

# JANUARY-FEBRUARY 2021

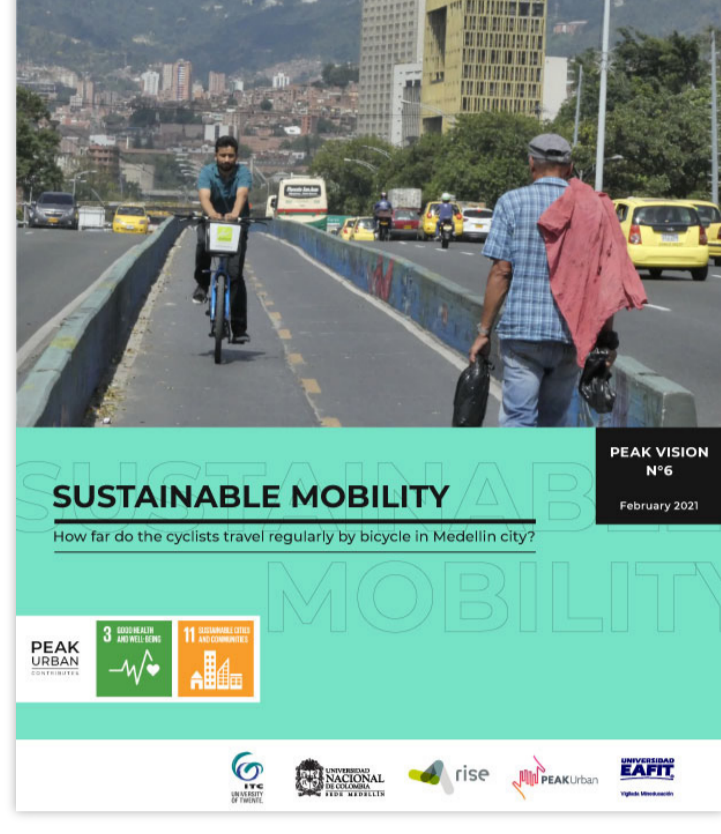
## Did you know?

During the pandemic, the bicycle has received significant boost. Air pollution levels were reduced in many cities around the world. Currently, twice as many bicycles are manufactured as cars, and during 2020 more than 160 million bicycles were manufactured, 60% in China. All diagnostics and plans indicate that the bicycle contributes to the solution of low air quality and constitutes an essential component in sustainable mobility systems. But is there a chicken and egg paradox, how to massively use the bicycle in a city with low-quality air and how to improve air quality if carbon dioxide and greenhouse gas emissions are not reduced to the atmosphere?

## Know what we do...

### PEAK Vision

Series of articles documenting the research we do accessible to all.



### Sustainable mobility

PEAK Vision N°6

This article presents the results of an investigation based on telephone and field surveys on bicycle routes. The research sought to collect information on cyclists' characteristics and their ways to make their trips. Medellín was the case study due to its substantial socio-demographic inequality, the spatial diversity of urban forms, and topographic variability. The survey was directed to people who use the bicycle to work and study in the city. The information obtained is being used to support strategies that promote the use of bicycles as a mode of transport that contributes in an integral way to urban sustainability.

[Read more](#)

### Cityzen

Series of interviews conducted with different researchers and academics involved in the issues around cities and public policies.



### Óscar Mejía

Capsule N°5

The anticipatory and analytical capacity that is currently available makes us reflect on how we build the cities that we inhabit, and that will be inhabited in the future; however, it is worth asking how environmental and urban capacities determined and incorporated into the public plans and policies of cities and territories are?

[Watch video](#)

## Last news



### Article publication: Analyzing the Spatiotemporal Uncertainty in Urbanization Prediction

February 1, 2021

Despite its importance, urban growth models often discard the spatiotemporal uncertainties in their prediction estimates. In this paper, we analyzed the uncertainty in the urban land predictions by comparing the outcomes of two different growth models, one based on a widely applied cellular automata model known as the SLEUTH CA and the other one based on a previously published machine learning framework. We selected these two models because they are complementary, the first is based on human knowledge and pre-defined and understandable policies while the second is more data-driven and might be less influenced by any a priori knowledge or bias. To test our methodology, we chose the cities of Jiaxing and Lishui in China because they are representative of new town planning policies and have different characteristics in terms of land extension, geographical conditions, growth rates, and economic drivers. The proposed analyses in this paper aim to contribute to better urban planning exercises, and they can be extended to other cities worldwide.

<https://bit.ly/3uPkhMs>



### Article publication: The heartbeat of the city

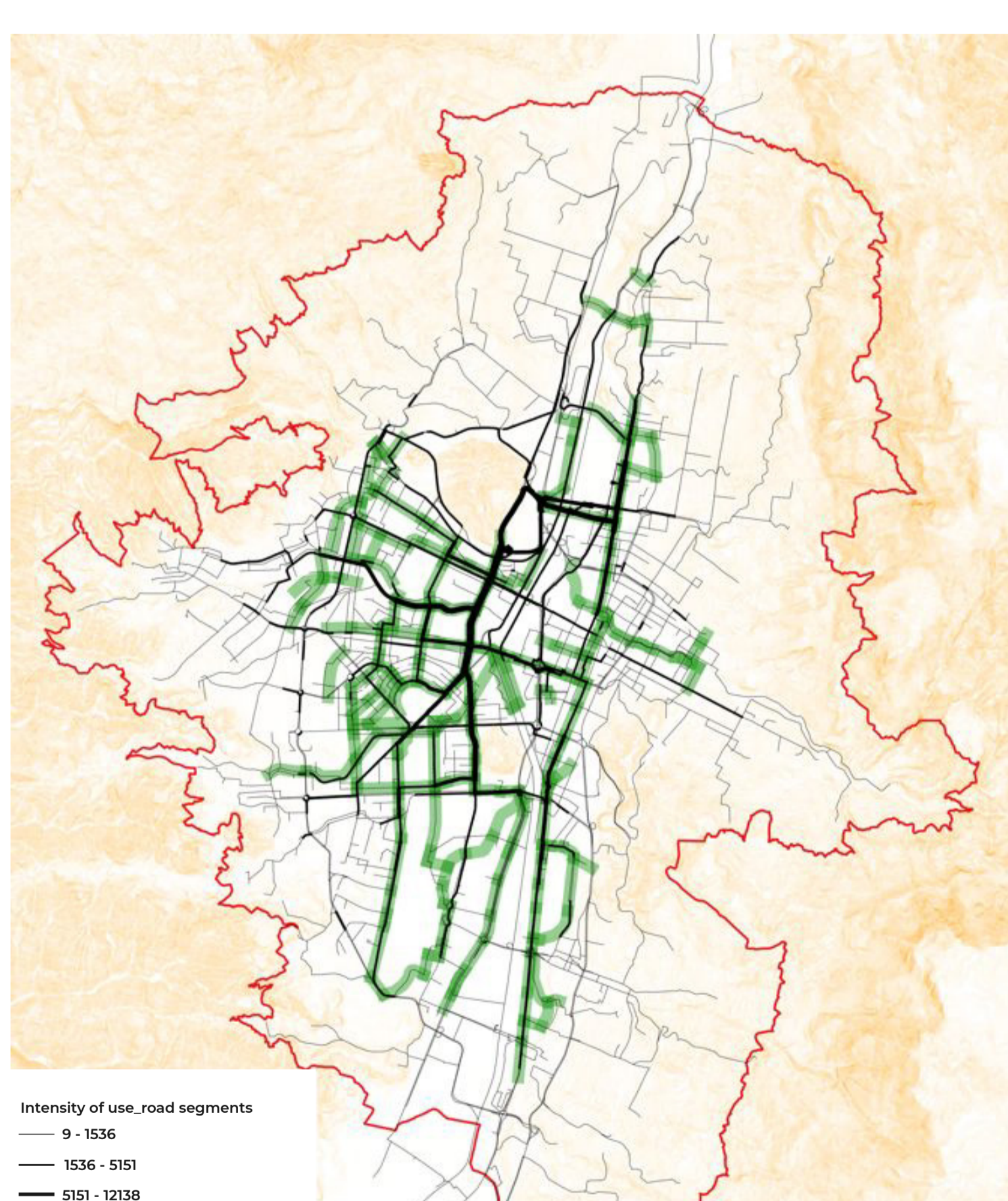
February 24, 2021

Human activity is organised around daily and weekly cycles, which should, in turn, dominate all types of social interactions, such as transactions, communications, gatherings and so on. Yet, despite their strategic importance for policing and security, cyclical weekly patterns in crime and road incidents have been unexplored at the city and neighbourhood level. Here we construct a novel method to capture the weekly trace, or "heartbeat" of events and use geotagged data capturing the time and location of more than 200,000 violent crimes and nearly one million crashes in Mexico City. On aggregate, our findings show that the heartbeats of crime and crashes follow a similar pattern. We observe valleys during the night and peaks in the evening, where the intensity during a peak is 7.5 times the intensity of valleys in terms of crime and 12.3 times in terms of road accidents. Although distinct types of events, crimes and crashes reach their respective intensity peak on Friday night and valley on Tuesday morning, the result of a hyper-synchronised society. Next, heartbeats are computed for city neighbourhood 'tiles', a division of space within the city based on the distance to Metro and other public transport stations. We find that heartbeats are spatially heterogeneous with some diffusion, so that nearby tiles have similar heartbeats. Tiles are then clustered based on the shape of their heartbeat, e.g., tiles within groups suffer peaks and valleys of crime or crashes at similar times during the week. The cluster found are similar to those based on economic activities. This enables us to anticipate temporal traces of crime and crashes based on local amenities.

<https://bit.ly/3ki95wj>

## A map is worth a thousand words

What is the interaction space for cyclists in the city of Medellín?



The promotion of bicycles as transport has gained relevance during the last decades in search of cities to mitigate the environmental and social impacts of the transport sector. Sociodemographic characteristics, the built urban environment, and topography are some of the factors that determine the use of bicycles (Heinen, 2010). In this sense, a recent study by Ospina et al. (2020) points out that the distance traveled by cyclists in the city of Medellín is positively affected by urban conditions at the origin and destination of cyclists' trips, urban characteristics along the route, and by topography. Thus, a good part of the corridors most used by cyclists have cycle-infrastructure or quiet streets and that are located in areas with gentle slopes in the city (See map). Understanding the distance cyclists are willing to travel is essential for several reasons.

On the one hand, this distance allows us to understand the space that cyclists have to interact in Medellín, which conditions the quantity and quality of urban activities (for example, work and study) that cyclists can access. On the other hand, understanding the distance traveled by cyclists and the factors that determine it is essential for the proper design of the cycle-infrastructure. In this way, it will be possible to guarantee that the investments destined for the construction of the cycle-infrastructure are following the budget availability of cities such as Medellín and, above all, can have a high impact in terms of their usability.

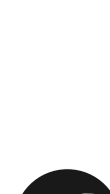
References.

Heinen, E., Van Wee, B., Maat, K., 2010. Commuting by bicycle: an overview of the literature. *Transp. Rev.* 30, 59–96. <https://doi.org/10.1080/01441640903187001>

Ospina, J. P., Botero-Fernández, V., Duque, J. C., Brussel, M., & Grigolon, A. (2020). Understanding cycling travel distance: The case of Medellín city (Colombia). *Transportation Research Part D: Transport and Environment*, 86(102423), 1–15. <https://doi.org/10.1016/j.trd.2020.102423>



@risegroup.eafit



@risegroupeafit



@Rise\_group



RISE Group EAFIT