT METHOD:

- 1 Obtain data for metropolitan area housing unit rent and sale prices.
- 2 Calculate the respective figures for 30% of the metropolitan median.
- 3 Obtain equivalent data or estimates for the station catchment area.
- 4 Calculate the ratio of housing units in the catchment area priced below 30% of the metropolitan median.

SCOPE:

Residential units within the defined station catchment area.



RATIO OF DWELLING UNITS BELOW THE METROPOLITAN MEDIAN

Ratio of dwelling units priced 30% below the metropolitan median to dwelling units priced above is:

Between 30% and 69%	▶	8 POINTS
Between 20% and 29% or between 70% and 79%	▶	5 POINTS
Between 10% and 19% or between 80% and 89%	▶	2 POINTS
Under 10% or over 90%	▶	0 POINTS

OBJECTIVE 5.B: Diverse demographics and income ranges are included among local residents.

3
POINT

5.B.2

HOUSING PRESERVATION

- ▶ Percentage of households living on site before the project that are maintained or relocated within walking distance.

DETAILS

- *Eligible households* have lived on the development site before public announcement of the project.
- A household is *maintained* if it is kept in the initial housing unit, brought up to local building standards, and safe from exposure to major risk (flooding, landslides, contamination, etc.).
- A household is *relocated* if it is rehoused on site or within walking distance of the former unit in newly built units of the same or better quality, the same or greater floor area, and the same or lower cost as previous housing. Safe interim housing must be provided during construction at the same conditions.
- *Walking distance* for the purpose of preserving community ties is defined as preferably 250 meters (m) from the original address and no more than 500 m.
- Replacement housing units provided off site must be served by a public transport station as per Metric 4.A.1.
- Households that are offered an upgrade or relocation but choose to move away will be counted toward fulfillment of the metric if compensated on the basis of the post-project market value.

MEASUREMENT METHOD

- 1 Identify the number of eligible households on site before the project. If no pre-existing households were on site, the project accrues the full three points and no further measurement is needed.
- 2 Identify the number of eligible households maintained, rehoused on site, or that chose compensation.
- 3 Identify the number of eligible households rehoused within a 250 m walking distance of their previous address.
- 4 Identify the number of eligible households rehoused within a 500 m walking distance of their previous address.
- 5 Compare the figures obtained in Steps 2–4 to the figure obtained in Step 1.



DATA SOURCES

Census; local government data; field surveys.

SCOPE

Residential units within the development.



PRESERVATION OF EXISTING HOUSING

100% of households are maintained, relocated on site or within a 250 m walking distance of previous address, or compensated according to their choice, or no households pre-existed on site



3
POINTS

100% of households that chose to have been relocated within a 500 m walking distance of the previous address



2
POINTS

Less than 100% of households have been maintained or relocated within walking distance



0
POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Relevant projects in station catchment area.



Community workshop for the Basic Services for Urban Poor (BSUP)- In Situ Slum Rehabilitation for Urban Poor project under Jawaharlal Nehru National Urban Renewal Mission (JNNURM) at Yerawada, Pune, India.

OBJECTIVE 5.B: Diverse demographics and income ranges are included among local residents.

2
POINT

5.B.3

BUSINESS AND SERVICES PRESERVATION

- ▶ Percentage of pre-existing local resident-serving businesses and services on the project site that are maintained on site or relocated within walking distance.

DETAILS

- Eligible businesses and services serve local residents and have been on site for at least one year before the announcement of the redevelopment project.
- The relocation or upgraded space must offer a similarly sized floor area of similar or better standard at the same or lower cost, including rent, mortgage, and monthly charges, as applicable. If rental, the relocation space must guarantee a long-term lease.
- Qualifying relocation on site must include interim relocation within 500 meters (m) during construction or compensation for loss of business.
- Qualifying relocation within walking distance must also take place in the TOD zone (i.e., within a 1,000 or 500 m walking distance of a qualifying public transport station, as detailed in Metric 4.A.1).

MEASUREMENT METHOD

- 1 Identify the number of eligible businesses and services on the project site before project construction starts. If no pre-existing businesses were on site, the project accrues the full two points and no further measurement is needed.
- 2 Identify the number of eligible businesses and services maintained or relocated on site after construction.
- 3 Identify the number of eligible businesses and services relocated within a 500 m walking distance of the previous location.
- 4 Compare the figures obtained in Steps 2–4 with the figure obtained in Step 1.



Informal settlement upgrading in the Dharavi settlement, Mumbai, India, preserves local businesses in situ.

DATA SOURCES

Government business registries; business directories; economic census; field surveys; interviews.

SCOPE

Local resident-serving businesses within the development.

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Relevant projects in station catchment area.



PRESERVATION OF PRE-EXISTING LOCAL BUSINESSES AND SERVICES

All eligible businesses and services are maintained in situ or relocated within a 500m walking distance of previous address, or no businesses or services pre-existed on site

2 POINTS

Businesses and services not fully maintained or relocated within walking distance

0 POINTS

Objective A:

High residential and job densities support high-quality transit, local services, and public space activity.

Metric 6.A.1 Nonresidential Density

Nonresidential density in comparison with best practice in similar projects and station catchment areas. **7 points**

Metric 6.A.2 Residential Density

Residential density in comparison with best practice in similar projects and station catchment areas. **8 points**



OPTIMIZE DENSITY
AND MATCH TRANSIT
CAPACITY



DENSIFY





Ground floor commercial activity and people-oriented urban design make a high-density residential area vibrant and attractive in the Liuyun Xiaoqu area of Guangzhou, China



OBJECTIVE 6.A: High residential and job densities support high-quality transit, local services, and public space activity.

7
POINTS

6.A.1

NONRESIDENTIAL DENSITY

- ▶ Nonresidential density in comparison with the best practice in similar projects or station catchment areas.

DETAILS

- Project or station catchment area nonresidential density is compared against a density best practice in a comparable case existing within the city which becomes the baseline.
- The baseline should be a recently completed project that is comparable in size, type of project and land use, and density regulations. It should be in an area of the city with real estate values above average as a proxy for desirability.
- The proxy indicators used in the comparison could be either:
 - (a) the total number of jobs and daily visitors per hectare (this is a superior performance indicator if data is available or can be estimated with accuracy sufficient for comparison), or
 - (b) the nonresidential floor area ratio (FAR), as an acceptable alternative.
- The *nonresidential FAR* is calculated by identifying and measuring the nonresidential gross floor area (GFA) of the buildings in the development and dividing this figure by the area of the land. The GFA is the cumulated area of floor inside the building envelope, including wall footprints and floor openings but excluding subsurface basements, unenclosed areas, and roof areas.
- The *gross land area* figures used in the *TOD Standard* include building plots and local streets but exclude any land occupied by
 - (1) large public infrastructure on or traversing the development land (e.g., arterial roads, transport facilities, water supply, power, or telecommunication),
 - (2) local public facilities (e.g., local schools, neighborhood libraries, public sport fields, and playgrounds), or
 - (3) publicly accessible parks and natural constraints more than 1 hectare in area (e.g., bodies of water and wetlands, wooded land, or steep slopes).
- To obtain full points, developers are encouraged to seek variances and exemptions from regulations that limit density.
- If a project is at least 85% residential in a predominantly non-residential area, it gets the same points as obtained for Metric 6.A.2 (*residential density*) up to a maximum of 7 points.

MEASUREMENT METHOD

- 1 Calculate the development's nonresidential density by the number of jobs and average daily visitors or by the FAR.
- 2 Identify the best practice baseline project and calculate its nonresidential density.
- 3 Compare the development with the baseline.
- 4 Determine if the project is located within or outside a 500-meter (m) walking distance of the primary station considered for metric 4.A.1.

DATA SOURCES

Jobs and visitors: Survey or estimation of jobs and visitors based on activity type, open source data, or direct data from businesses and services.

Nonresidential FAR: Plans and programs of development; local area plans; regulations; policies; local and professional media; site survey.

SCOPE

All buildings within the development.

PRESERVATION OF PRE-EXISTING LOCAL BUSINESSES AND SERVICES

The nonresidential density is **higher** than the baseline, and it is located **within a 500 m** walking distance of the transit station



7
POINTS

The nonresidential density is **higher** than the baseline, and it is located **between a 500 and a 1,000 m** walking distance of the station



5
POINTS

The nonresidential density is **equal** to or within 5% below the baseline, and it is located **within a 500 m** walking distance of the station



3
POINTS

The nonresidential density is **equal** to or within 5% below the baseline, and it is **between a 500 and a 1,000 m** walking distance of the station



2
POINTS

The nonresidential density is more than 5% below the baseline



0
POINTS

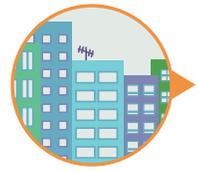
STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:

- 1 Calculate or estimate the nonresidential density for the total 1,000 m station catchment area and for the 500 m station catchment area.
- 2 Identify the densest district in the metropolitan area with land uses similar to the station catchment area being scored and a real estate value above the city average (as a proxy for desirability). Calculate or estimate the nonresidential density in the district.
- 3 Compare the average nonresidential density of the station catchment area with the baseline density.
- 4 Compare the 1,000 and 500 m station catchment areas.

SCOPE:

Within the defined station catchment area.



The redevelopment of a former industrial site in the Pearl District of Portland, Oregon, USA, combines high densities in work and residential uses integrated with great walkability and sustainable transportation options.

DATA SOURCES:

Activity type for visitors and employees, open source data, or direct data from businesses and services; census data for workers working in the same area code or commuting with shortest amount of time; main station ridership data for employees commuting from outside of the main station catchment area.

**STATION CATCHMENT AREA
NONRESIDENTIAL DENSITY**

The nonresidential density is **higher** than the baseline, and the 500 m catchment area is **denser** than the 1,000 m catchment area ▶ 7 POINTS

The nonresidential density is **higher** than the baseline, and the 500 m catchment area is **less dense** than the 1,000 m catchment area ▶ 5 POINTS

The nonresidential density is equal to or within 5% below the baseline, and the 500 m catchment area is **denser** than the 1,000 m catchment area ▶ 3 POINTS

The nonresidential density is equal to or within 5% below the baseline, and the 500 m catchment area is **less dense** than the 1,000 m catchment area ▶ 2 POINTS

The total density is more than 5% below the baseline ▶ 0 POINTS

OBJECTIVE 6.A: High residential and job densities support high-quality transit, local services, and public space activity.

8
POINT

6.A.2

RESIDENTIAL DENSITY

- ▶ Residential density in comparison with best practice in similar projects or station catchment areas.

DETAILS

- Residential density for a project or station catchment area is compared with the density best practice baseline as used in Metric 6.A.1.
- The proxy for residential density is *gross household density*, or *dwelling unit density*, calculated by dividing the total number of dwellings units by the gross land area as defined in Metric 6.A.1 and measured in hectares.
- If a project is at least 85% non-residential in a predominantly residential area, it gets the same points as obtained for Metric 6.A.1 (*nonresidential density*).

MEASUREMENT METHOD

- 1 Calculate the gross dwelling unit density in the project area.
- 2 Calculate the gross dwelling unit density for the baseline project identified in Metric 6.A.1.
- 3 Compare the development with the baseline.
- 4 Determine if the project is located within or outside a 500-meter (m) walking distance of the transit station used for metric 4.A.1.

DATA SOURCES

Project plans; government (national, regional, municipal) data; field survey of housing unit (mailboxes, apartment doors, etc.).



This mixed use development in Gastown, Vancouver, Canada, adds infill density to neighborhood well served by transit and integrates market rate and affordable housing with commercial, offices, and education activities.



PROJECT HOUSEHOLD DENSITY	STATION CATCHMENT AREA HOUSEHOLD DENSITY
The total number of dwelling units per hectare is higher than the baseline, and the project is located within a 500 m walking distance of the transit station	The total number of dwelling units per hectare is higher than the baseline. The 500 m catchment area is denser than the 1,000 m catchment area
The total number of dwelling units per hectare is higher than the baseline, and the project is located between a 500 and a 1,000 m walking distance of the station	The total number of dwelling units per hectare is higher than the baseline. The 500 m catchment area is less dense than the 1,000 m catchment area
The total number of dwelling units per hectare is equal to or within 5% below the baseline, and the project is located within a 500 m walking distance of the station	The total number of dwelling units per hectare is equal to the baseline or no more than 5% below it. The 500 m catchment area is denser than the 1,000 m catchment area
The total number of dwelling units per hectare is equal to or within 5% below the baseline, and the project is located between a 500 and a 1,000 m walking distance of the station	The total number of dwelling units per hectare is equal to the baseline or no more than 5% below it. The 500 m catchment area is less dense than the 1,000 m catchment area
The total number of dwelling units per hectare is more than 5% below the baseline	The total number of dwelling units per hectare is more than 5% below the baseline

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:

- 1 Calculate or estimate the dwelling unit density for the total 1,000 m station catchment area and for the 500 m station catchment area.
- 2 Identify the densest district in the metropolitan area with land uses similar to the station catchment area being scored and a real estate value above the city average (as a proxy for desirability). Calculate or estimate the dwelling unit density in the district.
- 3 Compare the average dwelling unit density of the station catchment area with the baseline density as well as the two catchment area zones, accordingly.

SCOPE:

Within the defined station catchment area.

Objective A:

The development is in, or next to, an existing urban area.

Metric 7.A.1 Urban Site

Number of sides of the development that adjoin existing built-up sites.
8 points

Objective B:

Traveling through the city is convenient.

Metric 7.B.1 Transit Options

Number of different transit options that are accessible within walking distance
2 points

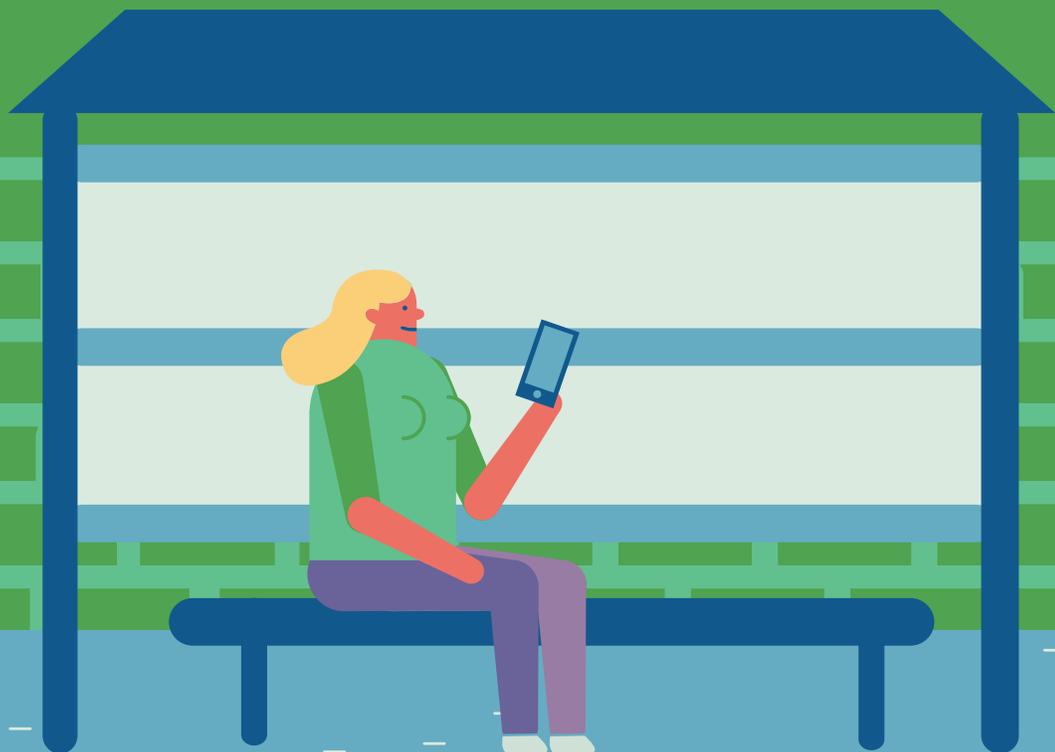


CREATE REGIONS WITH SHORT
TRANSIT COMMUTES

PRINCIPLE
7



COMPACT





Compact center of Hong Kong.



OBJECTIVE 7.A: The development is in, or next to, an existing urban area.

8
POINTS

7.A.1

URBAN SITE

▶ Number of sides of the development that adjoin existing built-up sites.

DETAILS

- Adjoining built-up sites or properties include sites actually built-up, previously developed sites that have been cleared, and land prepared for development as part of a larger masterplan.
- Transport infrastructure (railways and motorways), water bodies (lakes and rivers), or other natural topography or protected landscape that inhibits development should be counted as built-up sites for this metric.

MEASUREMENT METHOD

- 1 If not four-sided, divide the development site boundaries into four sections (each equal to approximately 25% of the total length of the development boundary).
- 2 Count the number of sides that adjoin existing built-up sites.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; site survey.

SCOPE

Edges of the development site.



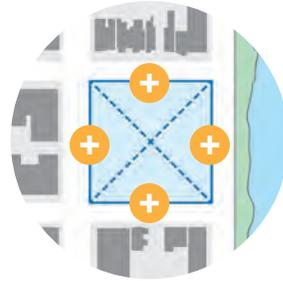
This infill building development in Dakar, Senegal, densifies the existing urban footprint and is accessible by local transit.

URBAN SITE	
Number of sides that adjoin built-up sites:	
4	▶ 8 POINTS
3	▶ 6 POINT
2	▶ 4 POINT
1	▶ 2 POINTS
0	▶ 0 POINTS

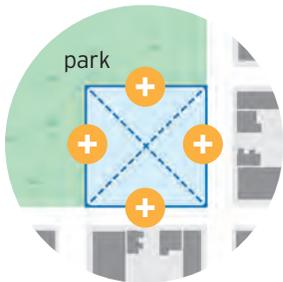
THESE PLANS EARN A FULL SCORE



4 sides adjoin built-up sites (8 points)



3 sides adjoin built-up sites and 1 side adjoins a water body (8 points)

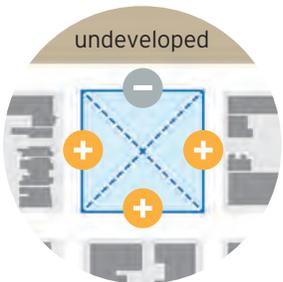


2 sides adjoin built-up sites and 2 sides adjoin a designated park (8 points)

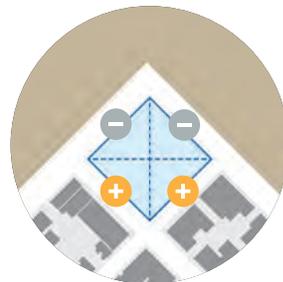


An irregular development plot, where each 25% of the side of the development adjoins a built-up site (8 points)

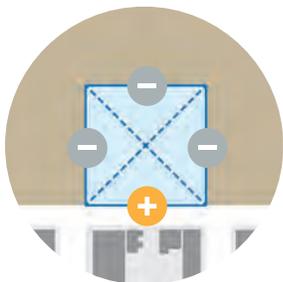
THESE PLANS EARN LOWER OR NEGATIVE SCORES



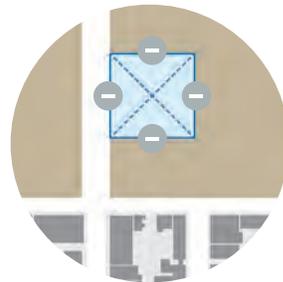
3 sides adjoin built-up sites (6 points)



2 sides adjoin built-up sites (4 points)



1 side adjoins built-up sites (2 points)



No sides adjoin built-up sites (0 points)



STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:

- 1 Measure the total area of developable sites/properties within the defined station catchment area.
- 2 Measure the total area of developable sites/properties that are built-up.
- 3 Divide the second measure by the first to get the percentage (area) of developable sites that are built-up.

SCOPE:

Within the defined station catchment area.

DEVELOPABLE SITES

Percentage (area) of developable sites that are built-up:

More than 90% ▶ 8 POINTS

Up to 90% ▶ 6 POINT

Up to 80% ▶ 4 POINT

Up to 70% ▶ 2 POINTS

Less than 80% ▶ 0 POINTS



Infill development in central London, UK, makes efficient use of land and creates denser districts to support economic activity and transit capacity.

OBJECTIVE 7.B: Traveling through the city is convenient.

2
POINTS

7.B.1 TRANSIT OPTIONS

▶ Number of different transit options that are accessible within walking distance.

DETAILS

- Regular transit lines or routes, including non-bus rapid transit and para-transit modes, can be considered a transit option if the transit line regularly operates from 7 a.m. to 10 p.m., with a service frequency of 20 minutes or less.
- Stations on different transit lines should be counted. Different stations on the same line only count as one transit option.
- A dense public bicycle sharing system is considered as a transit option.^[8]

MEASUREMENT METHOD

- 1 Identify all applicable high-capacity regular transit services, as well as para-transit services and public bicycle station options, within walking distance, excluding the primary transit station used in scoring Metric 4.A.1.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; local government transport data; site survey.

SCOPE

Within a 1-kilometer (km) radius around the development.



TRANSIT LINE OPTIONS	
Each option that applies for a maximum of 2 points	
Additional high-capacity transit line ▶	2 POINTS
Applicable bike share system ▶	2 POINTS
Additional regular transit routes ▶	1 POINT

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within 1 km around the primary transit station.

^[8] For information on public bicycle sharing systems, see the *Bike Share Planning Guide* (New York: ITDP, 2013).



A bus rapid transit in Curitiba, Brazil, takes passengers directly to the urban center.



BRT and public bicycle sharing system offer sustainable transport options in Mexico City, Mexico.

Objective A:

The land occupied by motor vehicles is minimized.

Metric 8.A.1 Off-Street Parking

Total off-street area dedicated to parking as a percentage of the development area.

8 points

Metric 8.A.2 Driveway Density

Average number of driveways per 100 meters of block frontage.

1 point

Metric 8.A.3 Roadway Area

Total road bed area used for motor vehicle travel and on-street parking as percentage of total development area.

6 point

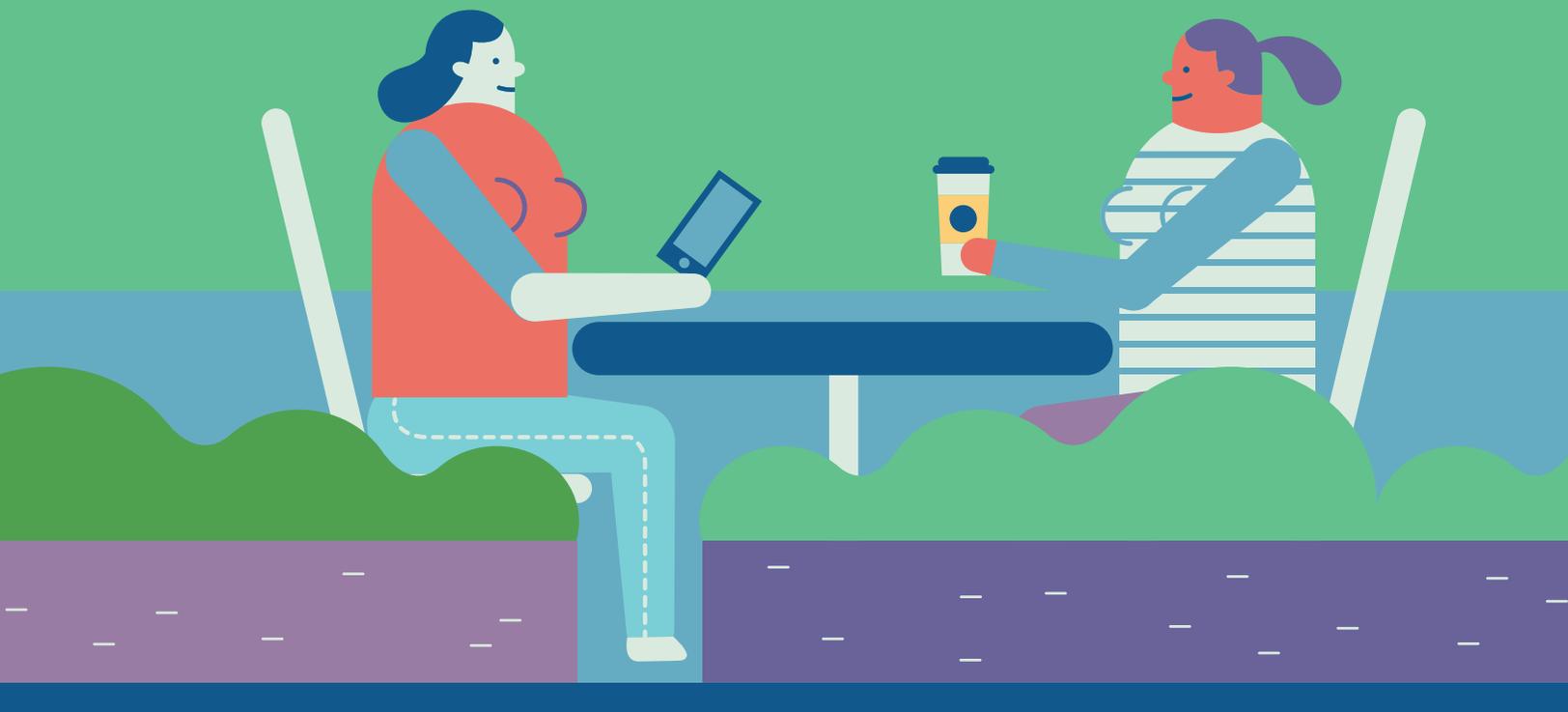


INCREASE MOBILITY BY REGULATING PARKING AND ROAD USE

PRINCIPLE
8



SHIFT



Downtown Buenos Aires, Argentina, pedestrian-prioritized streets network redistributes street space from vehicular roadway to people-centric activities and commerce





OBJECTIVE 8.A: The land occupied by motor vehicles is minimized.

8
POINTS

8.A.1

OFF-STREET PARKING

► Total off-street area dedicated to parking as a percentage of the development area.

DETAILS

- Add the area of all surface parking lots, the total floor area of structured parking facilities (underground parking floors included), and all related driveways starting from the access property line.
- Leave out the parking places and driveway reserved for car share service, people with disabilities, and *essential service vehicles*.

MEASUREMENT METHOD

- 1 Quantify the cumulative area of all nonexempt off-street parking areas and driveways.
- 2 Quantify the total land area.
- 3 Divide the first measure by the second to calculate the ratio of parking area to land area.



OFF-STREET PARKING AREA

Nonessential parking area is equivalent to:

0% to 10% of site area	►	8 POINTS
11% to 15% of site area	►	7 POINTS
16% to 20% of site area	►	6 POINTS
21% to 25% of site area	►	5 POINTS
26% to 30% of site area	►	4 POINTS
31% to 40% of site area	►	2 POINTS
more than 40% of site area	►	0 POINTS

DATA SOURCES

Plans and designs; local government transport data or zoning regulations.

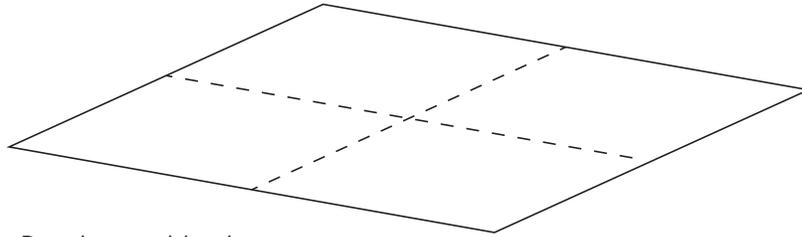
SCOPE

Within the development

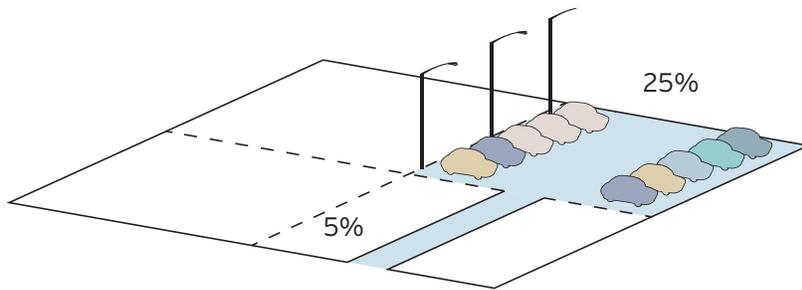
STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

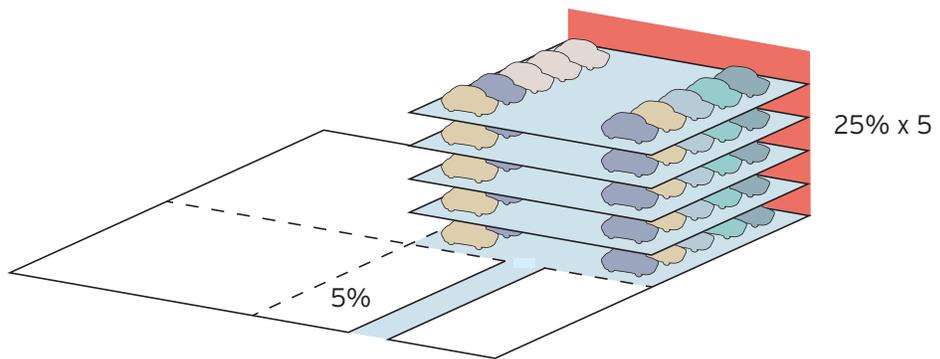
SCOPE:
Within the defined station catchment area.



Development land area



Example 1:
Surface parking & driveway area is 30% of the development land area.



Example 2:
Parking & driveway area is 130% of the development land area.



OBJECTIVE 8.A: The land occupied by motor vehicles is minimized.

1
POINT

8.A.2

DRIVEWAY DENSITY

▶ Average number of driveways per 100 meters (m) of block frontage.

DETAILS

- Driveways are paths for motor vehicles that cross pedestrian areas and walkways to connect to off-street parking, drop-off areas, or loading facilities.
- Vehicle connections to off-street parking and loading facilities that do not intersect a walkway or reduce the completeness of the walkway network are not counted as driveways for this metric.

MEASUREMENT METHOD

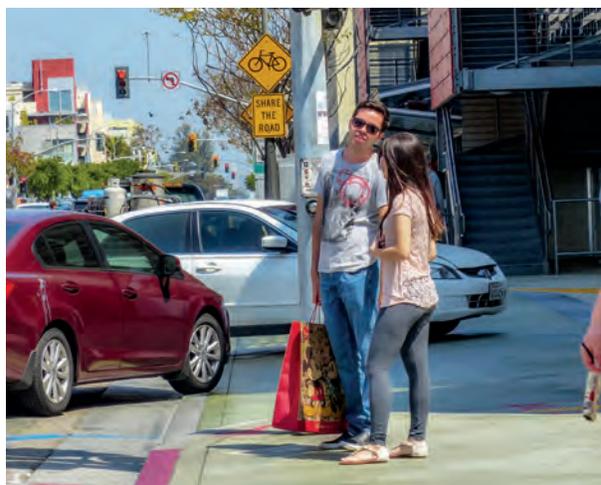
- 1 Quantify the total length of block frontage and divide by 100 m.
- 2 Quantify the total number of driveways that intersect a walkway.
- 3 Divide the second measure by the first to calculate a driveway density average.

DATA SOURCES

Plans and designs; maps; up-to-date aerial/satellite photography; site survey.

SCOPE

Within the development.



A shared parking garage facility for a mixed use block in Santa Monica, California, USA, minimized driveways on the sidewalk.



DRIVEWAY DENSITY

Average driveway density is

2 or fewer driveways per 100 m of block frontage



1
POINT

More than 2 driveways per 100 m of block frontage



0
POINTS

STATION CATCHMENT AREA EVALUATION

MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.

OBJECTIVE 8.A: The land occupied by motor vehicles is minimized.

6
POINTS

8.A.3

ROADWAY AREA

► Total road bed area used for motor vehicle travel and on-street parking as percentage of total development area.

DETAILS

- Exclude all street area not designated for private motor vehicle use: sidewalks, plazas and landscaped areas, and any portions of the road bed area exclusively dedicated to cycling and buses.
- Exclude pedestrian-priority shared streets (with speed under 15 km/h [10 mph]).

MEASUREMENT METHOD

- 1 Quantify the total area of traffic lanes, including but not double-counting intersection space.
- 2 Quantify the total area of on-street parking.
- 3 Sum up both measures.
- 4 Quantify the total land area of the development site, extended to the centerline of peripheral streets.
- 5 Divide the figure obtained in Step 3 by the figure obtained in Step 4 to calculate a percentage of land paved for motor vehicle traffic and on-street parking.

DATA SOURCES

Plans and designs; up-to-date aerial/satellite photography; site survey.

SCOPE

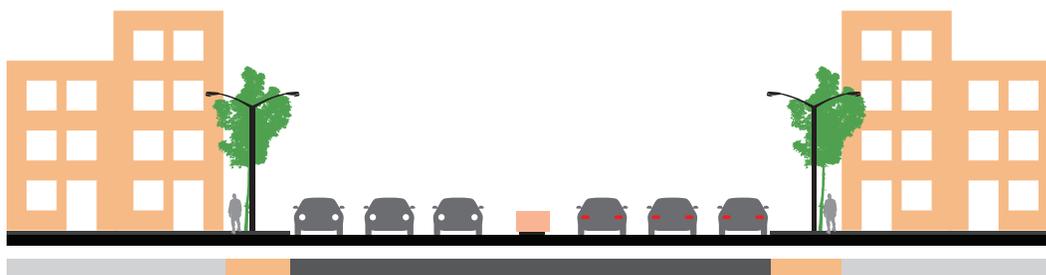
Within the development and to the centerline of peripheral streets.

STATION CATCHMENT AREA EVALUATION

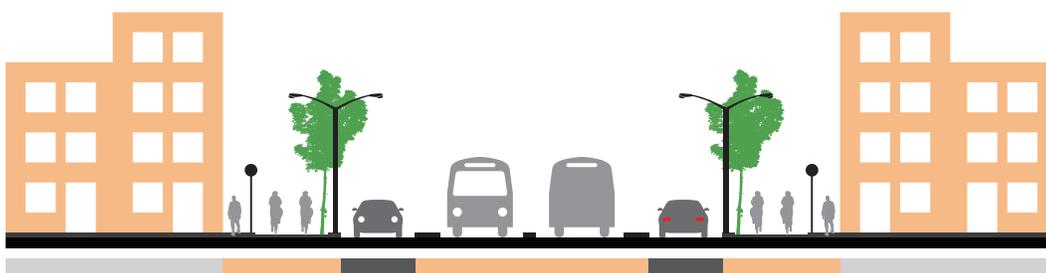
MEASUREMENT METHOD:
Same as above.

SCOPE:
Within the defined station catchment area.

		
	ON-STREET PARKING AND TRAFFIC AREA	
	Motor vehicle area is	
15% or less of site area	►	6 POINTS
20% or less of site area	►	3 POINTS
More than 20% of site area	►	0 POINTS



More road area is given to less efficient motor vehicle travel



More road area is given to more efficient modes of non-motorized transport



In this street in the center of Rio De Janeiro, Brazil, the roadway is minimized and restricted to local access while pedestrian public space is maximized.



Safe pedestrian and cycling infrastructure is included in this street design in Washington, DC, USA.





GUIDE TO SCORING THE TOD STANDARD METRICS





Inclusive design allows safe and easy access to Plaza de la República, Metrobús BRT Station in México City