

A new road/street network classification for Havana, Cuba

Overview

This note summarises the production of a new road/street network classification for Havana, Cuba. This classification was the output of a 2-day workshop with representatives of national and municipal planning and transport authorities and of the local community of Centro Habana. The workshop highlighted the limitations of traditional road network classifications and introduced participants to alternative approaches that consider the dual function of streets as links (conduits for movement) and places (destinations in their own right). Workshop participants then produced a new classification of Havana's road/street network based on these two functions.



Key Findings

- The citizens' vision of Havana is of a friendly, inclusive, equitable, connected, green, humane, prosperous, and liveable city. Every road and street needs to be designed to deliver that vision.
- Analysing the complete road and street network of the city as elements that serve diverse urban functions and people's needs offers a contribution to all dimensions of sustainability.
- Havana's new road/street network classification using the 'Movement and Place' approach has implications for the ways in which roads/streets are designed, how their performance is assessed, and how parts of the network are prioritised for attention. Hence, this classification can promote a more equitable distribution of the type of environments that are conducive to improving human health.

Objectives

The main objective of the workshop was to discuss the advantages and disadvantages of the most commonly used types of road/street network classifications and introduce the 'Movement and Place' approach for street classification (Jones *et al.* 2008) as a tool for overcoming some of the disadvantages.

The workshop also aimed to draw attention to urban road/street space as a scarce resource that needs to be "distributed" in time and space in a way that is consistent with the city's overall vision and its sustainable mobility vision. The Movement and Place approach offers options for achieving those objectives and address a gap in the understanding, planning, design, and management of the road/street network in Havana.



Diversity of street environments in Havana

Background

Distribution of walking environments: price or need?

In many cities in middle and low income countries, a substantial share of daily trips is made by walking. It is important to understand the conditions under which these trips are taking place and the implications for health, wellbeing, and equity. High-quality walking environments face the risk of becoming a 'luxury good' prevalent mostly in high-income or tourist areas, as housing and retail markets capitalize on the benefits of living near those environments (Anciaes *et al.*, 2017).

This can lead to investments in good quality environments being made mostly in areas where financial value is created but not necessarily in the areas where it is most needed due to the number of street users and their needs for connectivity, safety, and comfort. These disparities in the quality of street environments may reduce the accessibility to activities and opportunities, particularly for the poorest, reinforcing social inequalities.

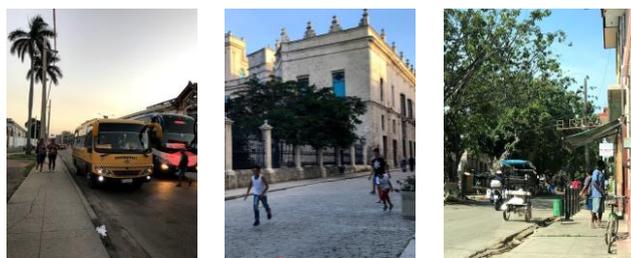
Traditional road/street network classifications

Road/street classifications provide a systemic approach for planning and implementing policies and projects. Traditionally, road network classifications have been based on criteria such as use, relation, form, and function. One of the most commonly used approaches is the hierarchical classification, which is based on traffic volumes, land use, strategic role of the road within the network, and administrative responsibility over the management and maintenance of the road. Havana's current road network classification is hierarchical-administrative consisting of four categories: Principal or National, Complementary, Intermediate, and Local

Why a new road/street network classification?

A more comprehensive road/street classification can address the limitations of existing approaches by acknowledging that:

- 1) roads/streets have different users with different needs, therefore they need to enable different functions. Furthermore roads and streets are not the same thing. In roads, motorised vehicles are the dominant element, but there is an expectation that streets should be more diverse.
- 2) although roads/streets have different users, the most important one are people (not vehicles) therefore it makes sense to use a classification that is people-centred.



Diverse users = diverse functions

Reclassifying the road/street network can help us to understand the potential of the network to contribute

through its various functions to the social, environmental, and economic sustainability of the city

Sustainability Dimension	Road/street Functions
Social	<ul style="list-style-type: none"> • Accessibility for diverse users • Destination for diverse social activities • Promotion of secure spaces
Environmental	<ul style="list-style-type: none"> • Promotion of "greener" and active travel modes • Minimisation of risk of traffic injuries, exposure to noise and air pollution
Economic	<ul style="list-style-type: none"> • Destination for economic activity • Conduit for connectivity and accessibility to other areas

Road/street functions and sustainability

Movement and Place classification

The Movement and Place approach considers that roads/streets have two broad functions. The Movement function is the role of roads/streets as conduits for the movement of people and goods from one place to another. The Place function is the role of roads/streets as destinations in their own right, where people spend time (for example, shopping, strolling, sitting, socializing).

In the Movement and Place classification approach, the network is considered as a part of the wider mobility system. Each type of road/street has a specific function within the system which is not directly comparable with that of other types. All road/street types are needed for a sustainable, healthy, thriving city, but in different contexts.

The approach considers certain level of subordination between categories due to geographical significance but is it not a hierarchical model in the sense of having some categories which are more important than others.

Methods

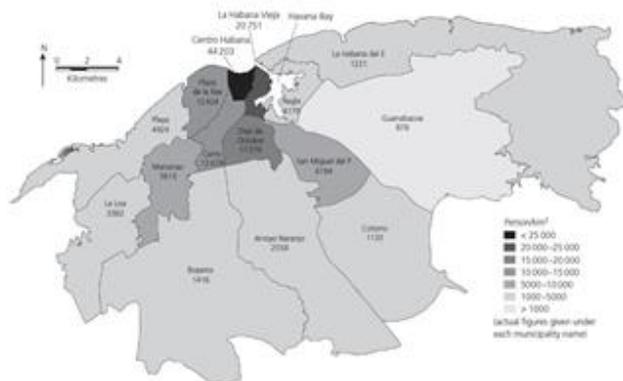
The road/street classification workshop was developed over 2 days and included three activities:

- 1) Identification of Havana's general city vision and the specific vision for its mobility system (discussion)
- 2) Classification of the network according to Movement (first in small groups, then in plenary)
- 3) Classification of the network according to Place (first in small groups, then in plenary)

How many levels?

Levels of movement and place status for Havana were defined by the research team based on strategic significance and geographical scale. Four levels were chosen - enough to capture the key differences of the types of roads/streets in Havana whilst keeping the number of categories manageable.

In practice, workshop participants classified only Levels 1-3, as Level 4 is "all the rest"



Havana and its 15 Municipalities

Movement levels

Name	Description
M1 National	<ul style="list-style-type: none"> Part of national routes Connects main cities (enables people or goods movement)
M2 City	<ul style="list-style-type: none"> Part of the major routes within the city (e.g. city radial route) or key route across the city Connects municipalities Connects centres and sub-centres
M3 Municipality	<ul style="list-style-type: none"> Enables movement of people and goods within the municipality
M4 Neighbourhood /Residential	<ul style="list-style-type: none"> Local streets primarily for access, residential streets, service lanes

Place levels

Name	Description
P1 National	<ul style="list-style-type: none"> Places of national or international significance (historic and cultural value, touristic attraction)
P2 City	<ul style="list-style-type: none"> Places with high significance and value for the city but not necessarily at the national level
P3 Municipality	<ul style="list-style-type: none"> Relevant places for the municipality (commercial, cultural, etc.) but not necessarily visited frequently by users from other areas of the city
P4 Neighbourhood /Residential	<ul style="list-style-type: none"> Places of interest exclusively for the users or residents of the immediate area

Results

The new Havana road/street classification is shown in the map overleaf. The Movement classification is in dark colours (M1=dark red, M2=dark green, M3=dark blue). The Place classification is in light colours (P1=light red, P2=light green, P3=light blue). M4 and P4 are in grey.

As shown in the table below, 6.8% of the network was classified as M1-P4, i.e. roads/streets predominantly for movement, part of the national routes, but with local place function. 5.6% of the network was classified as M4-P1, i.e. places of high significance with only local movement. The different combinations of M1-M3 with P1-P3 represent only 2% of the road network. The M4-P4 combination corresponds to 75% of the network.

	P1	P2	P3	P4
M1	0.3%	0.2%	0.2%	6.8%
M2	0.1%	0.5%	0.2%	3.9%
M3	0.3%	0.1%	0.1%	3.8%
M4	5.6%	1.3%	0.8%	75.7%

Analysis of the map reveals disparities in the distribution of different road/street types across the city, especially with regards to the place function.

For example, the M4-P1 streets (i.e. low movement, high place level) are mostly located in the historical city centre or in specific locations in city's periphery (e.g. parks, botanical garden, zoo, university campuses). The M4-P2 and M4-P3 combinations (i.e. low movement and medium place level) are mostly located in the north (along the seafront) and north-west of the city.

In contrast, the low place level combinations are better distributed around the city. The M1-P4 roads (high movement, low place level) include most orbital and radial routes in the city. The M2-P4 and M3-P4 combinations (i.e. medium movement and low place level) cover the area between radial roads.

The Movement and Place classification does not describe the road geometry or the quality of the built environment, but only an agreement on how the road/street should be used (i.e. its functions). However, this reclassification can potentially inform local authorities to improve the place function of streets in areas of the city where it is very low.

Most importantly, the new classification highlights the importance of the local street network because of its large spatial coverage and also because of the key role

it plays in promoting and enabling social activities and active travel at the local scale.

The exercise emphasised that in a city like Havana all road types are needed to different degrees and at different locations to function as a system that enables the sustainable functioning of the city and addresses the needs of multiple users. These results support this systemic understanding of Havana's road network by showing the characteristics of the system.

When thinking about the road/street network as a system that serves the dual function of movement and place, it is key to consider contextual factors. Around the world, different cities have adopted different transport policies in the past and are facing different challenges now.

In some cities, particularly in Europe, the importance of the role of the road network is being re-thought and some elevated motorways or ring roads have been demolished to give space to active modes of transport and social activities.

However, other cities -like Havana - are in different economic and transport policy development moments. These cities need both the vital liveable places that enhance people's quality of life but also require the connectivity that will allow their

economies to thrive. These cities need a comprehensive understanding of their road/street networks to enable its efficient planning and management and to reduce or prevent congestion.

The new Movement and Place road classification is a tool to start this understanding in Havana.

Future Work

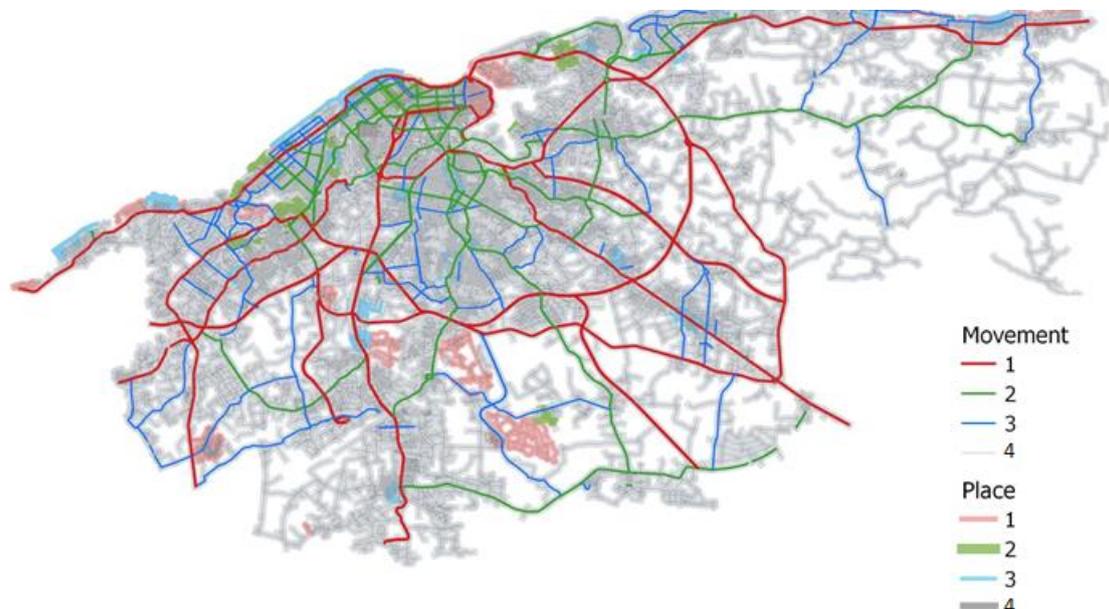
This workshop was a first approximation at reclassifying Havana's road network. The workshop included participants from different institutions at the city and municipal levels but further discussion with other municipalities and other institutions need to take place to build a fully concerted version of the classification and to work on the granularity of the classification within each municipality.

References

- Anciaes, P R., Nascimento, J., Silva, S., 2017. The distribution of walkability in an African city: the case of Praia, Cabo Verde. *Cities* 67, 9-20.
- Jones, P., Boujenko, N., Marshall, S., 2008. *Link & Place - A Guide to Street Planning and Design*. Landor Publishing, London.

Authors

Adriana Ortegon-Sanchez, Paulo Anciaes, Adrian Gonzalez, Joiselen Cazanave.



Havana's Movement and Place road/street classification