Data Science enlightening the path for resilient cities to fight COVID-19 Case study of Medellin

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Laboratorio de Gestión de Sistemas en Tiempo Real

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Coronavirus Cases:

4,207,908

view by country

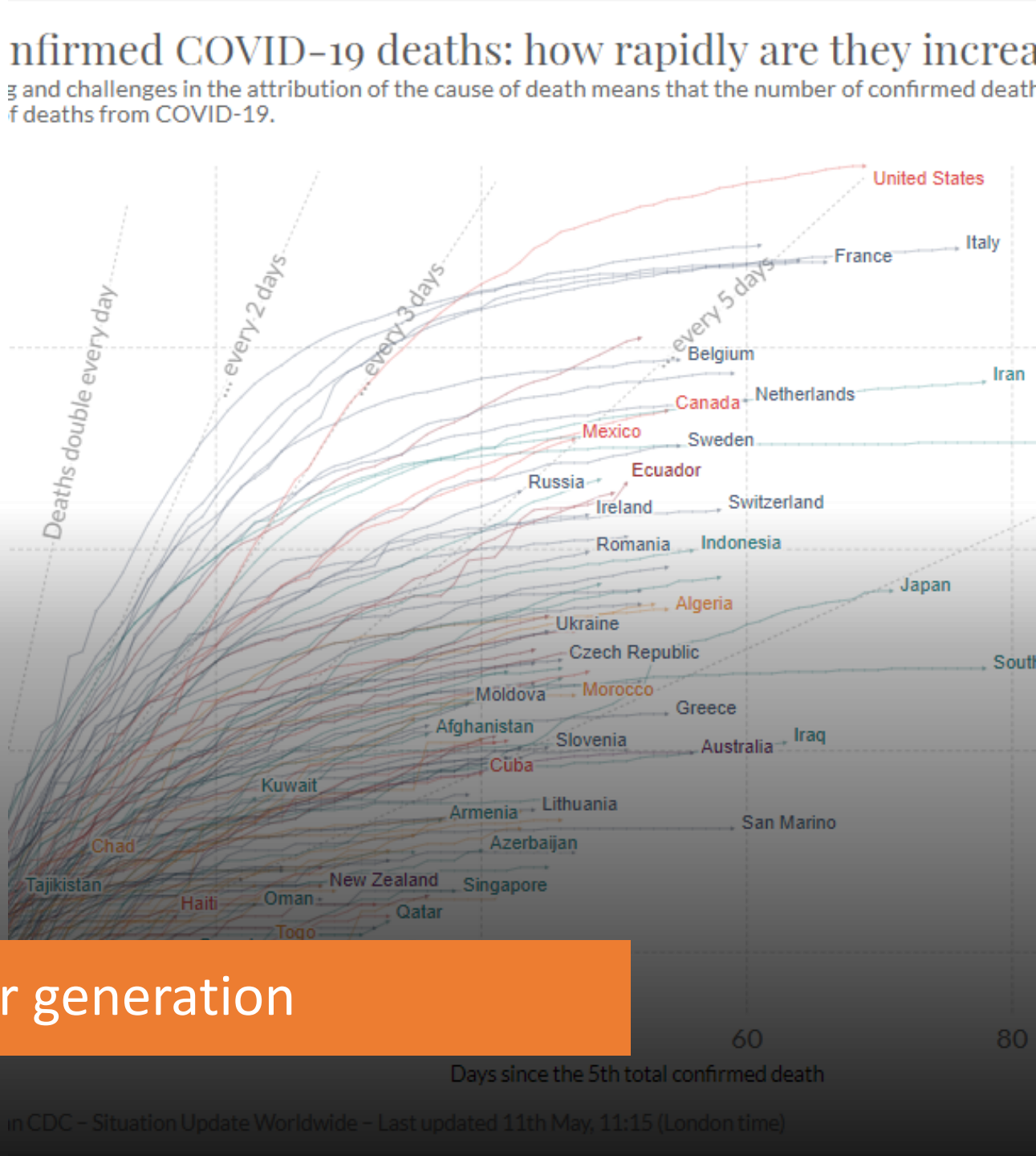
Deaths:

284,382

Recovered:

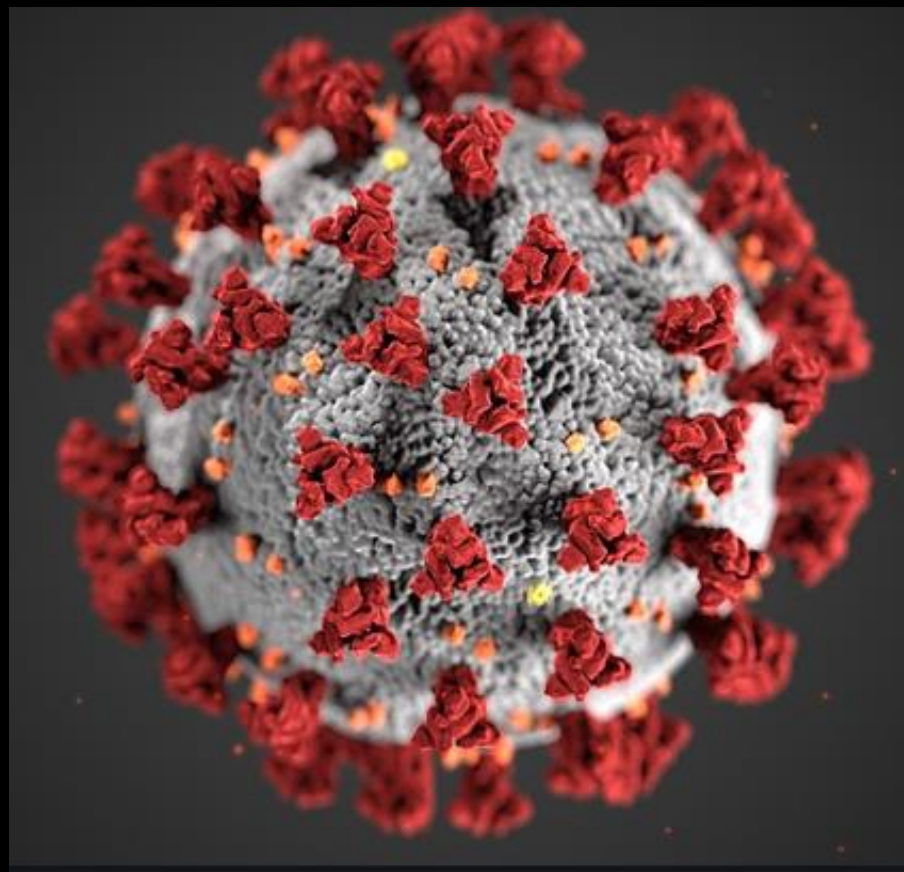
COVID-19

The greatest “urgent” challenge for our generation

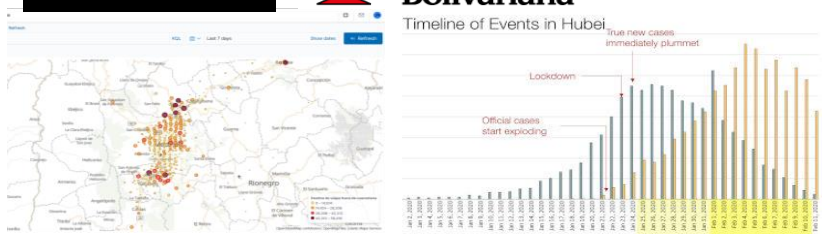


It is a stealth enemy

- It is a suicide enemy
- It operates under the “radar” for at least five days
- It can stop your main supply routes
- It infiltrate your own troops
- If keeps your health system busy and even collapsed it
- When you gage the size of their troops they will be at least 2.5 times bigger than



Our defence tactics monitoring and prediction



Monitoring Estimation and Prediction of Cases and their location

Alcaldía de Medellín

Social and Economical Models

Profile of cases an vulnerabilities

Logistics of UCI and Hospitals

aws

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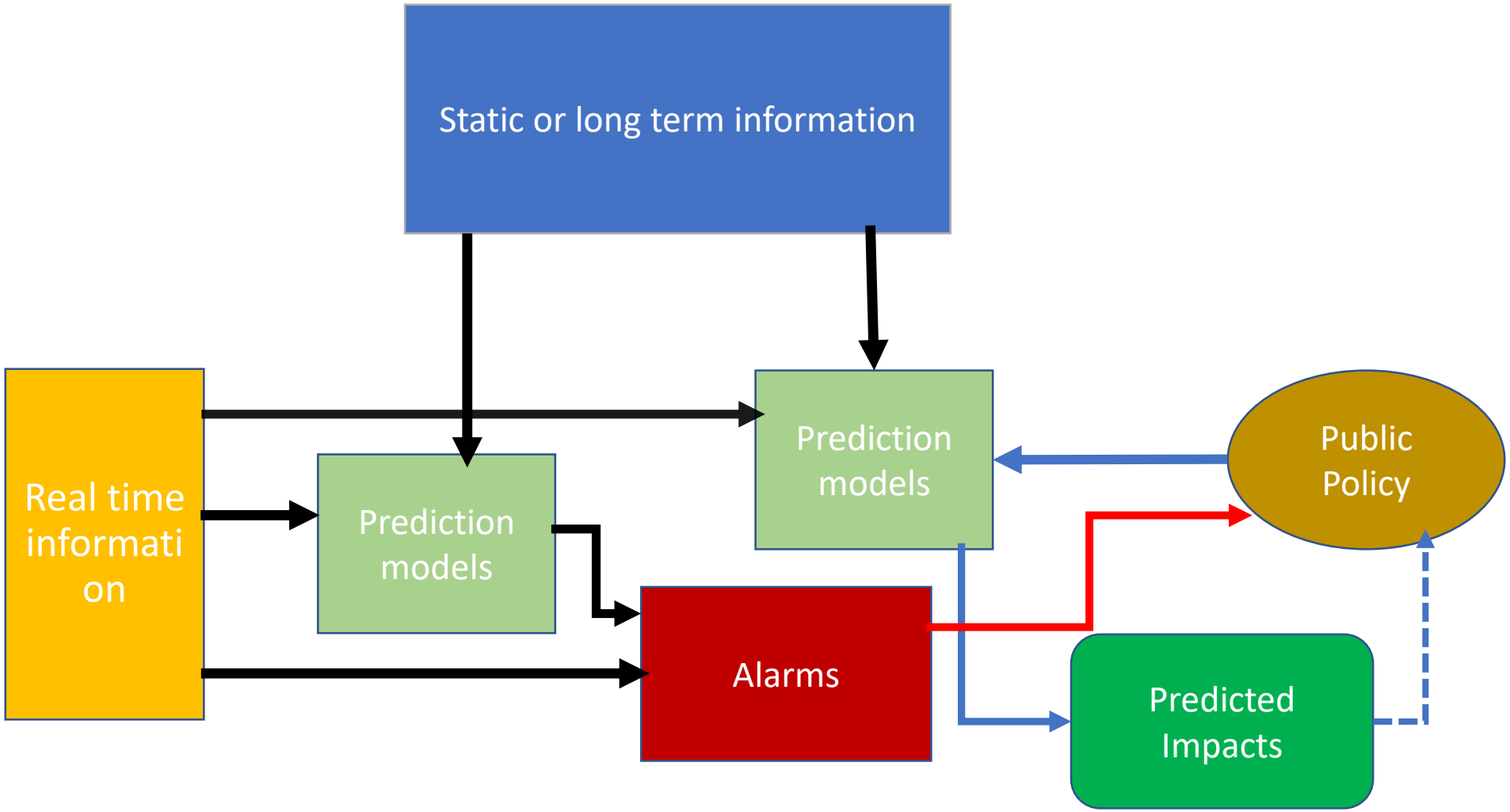
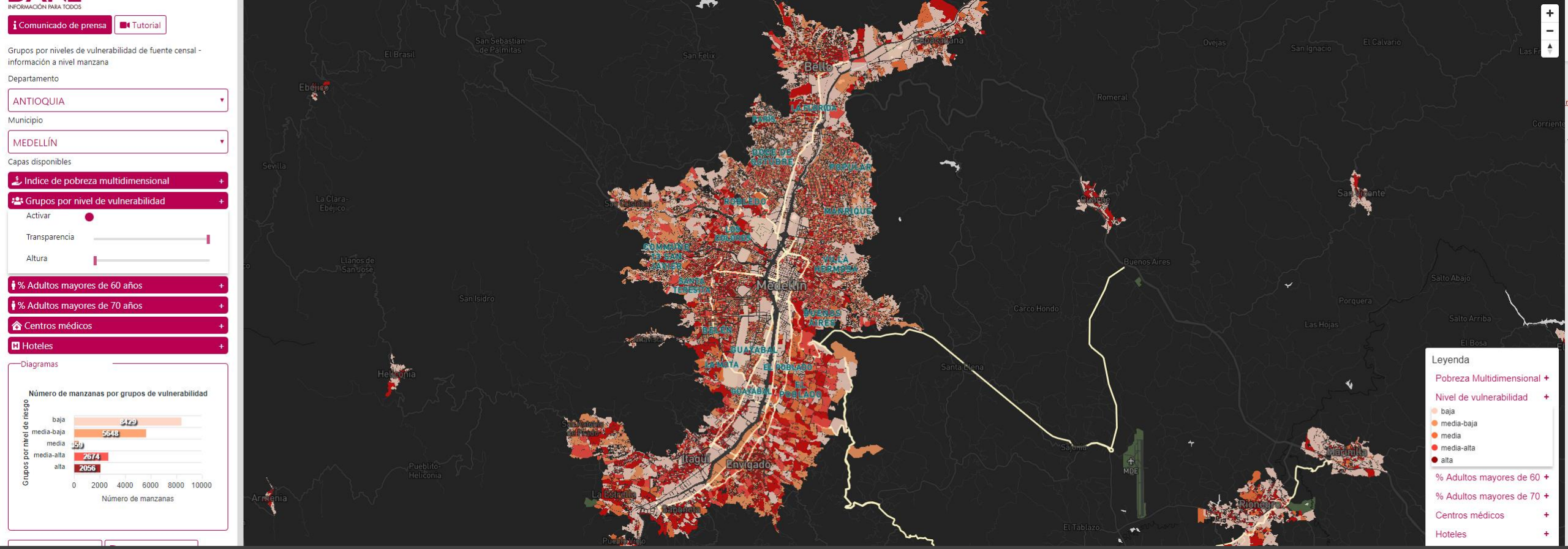
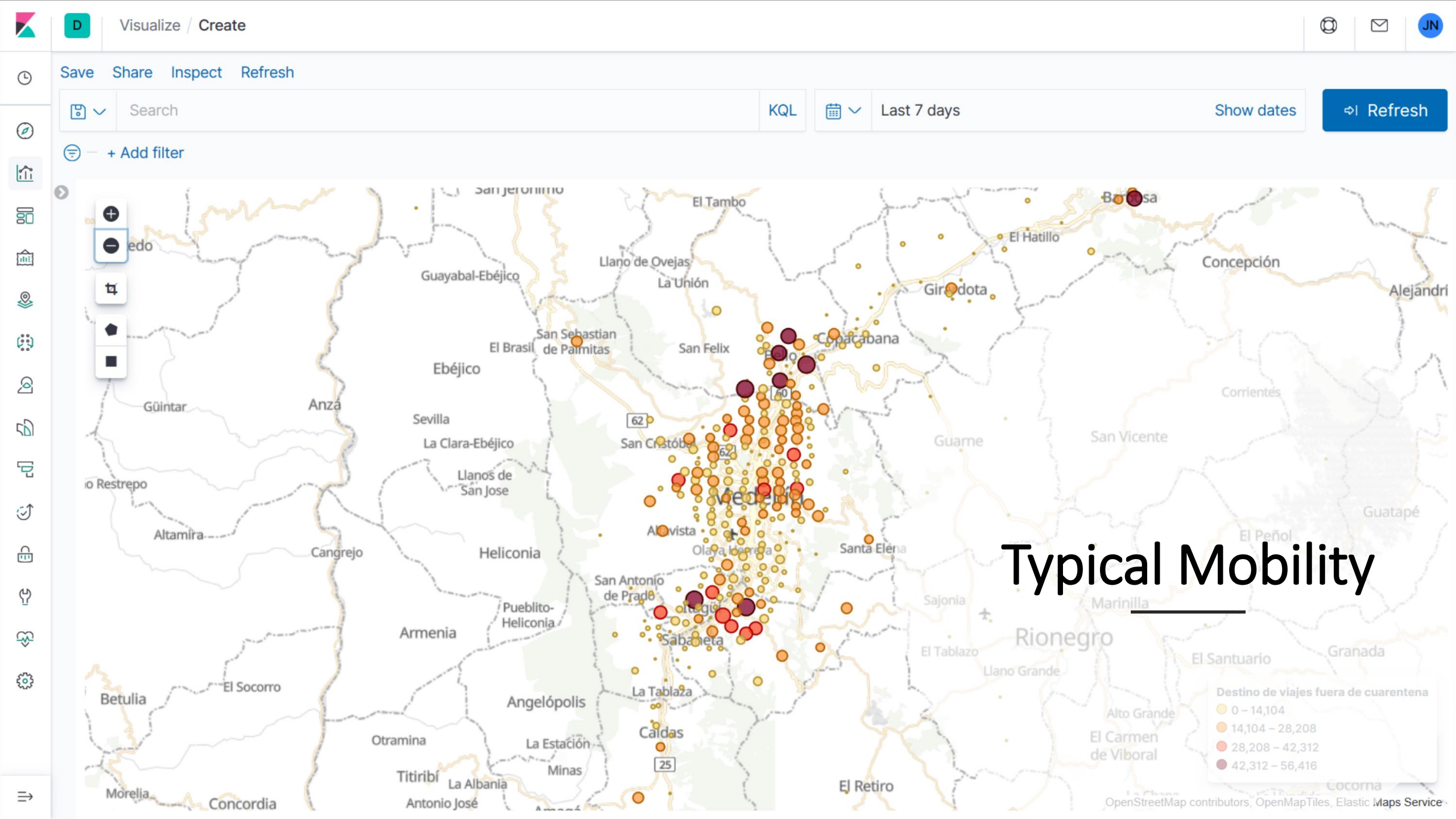
Architecture for decision making

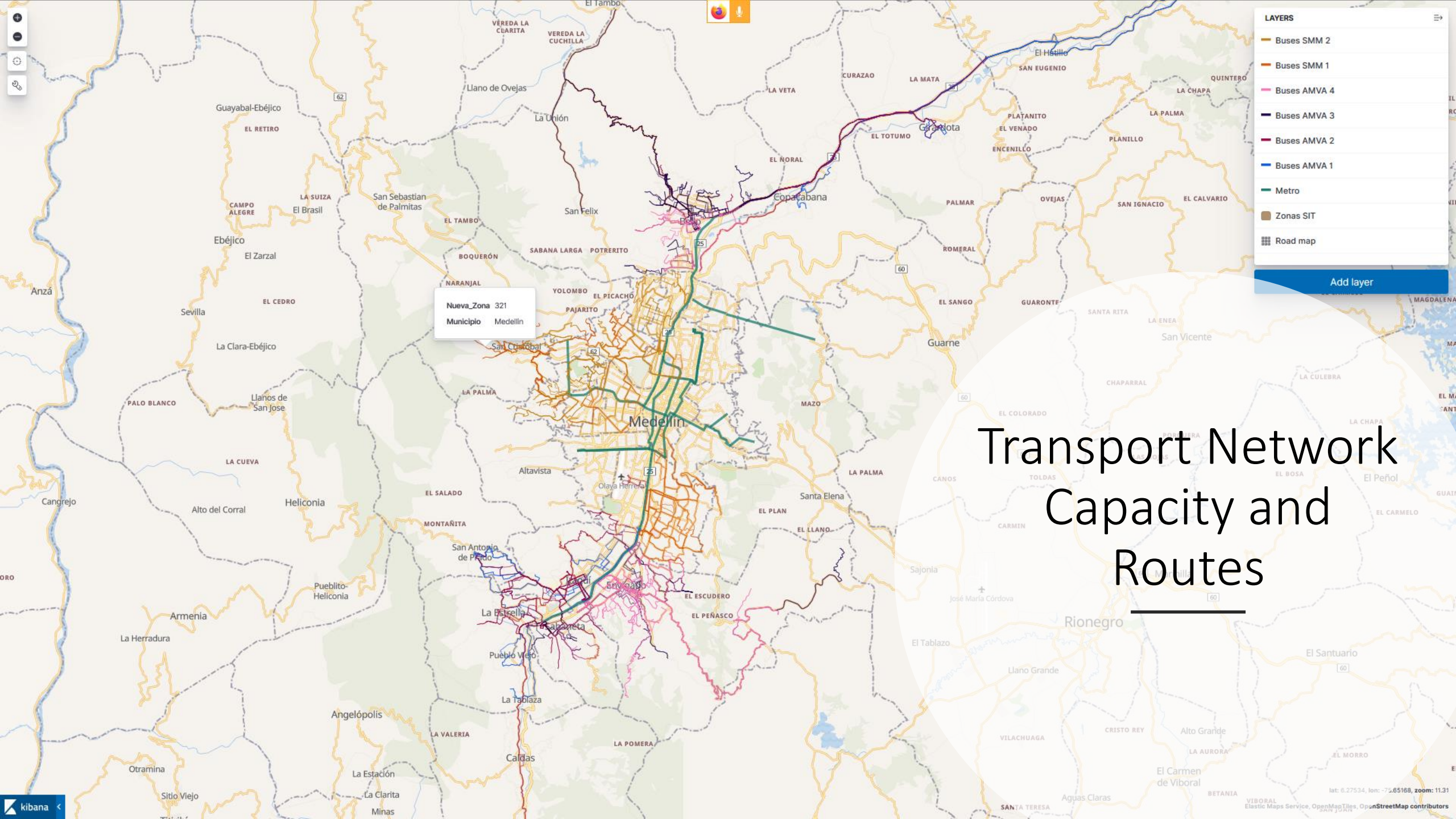


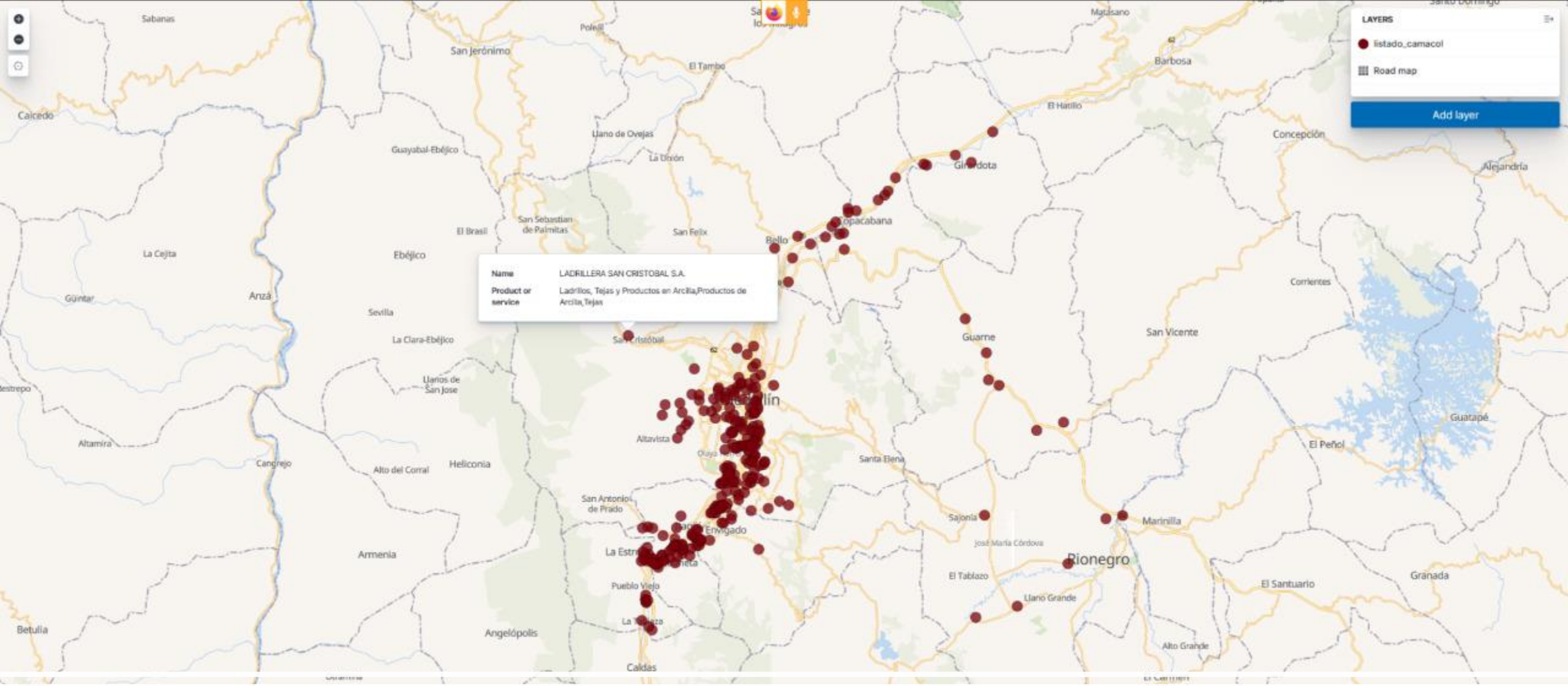
Static Information



Vulnerability maps


D
Visualize / Create
JN
Save Share Inspect Refresh
Search
KQL
Last 7 days
Show dates
Refresh
+ Add filter
Typical Mobility
Destino de viajes fuera de cuarentena
0 – 14,104
14,104 – 28,208
28,208 – 42,312
42,312 – 56,416
OpenStreetMap contributors, OpenMapTiles, Elastic Maps Service


LAYERS
Buses SMM 2
Buses SMM 1
Buses AMVA 4
Buses AMVA 3
Buses AMVA 2
Buses AMVA 1
Metro
Zonas SIT
Road map
Add layer
Nueva_Zona 321
Municipio Medellin
Medellin
Bello
Copacabana
Girardota
Guarne
Envigado
Itagüí
Sabaneta
La Estrella
Caldas
Rionegro
Transport Network Capacity and Routes



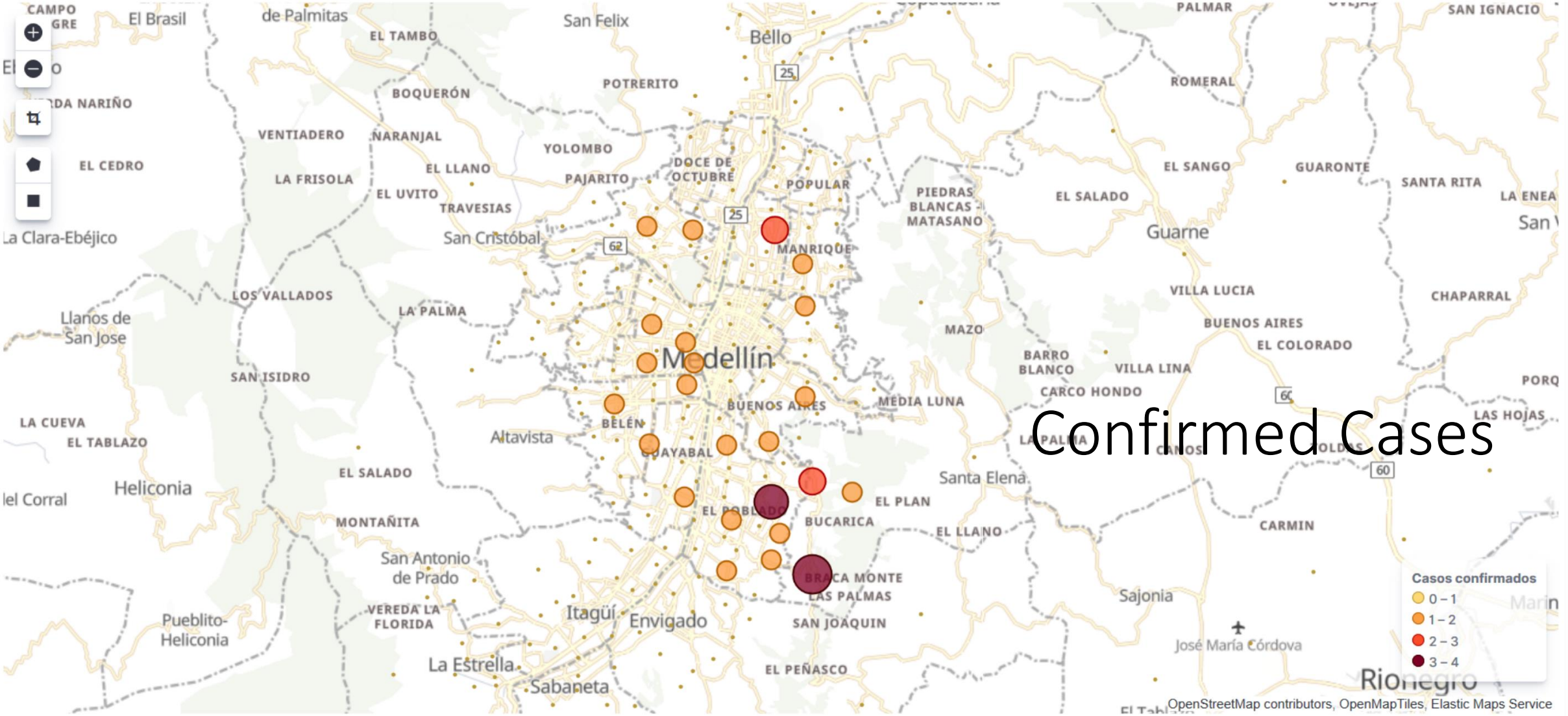
Bussiness Location

Real Time Information

Save Share Inspect Refresh

Search KQL Last 7 days Show dates Refresh

+ Add filter



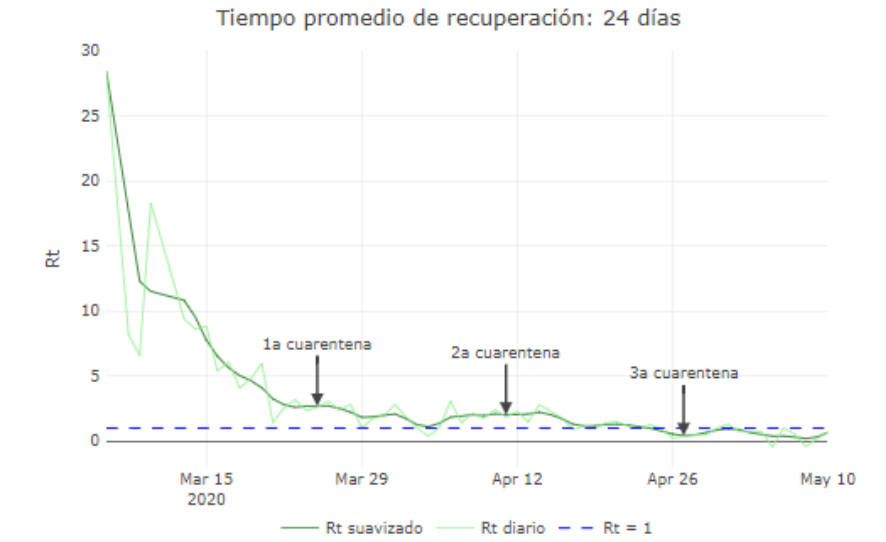
Real time Rt monitoring

COVID19 Colombia

Cálculo de Rt en tiempo real

Departamento o distrito especial

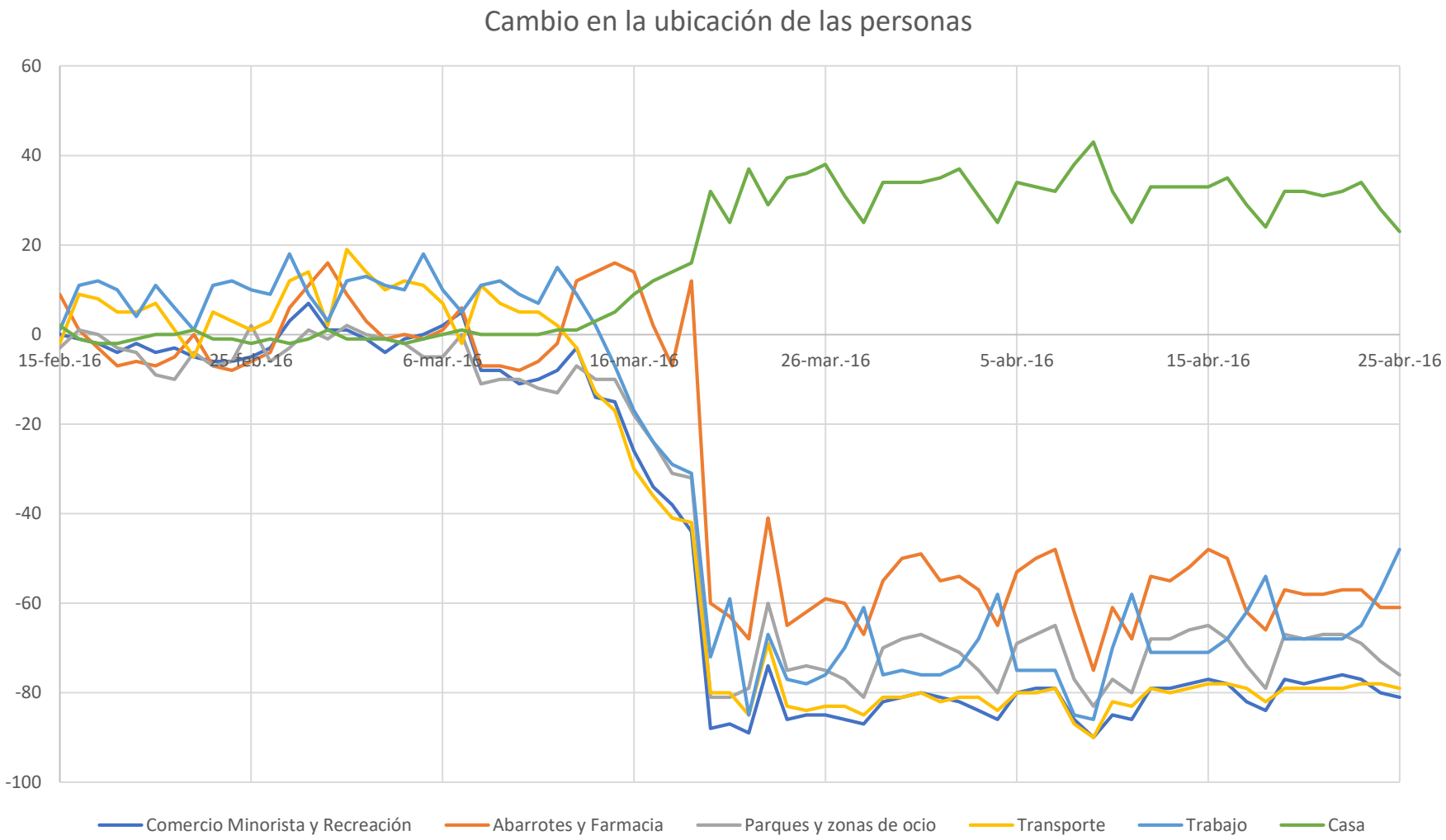
Antioquia



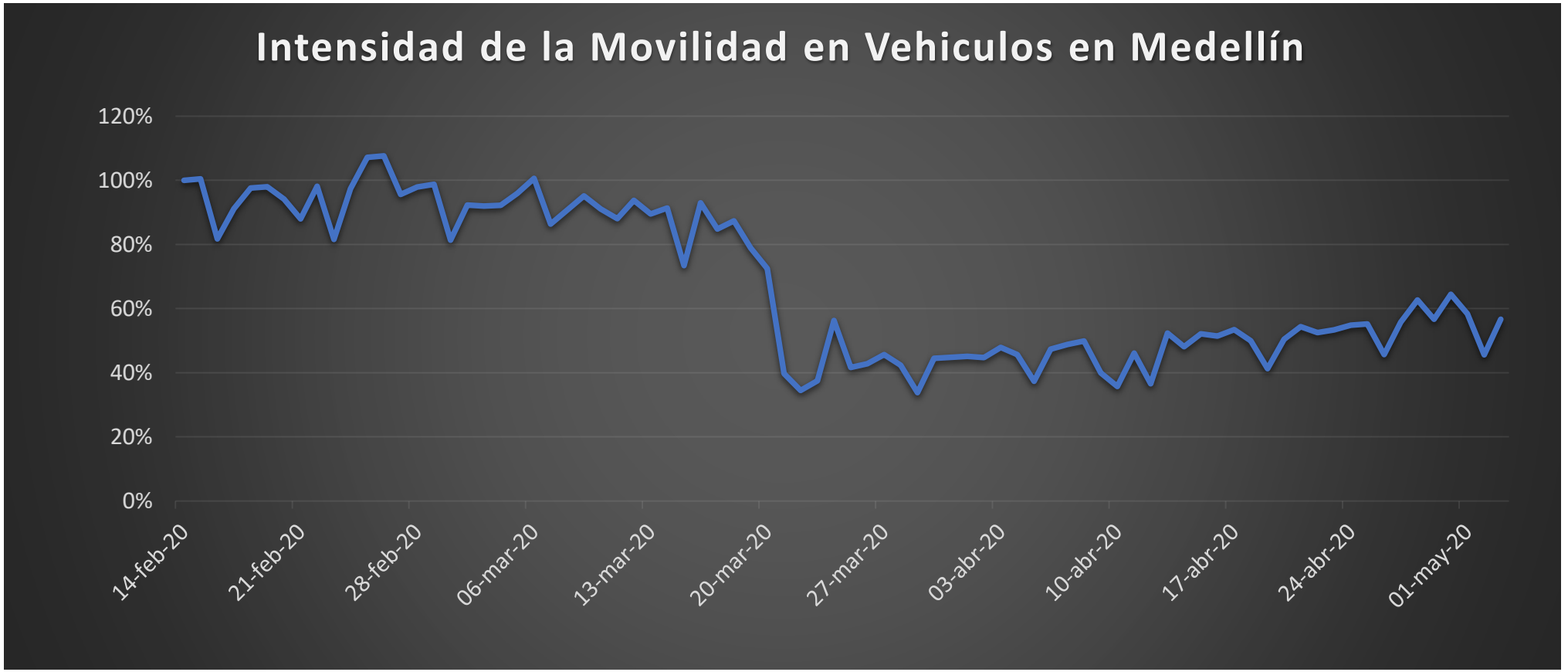
Casos	Número	INFECTADOS	Número
Positivos	468	Activos	195
Importados	131	En casa	182
Recuperados	267	Hospitalizados	8
Fallecidos	6	En UCI	5

https://rtcolombia.herokuapp.com/

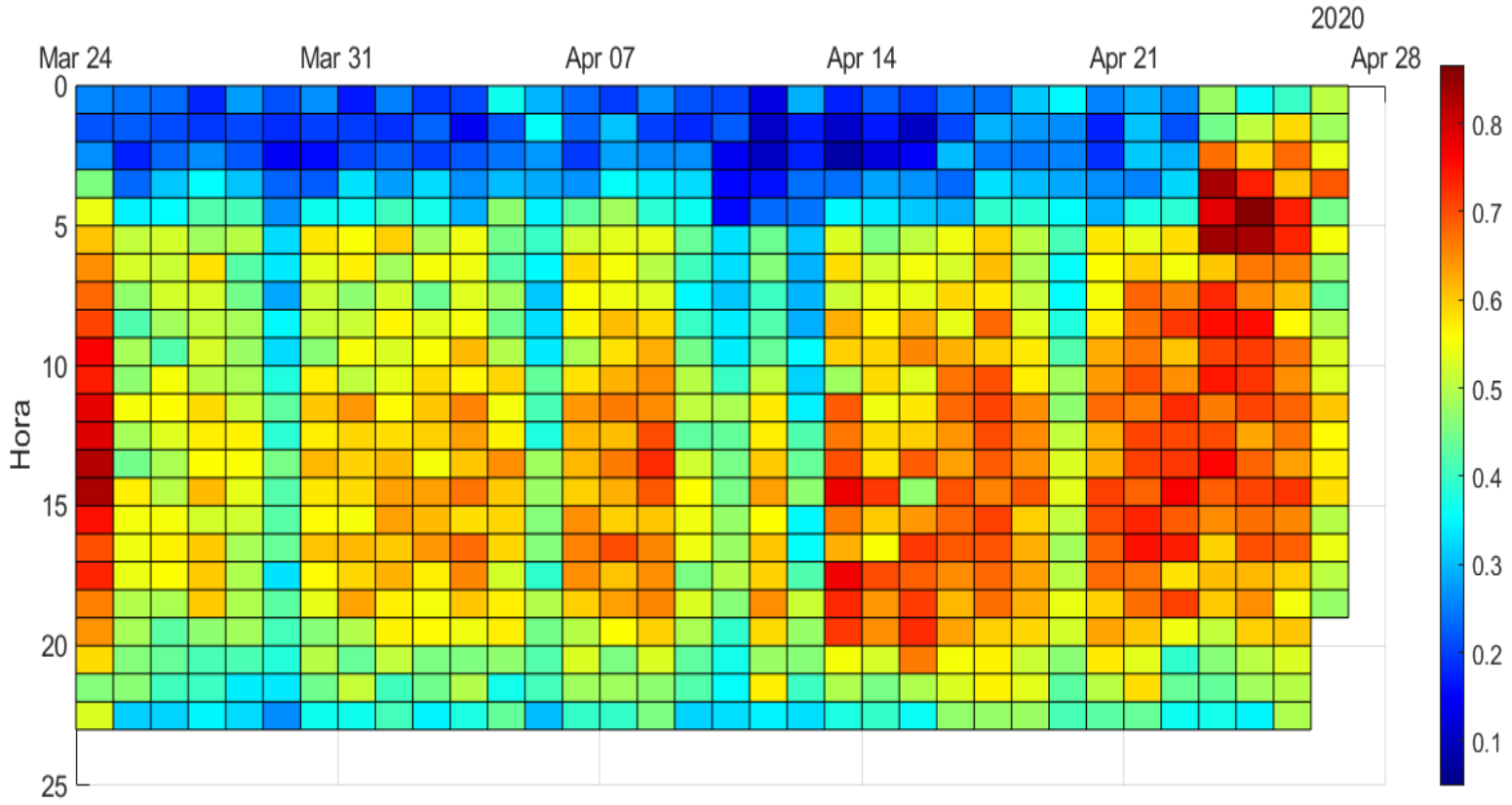
Location of activity- (Source Google)



Car mobility before and during lockdown

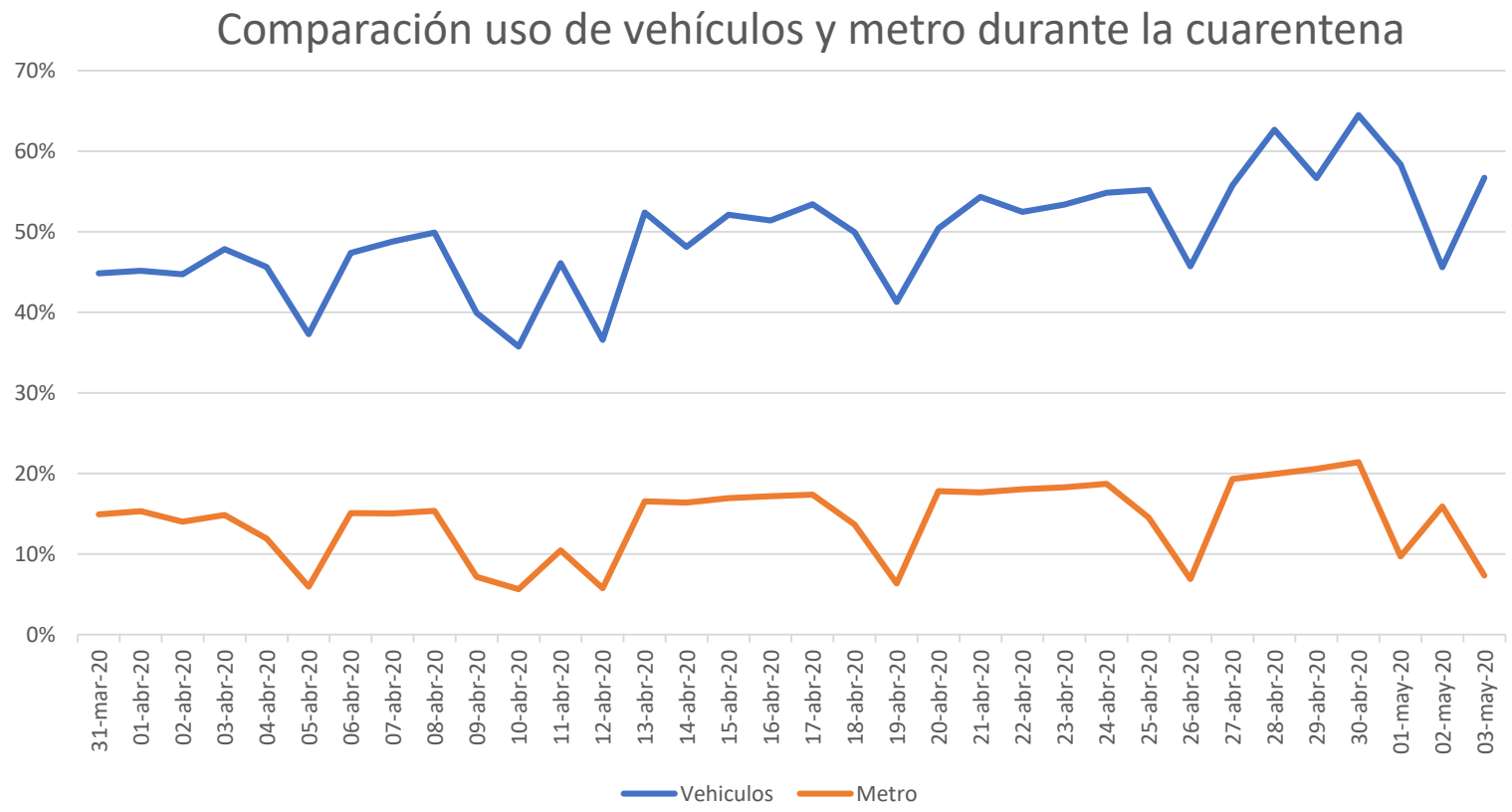


Car mobility during lockdown

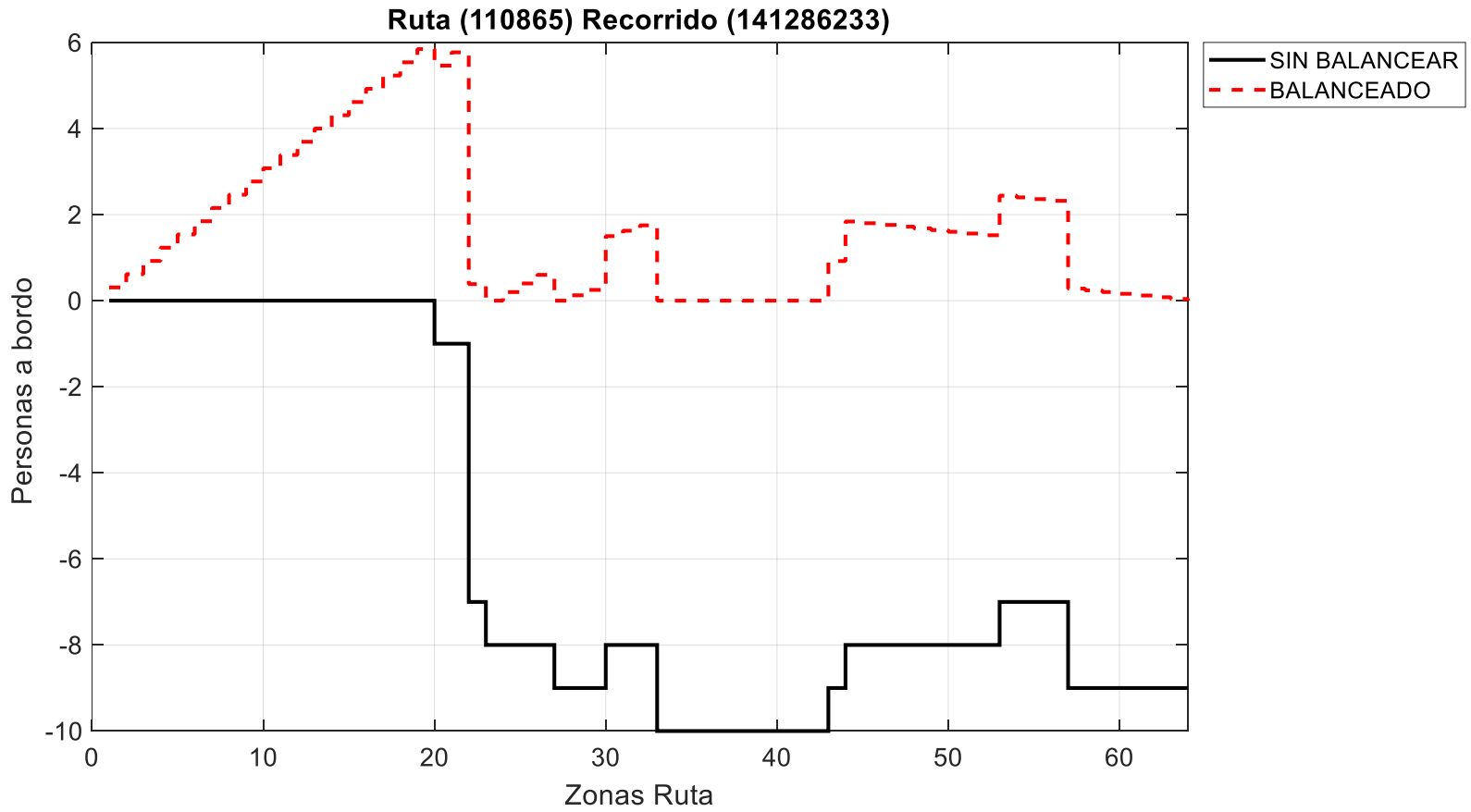


Metro and Car Mobility during Lockdown

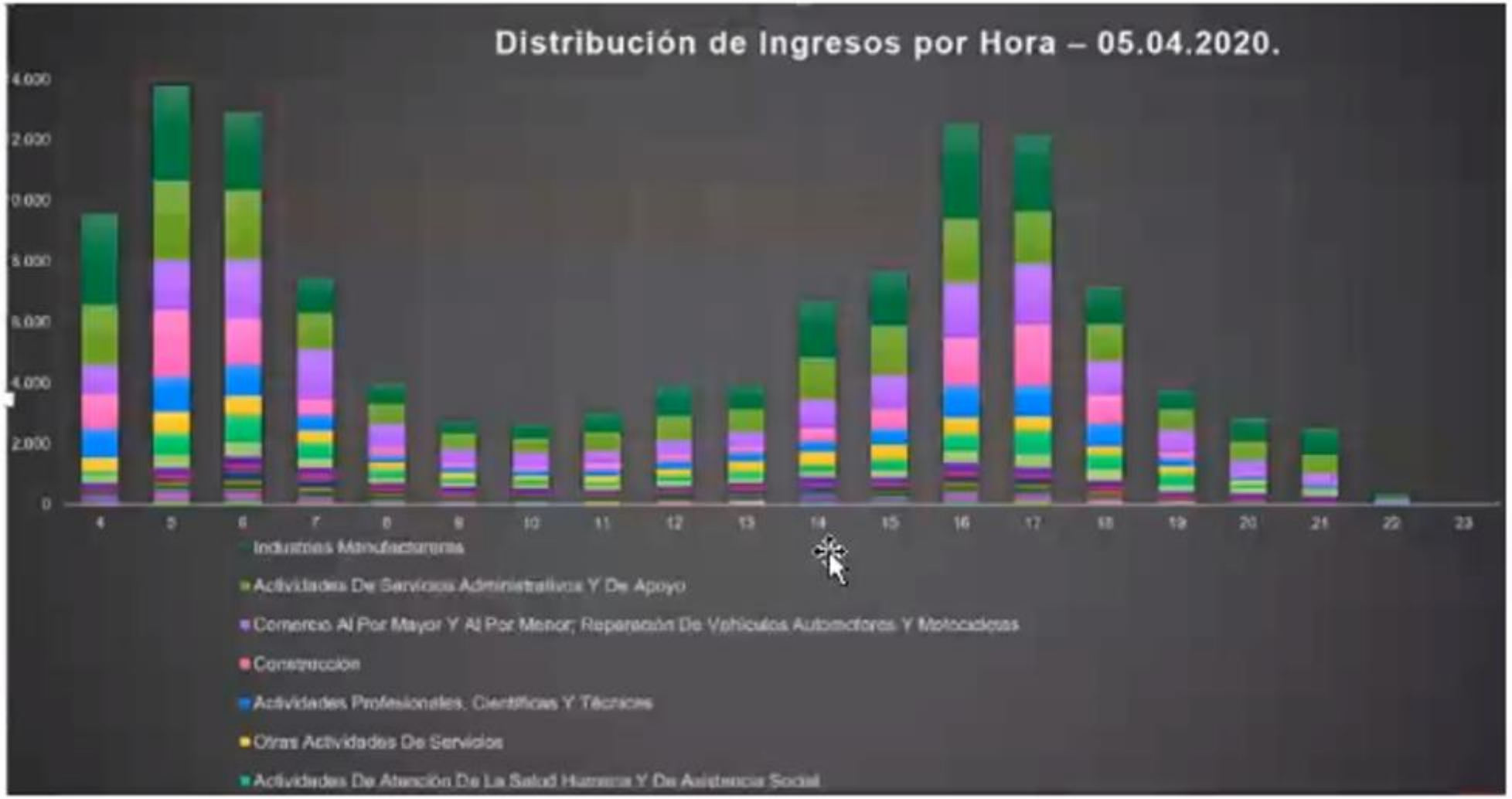
Basado en información de volúmenes de ARS (1 promedio Marzo 1-23 de 2020)



Bus ocupation

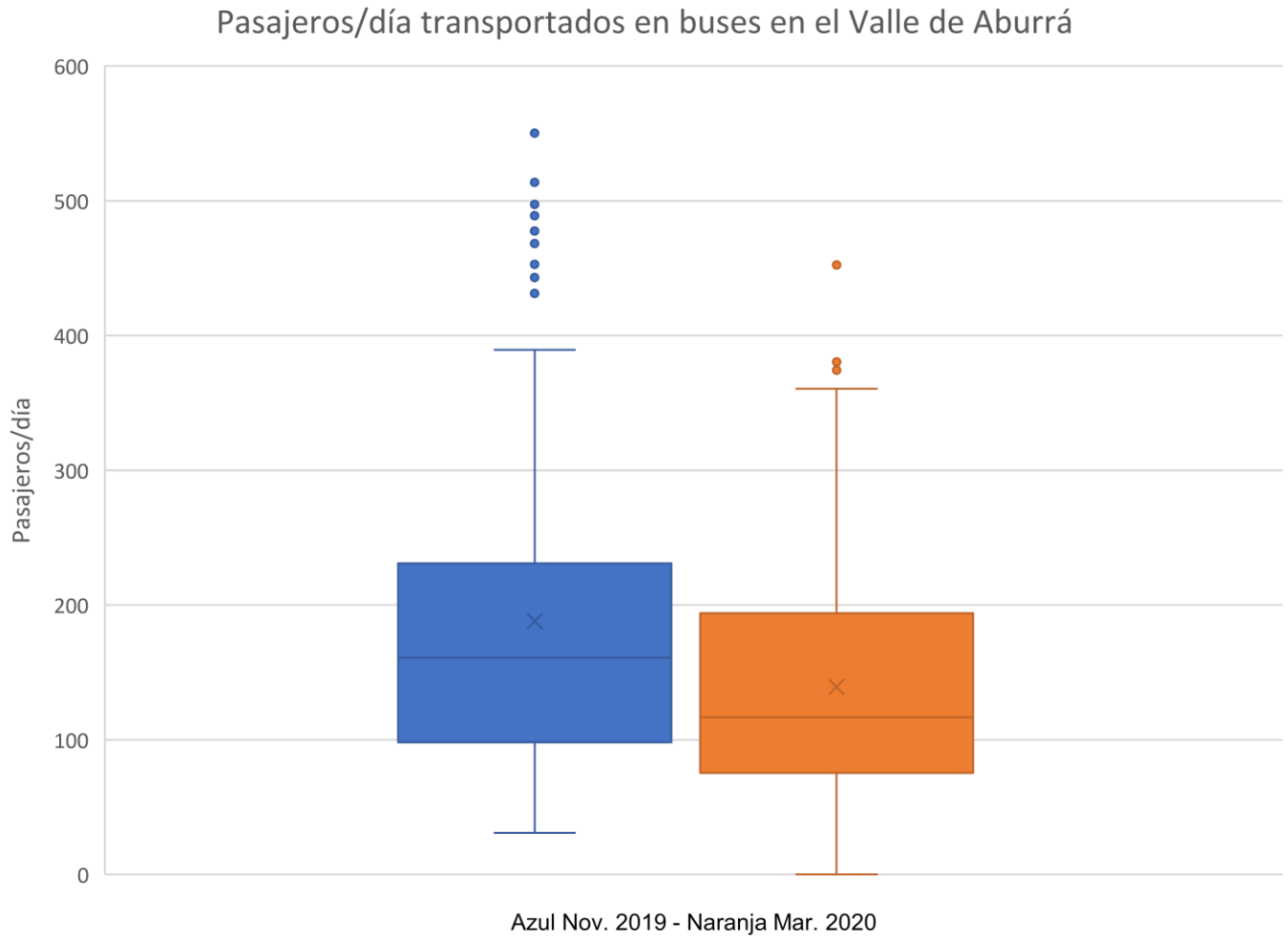


Metro ocupation per economic activity

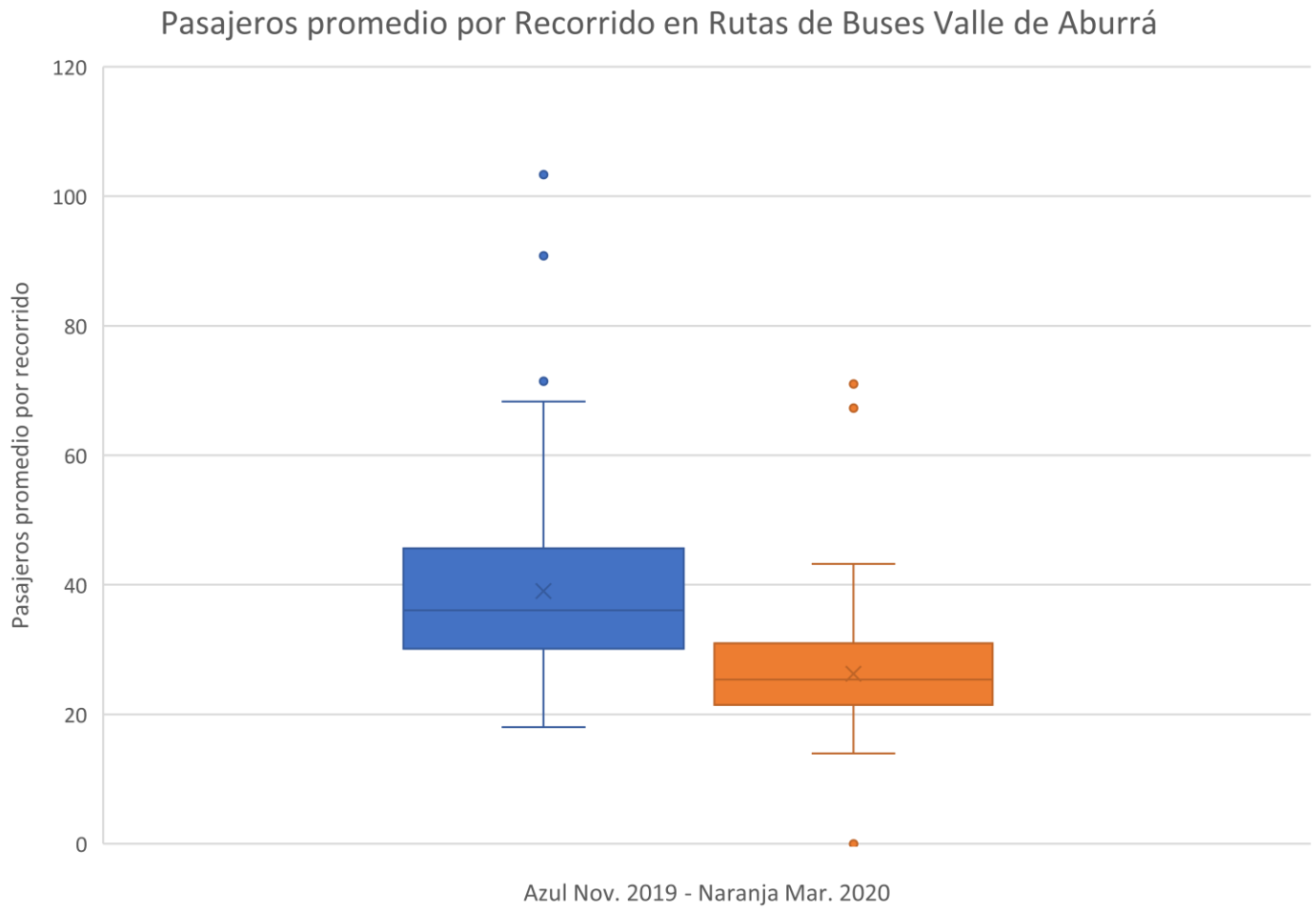


Fuente: Metro de Medellín

Passenger/day-bus – Driver's Risk

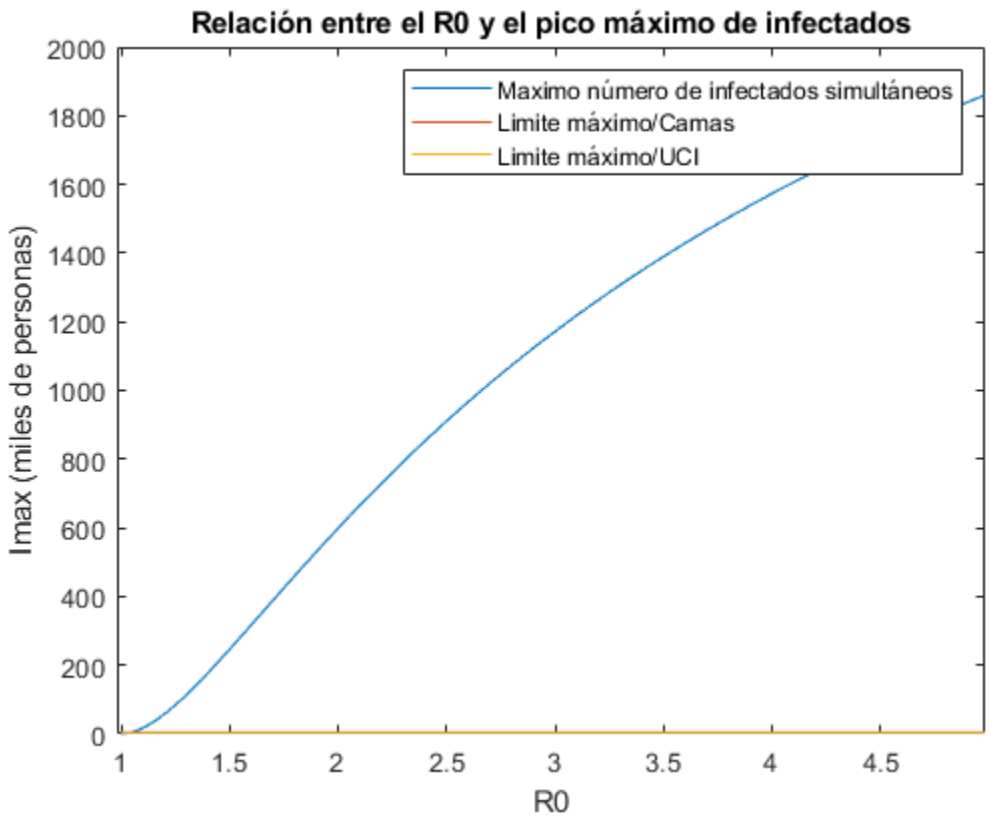


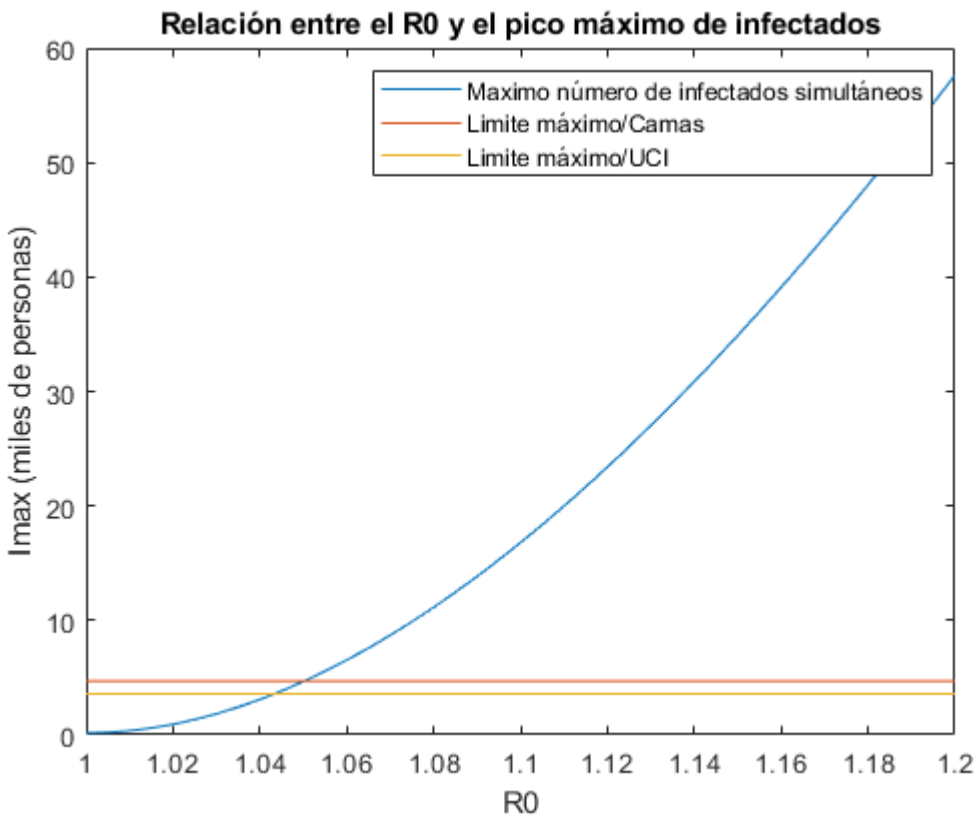
Passengers in route



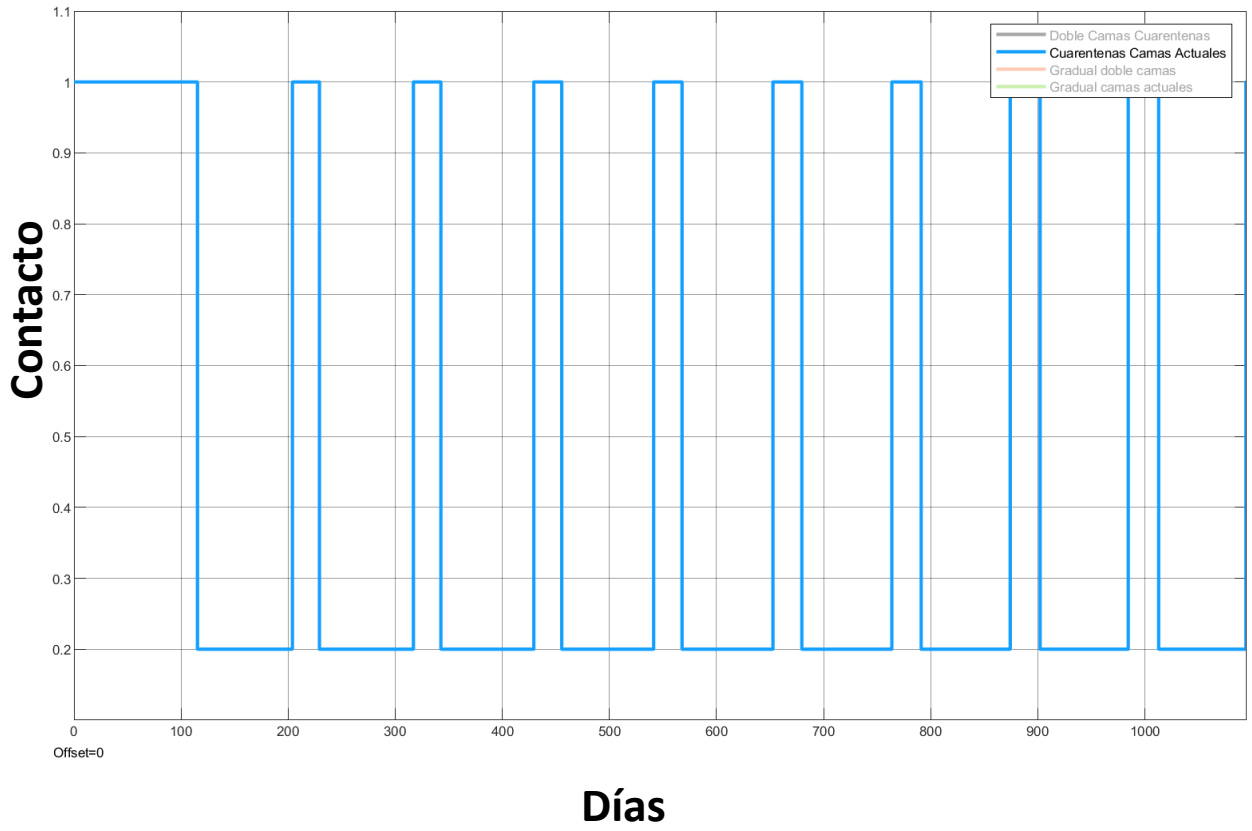
Prediction Models

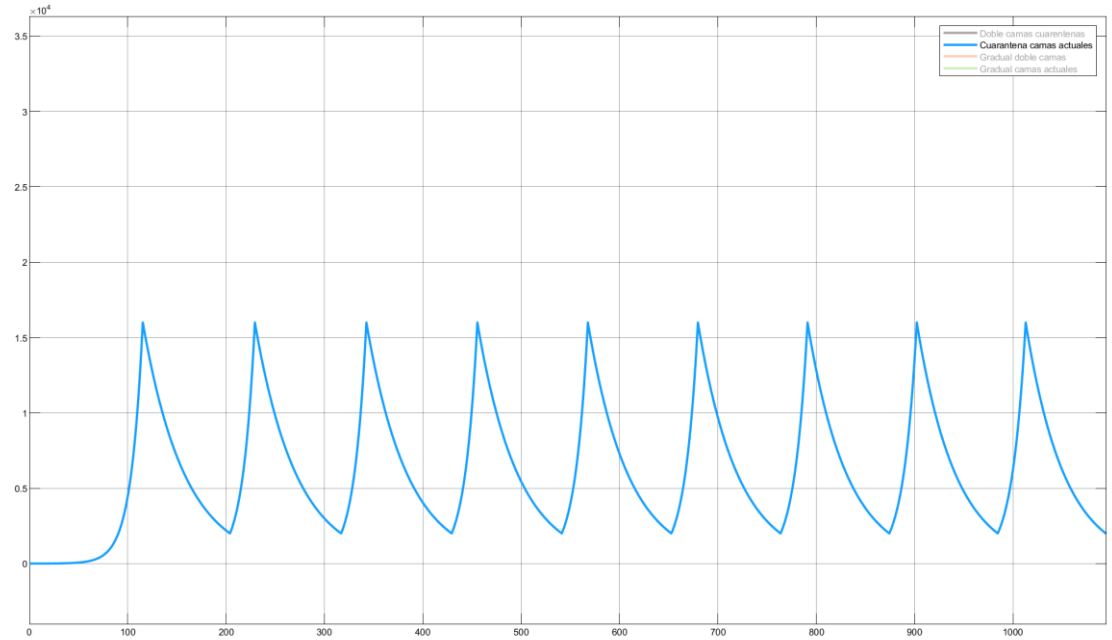
Gauging our health system

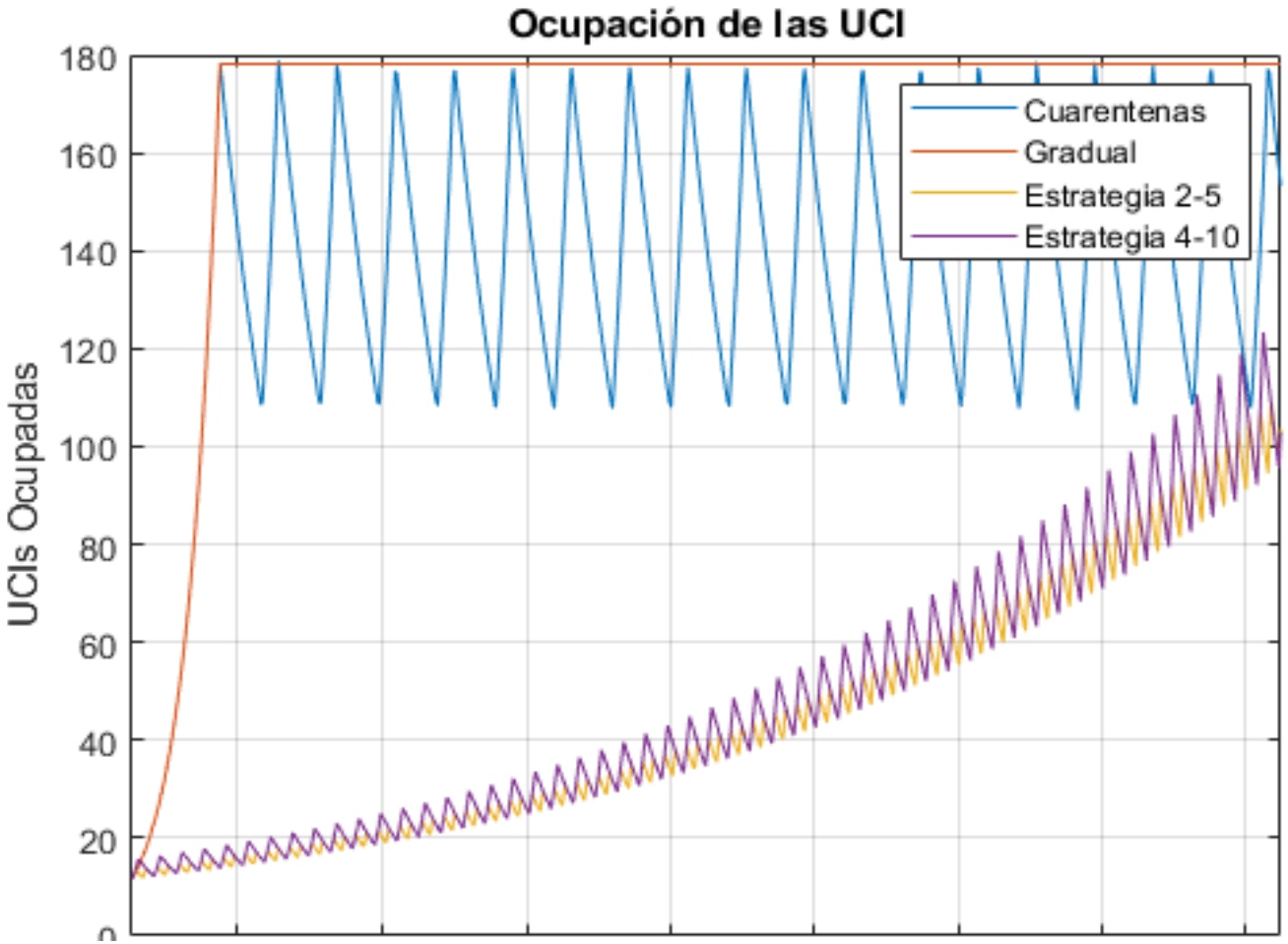




Future Lockdowns and UCI occupation

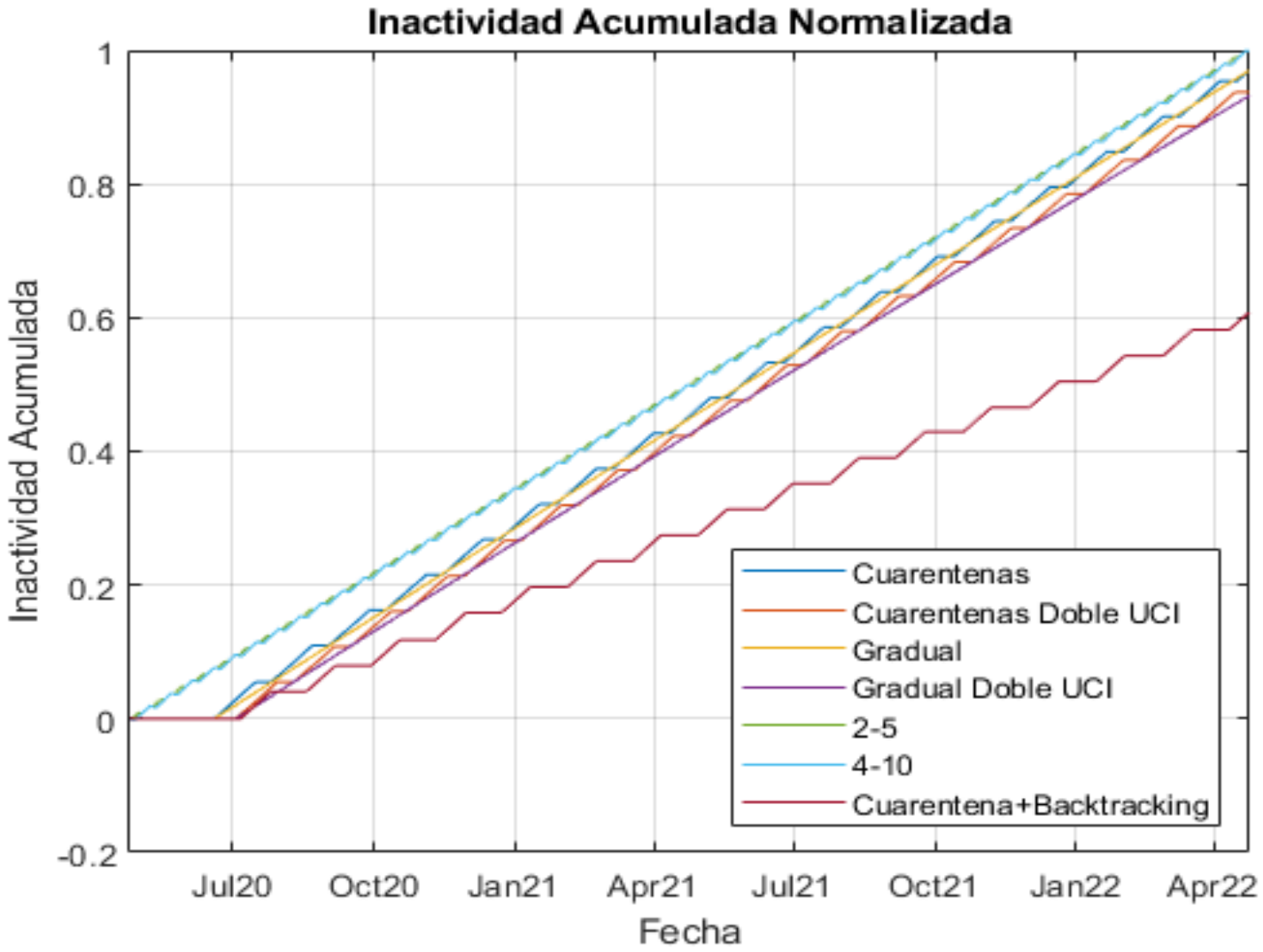




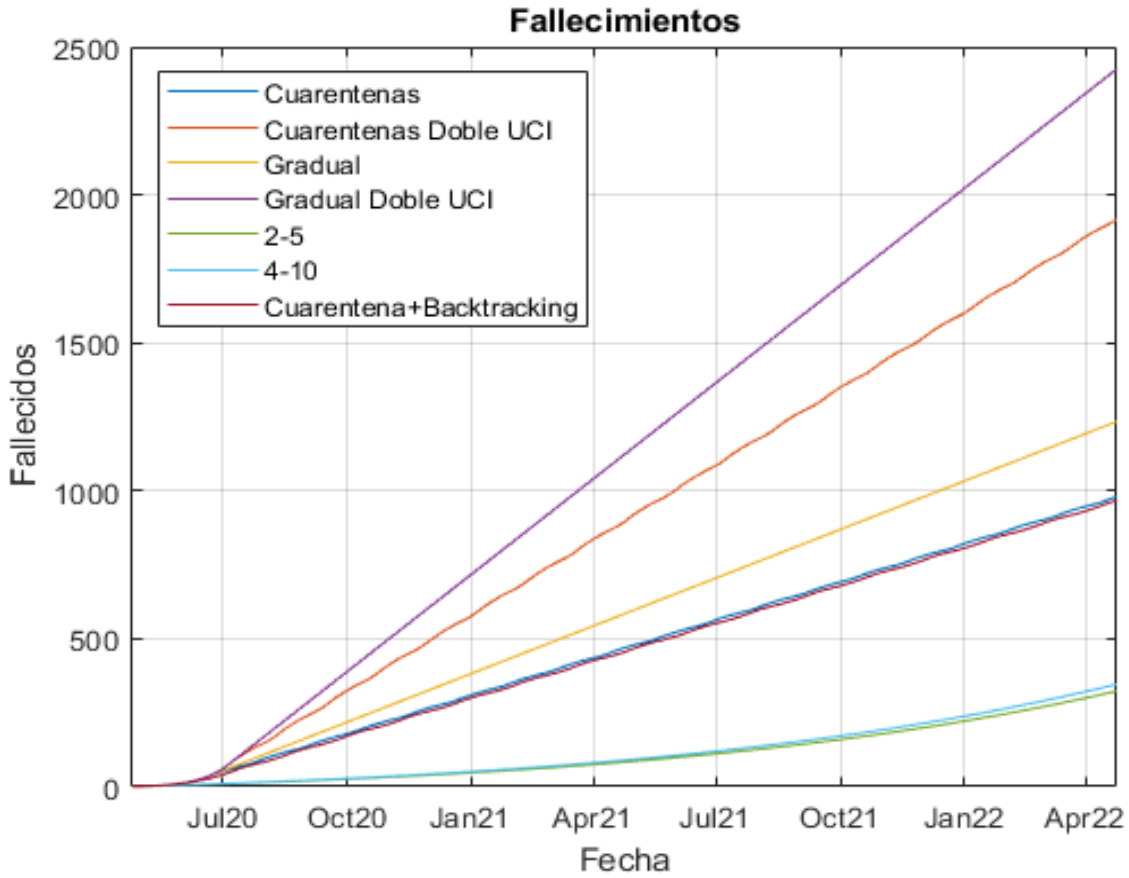


Effect of other Strategies

Cumulated inactivity

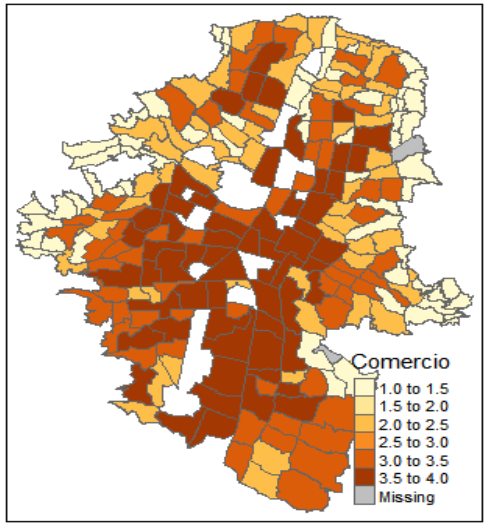


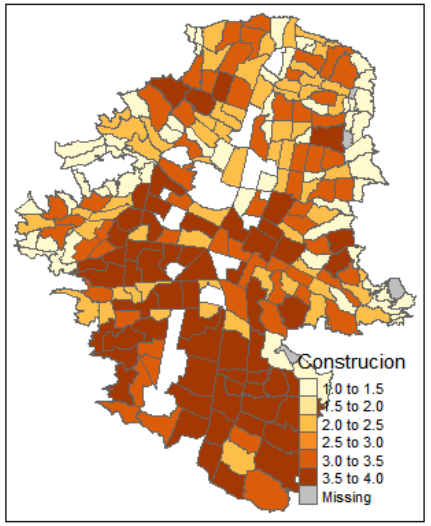
Projected Deaths

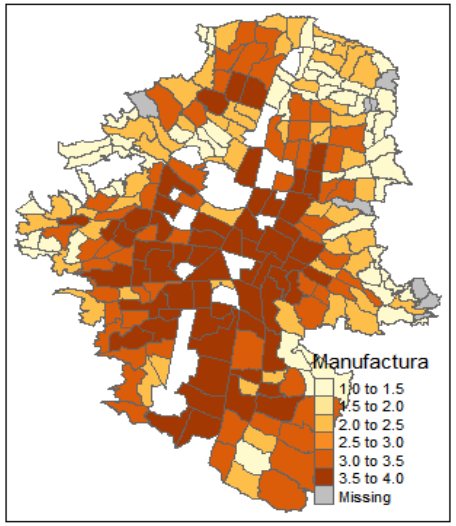


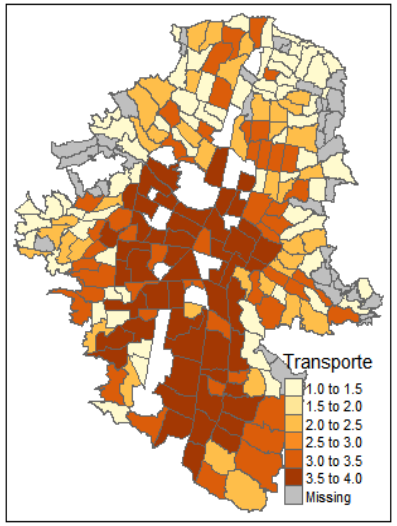
Decision Making

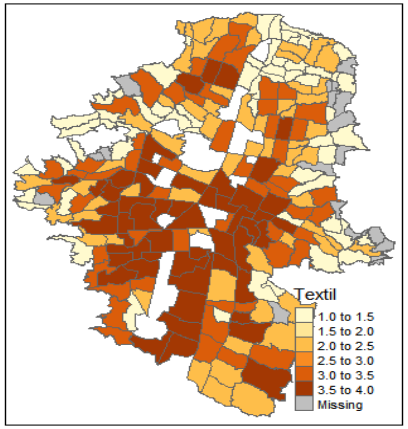
Location of Economic Activities

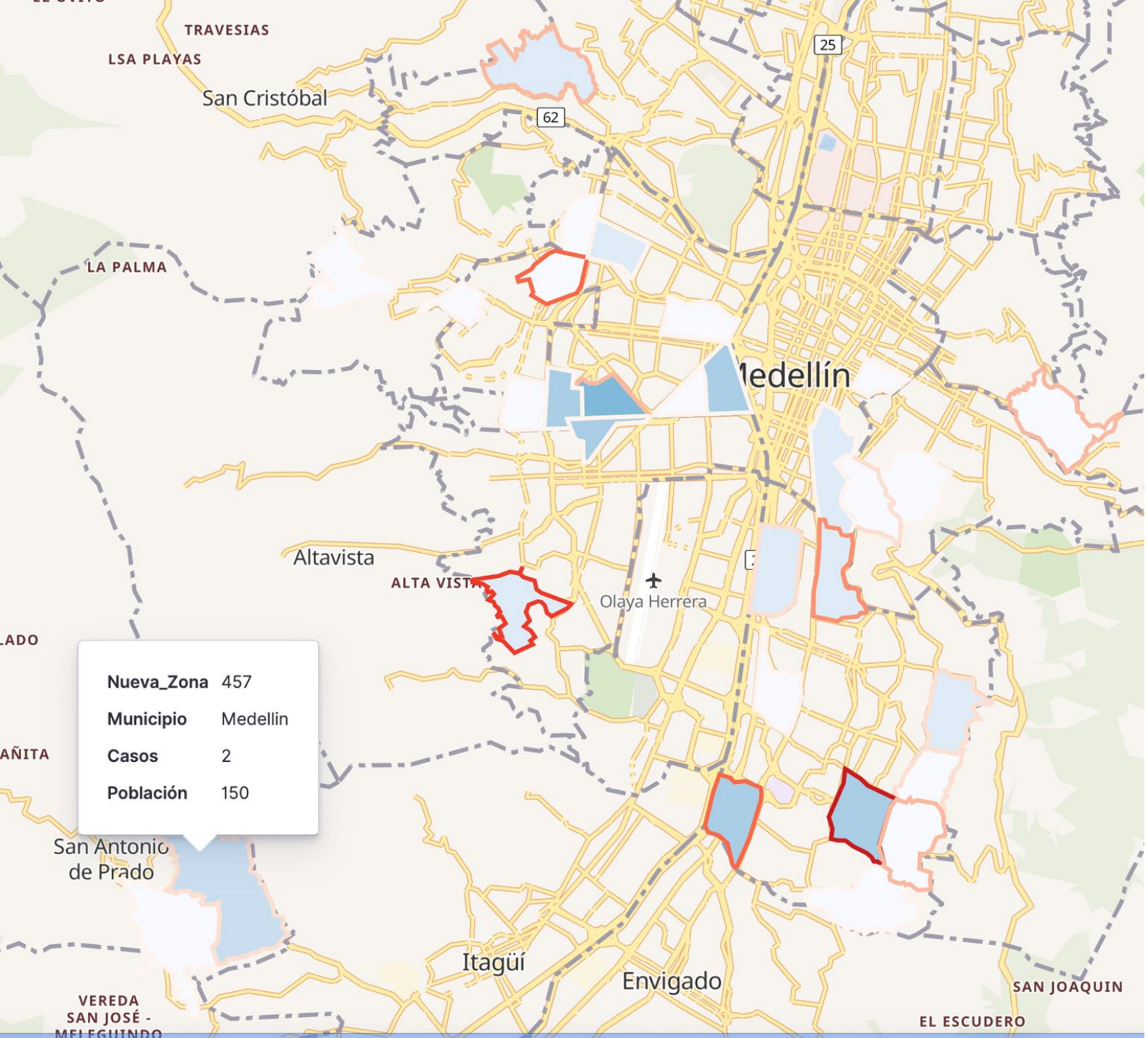




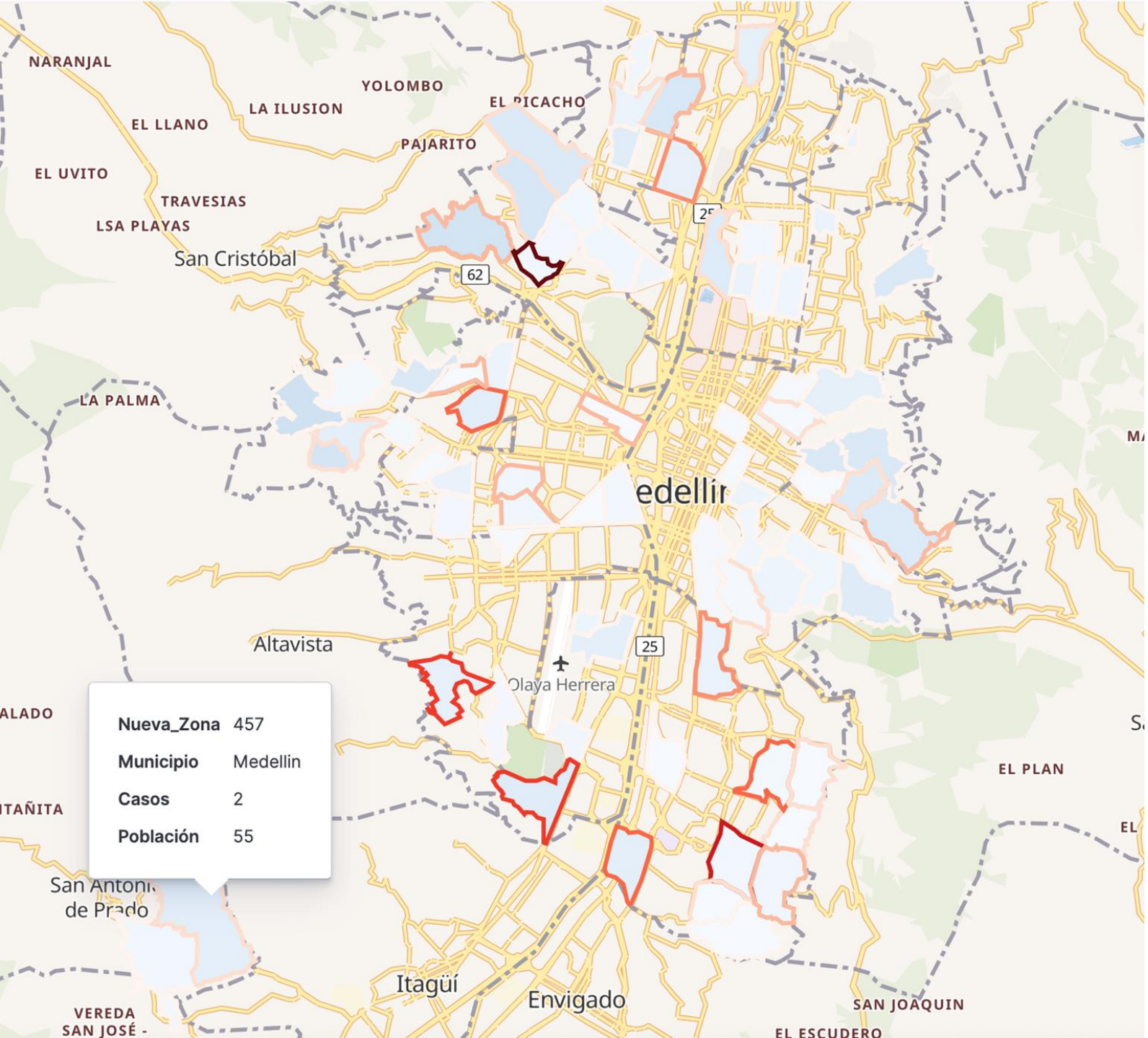








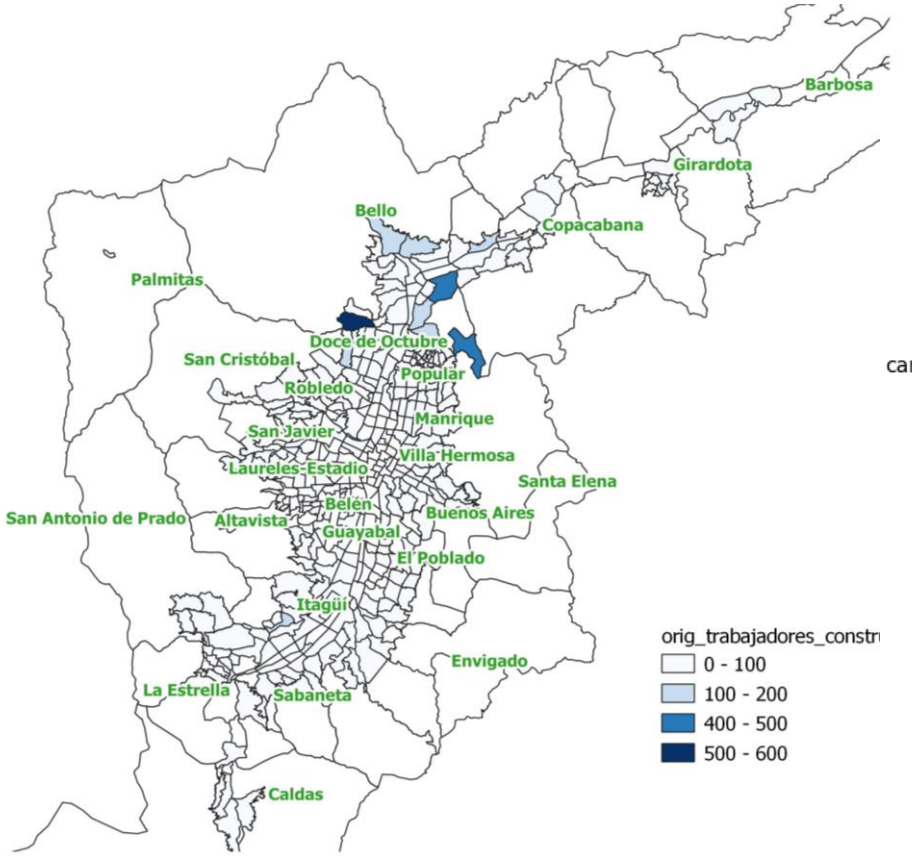
Reisdence of Construction workers and COVID cases



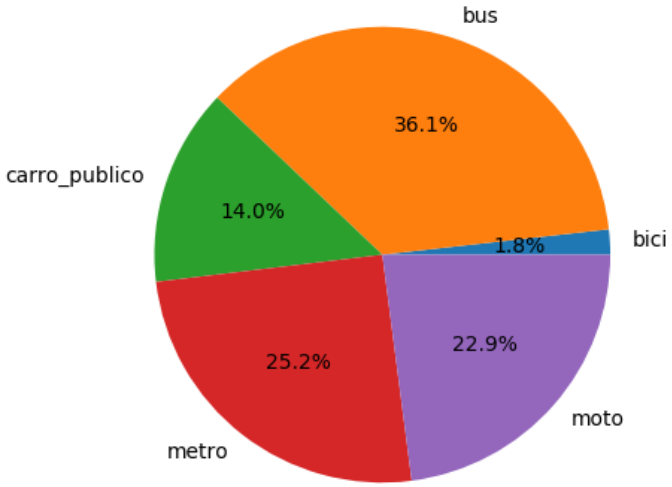
Construction sites and COVID Cases

Construction Sector

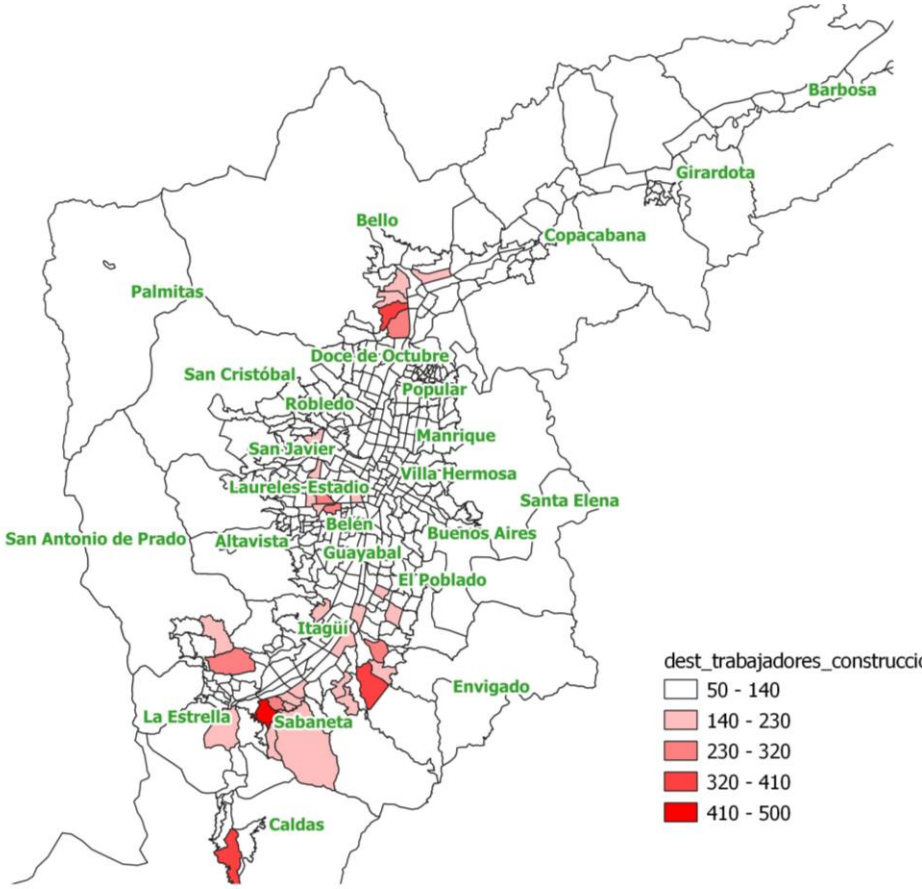
Origin



Modo



Destination



Conclusion

Without vaccine o antiviral, test, data and models are our best hope

Thank you

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