# How to promote Matosinhos' transition to micromobility, towards decarbonization?

by **Blind Data**

Eurekathon 2021

Advanced Analytics & Business Consultancy

Porto Business School / University of Porto

NOS

matosinhos

CEIIA

# Although Matosinhos has shown amazing efforts towards carbon neutrality by 2030, there is plenty of room to grow

> *Matosinhos quer ser a primeira cidade no mundo a trocar bens por emissões de $CO_2$*
>
> **Observador, 2021**

**57kg/day**

of $CO_2$ saved in Pilot

> *Ford estreia serviço de partilha de trotinetas em Matosinhos*
>
> **Jornal de Notícias, 2021**

**0.18%**

mean flow penetration in Pilot

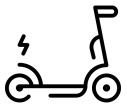
# To increase the impact of micromobility it is essential to focus on user engagement, effective targeting and fleet optimization

## A. User encouragement

A method and set of actions to **encourage more people to use** more frequently the available micromobility solutions

## B. Effective targeting

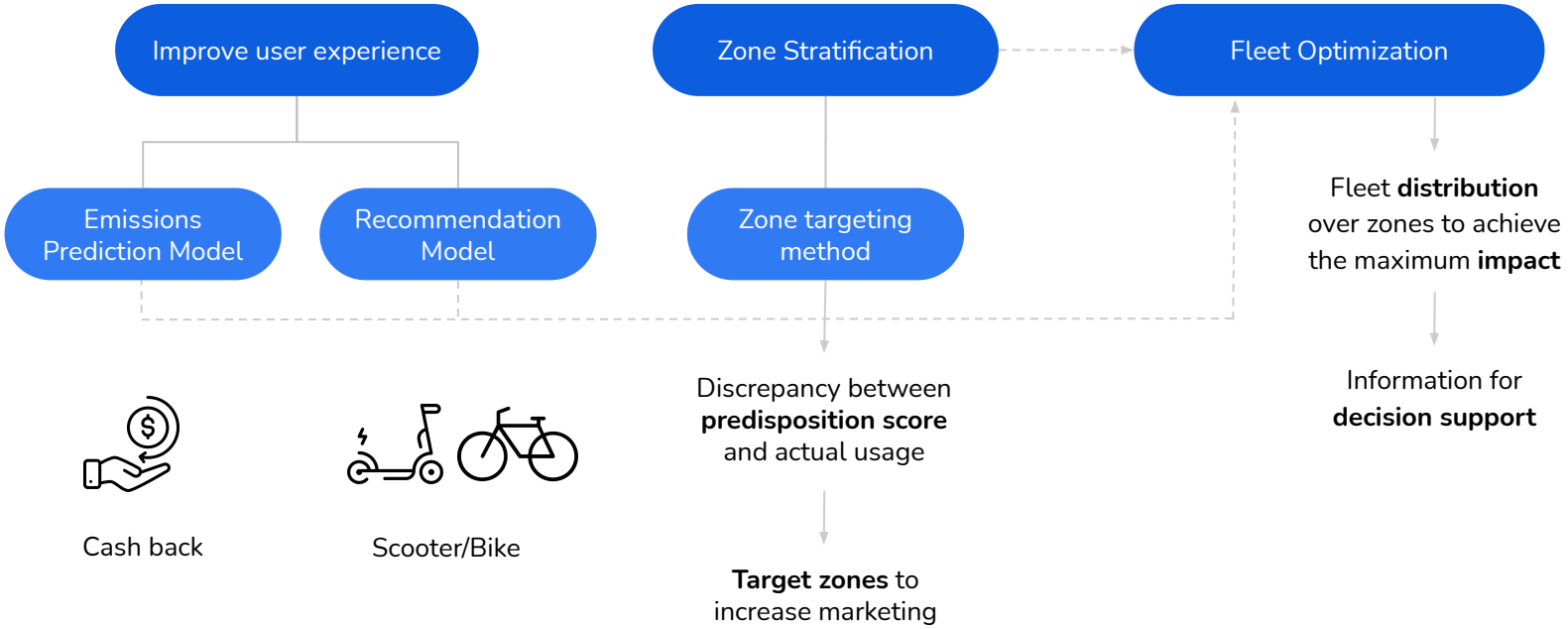
A method to define target zones to increase efforts for **user acquisition**, including marketing efforts, launching new pilot program, etc.



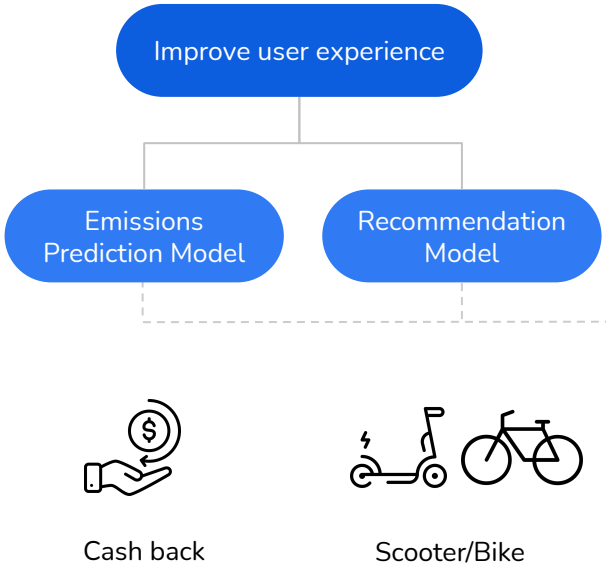
## C. Fleet Optimization

A method to define **how many bikes or scooters have to be available** each day on each zone, in order to maximize the impact.

# To increase the impact of micromobility it is essential to focus on user engagement, effective targeting and fleet optimization



# To improve user experience, we built 2 models for emissions prediction and recommendation of means of transportation




Zone Stratification

Fleet Optimization

Zone targeting method

Fleet **distribution** over zones to achieve the maximum **impact**

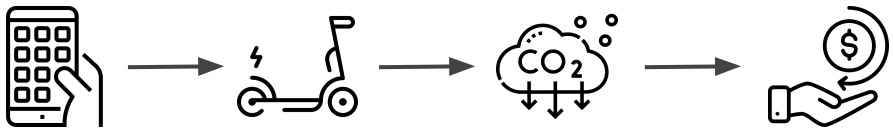
Discrepancy between **predisposition score** and actual usage

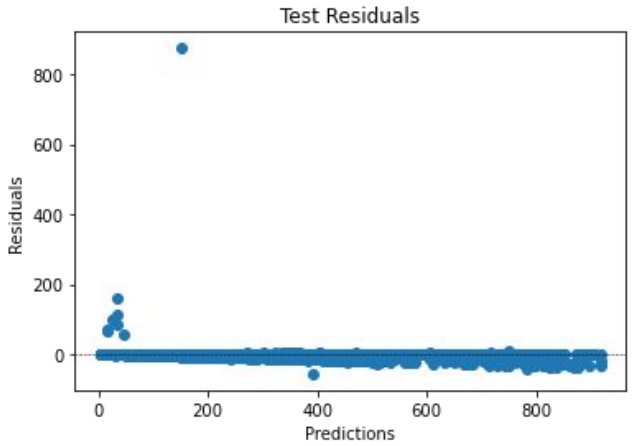
Information for **decision support**

**Target zones** to increase marketing

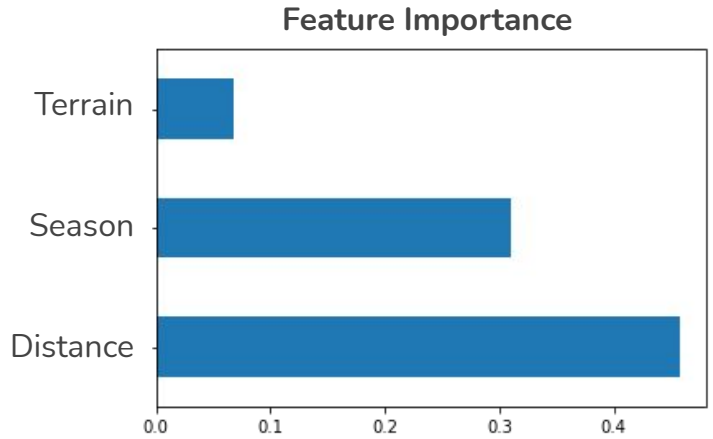
# Accurately estimating saved emissions could be the basis for a cashback strategy to acquire and retain users

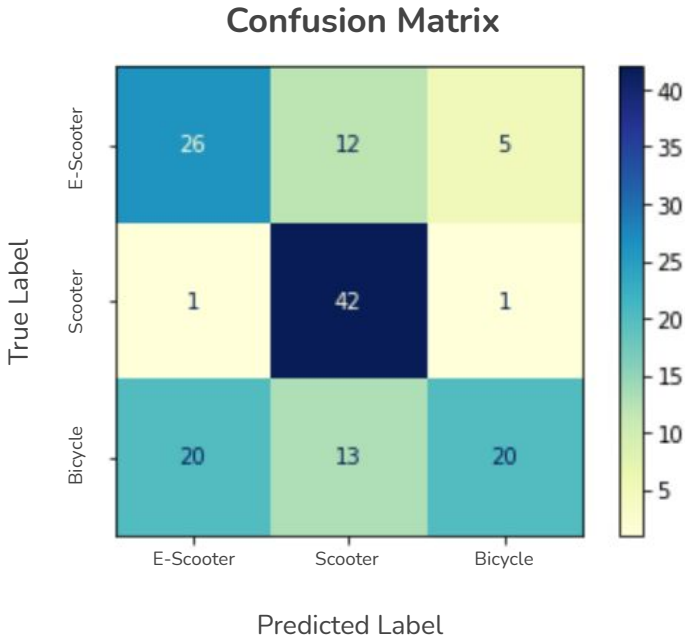
**Cash back** method that returns a portion of the cost to user, depending on the **saved emissions**

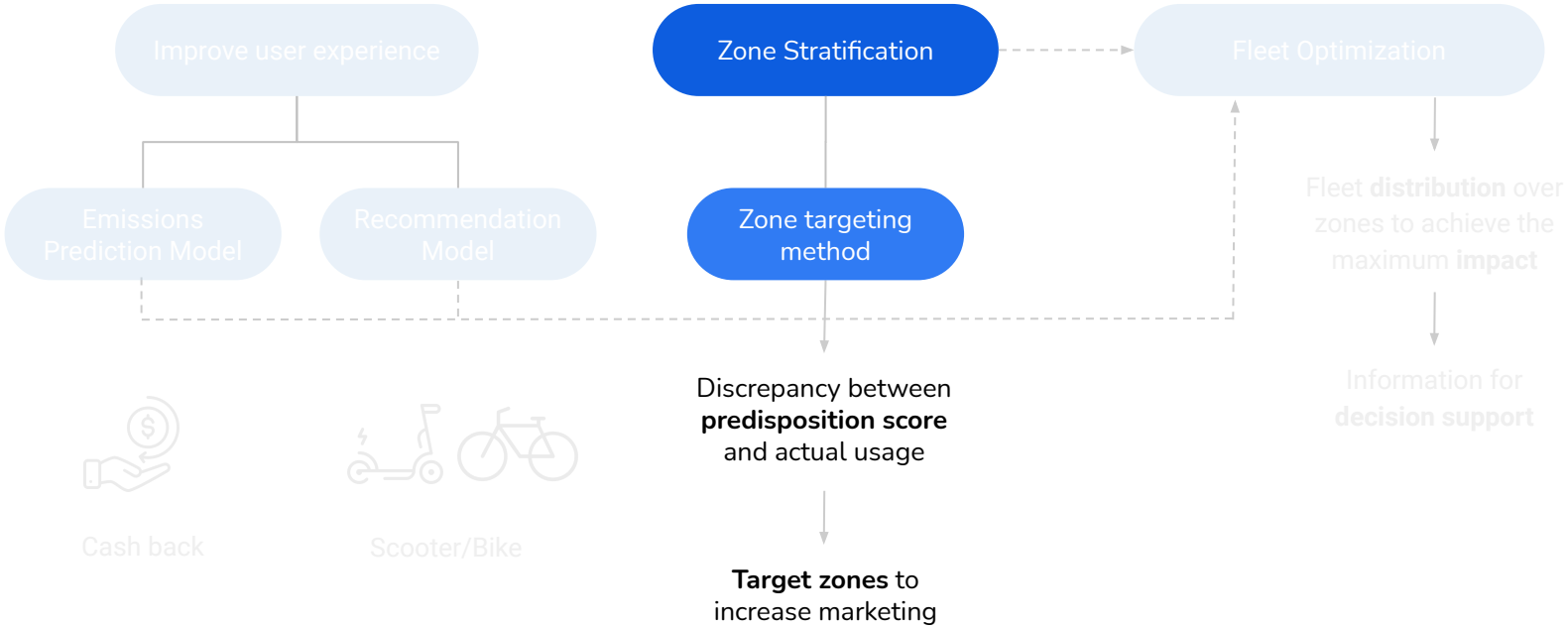



# Users can also benefit from our Recommendation Model, which is able to recommend the best transport type for a planned trip

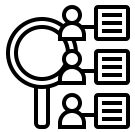



# To identify target zones, we categorized them by transition predisposition and compared that with real penetration values



# Our “Predisposition” model takes into account demographic, topographic and movement data

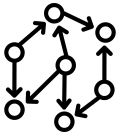


- Geographical and social context

- **Demographic data from Censos 2011**

- Distances of flows between zones

- **Driving times and routes**

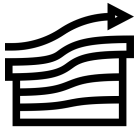


- Flows between zones

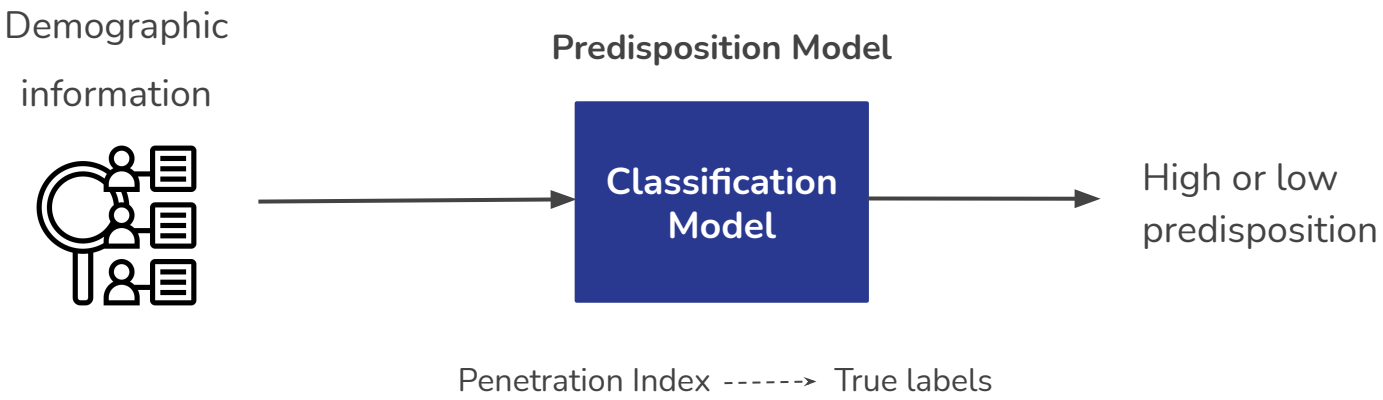
- **NOS flows data**

- Zones’ topography

- **Cartography data**



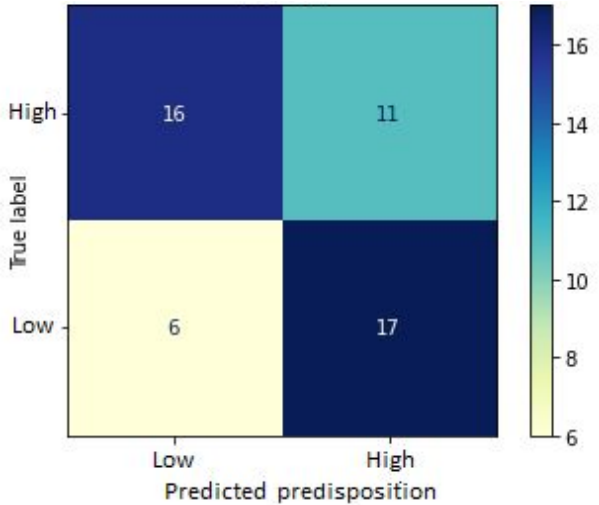
# To validate the built categorization, we built another classification model to see if our demographic info matched real pilot penetration



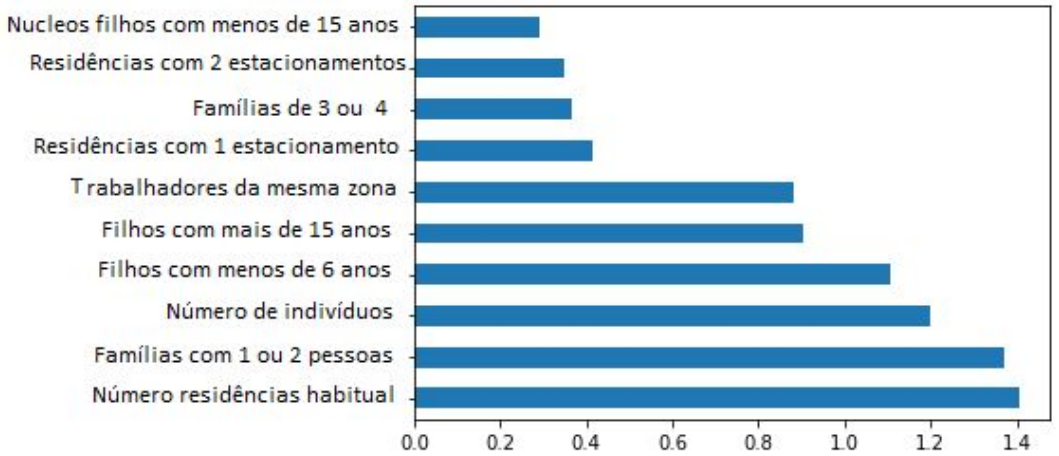

## Validating our analysis... with one more analysis

# The results showed we could be confident in our categorization

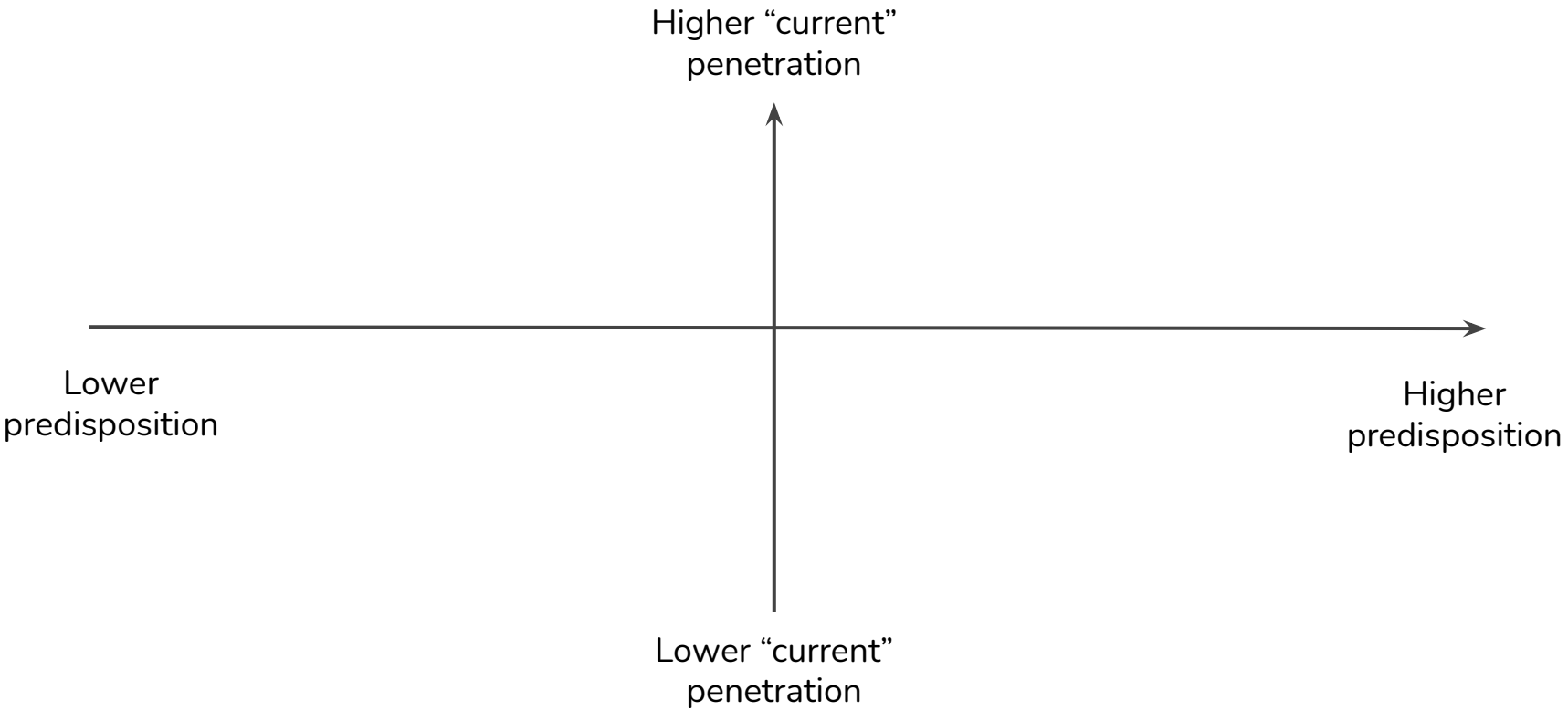
Test Confusion Matrix




Feature Importance Assessment



# To increase effectiveness, marketing efforts should be targeted at zones with high transition potential and low historical penetration



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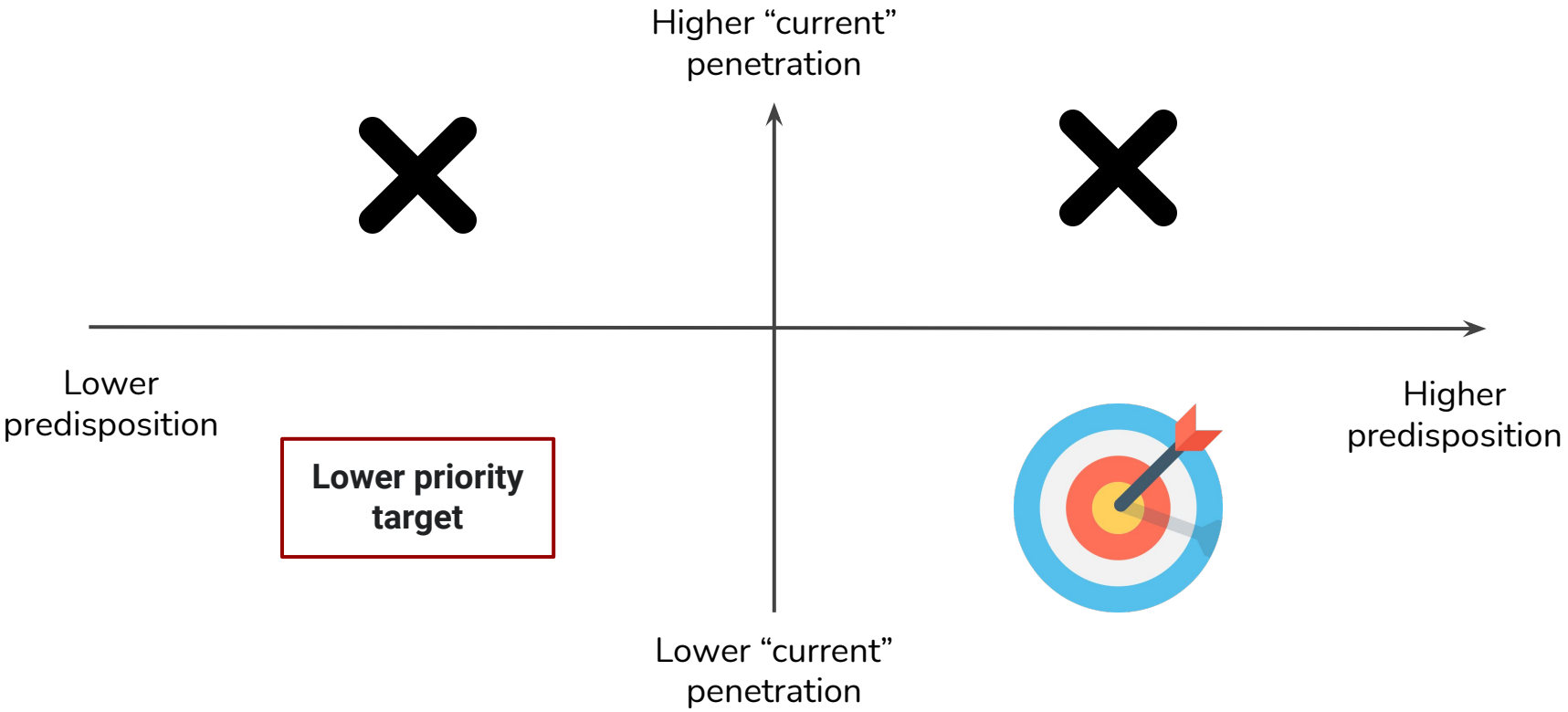

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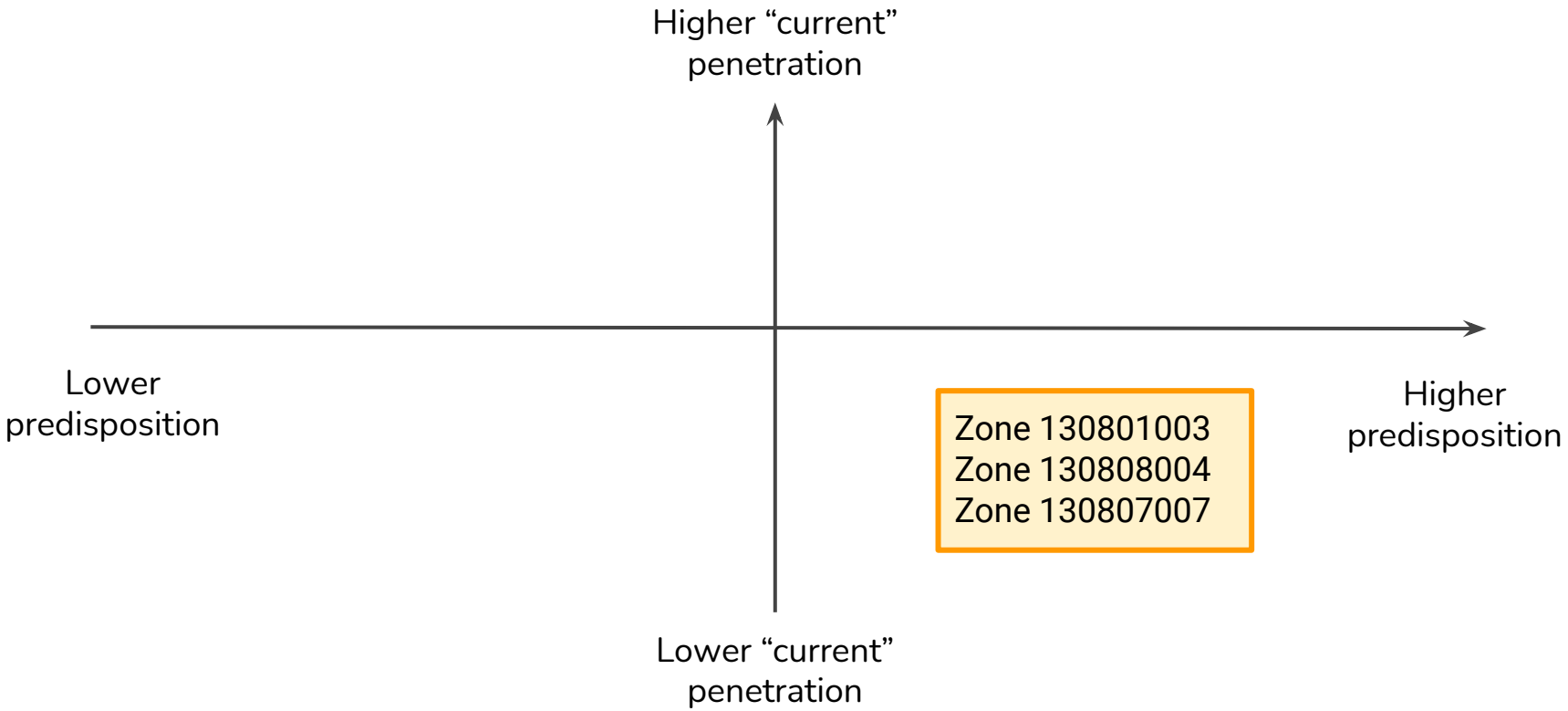

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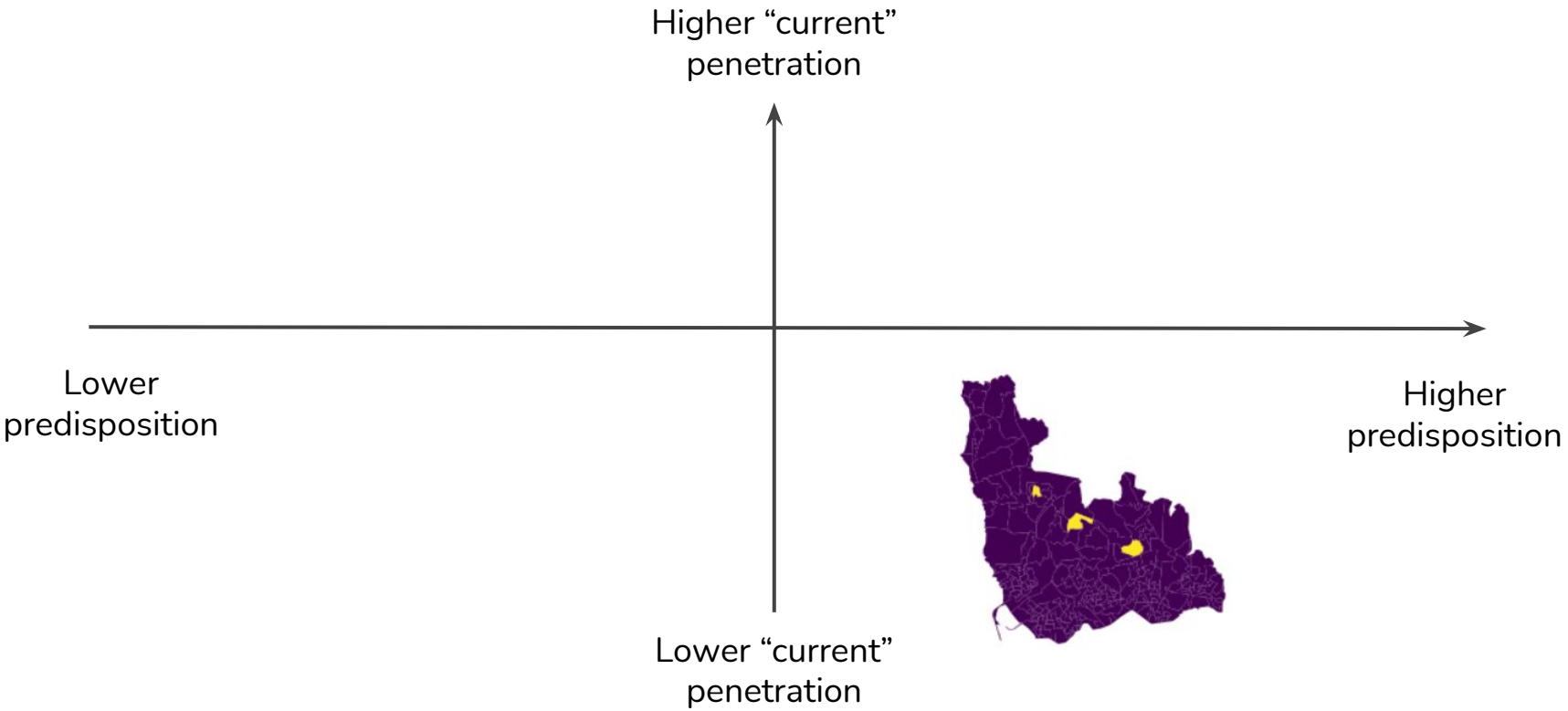
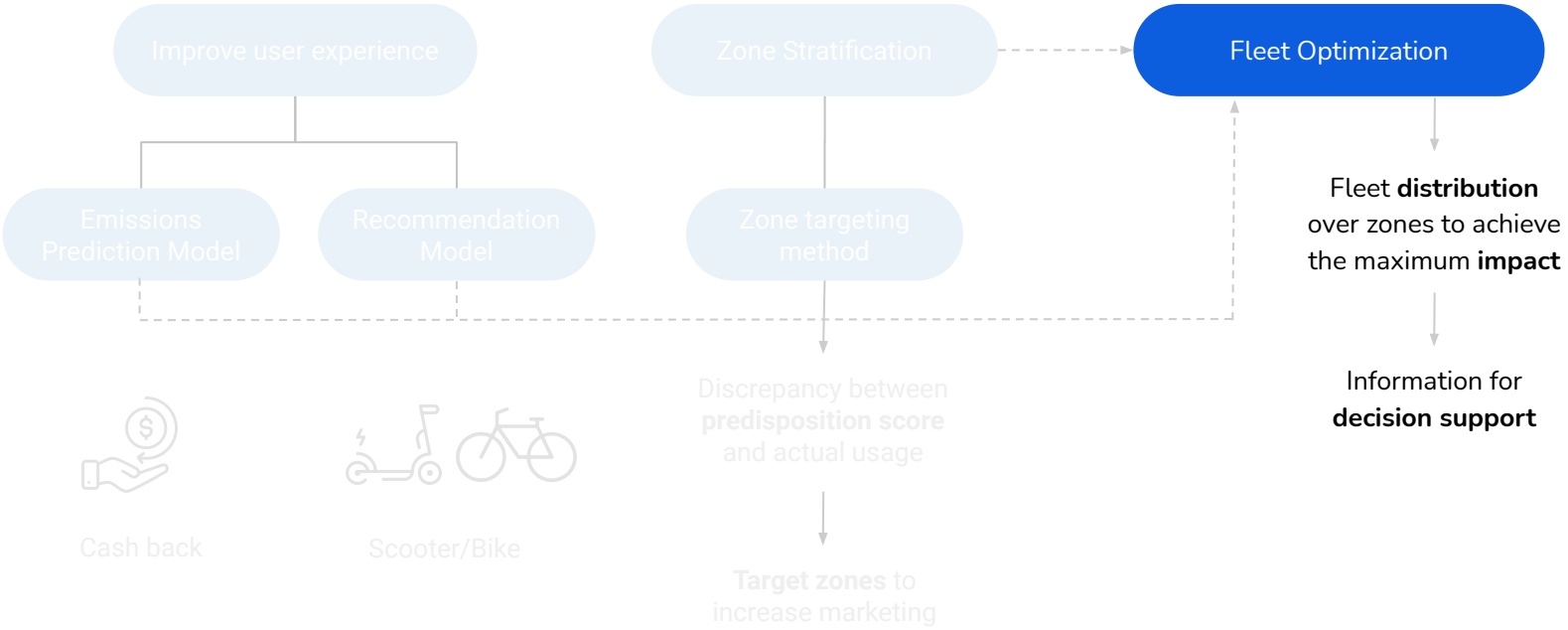
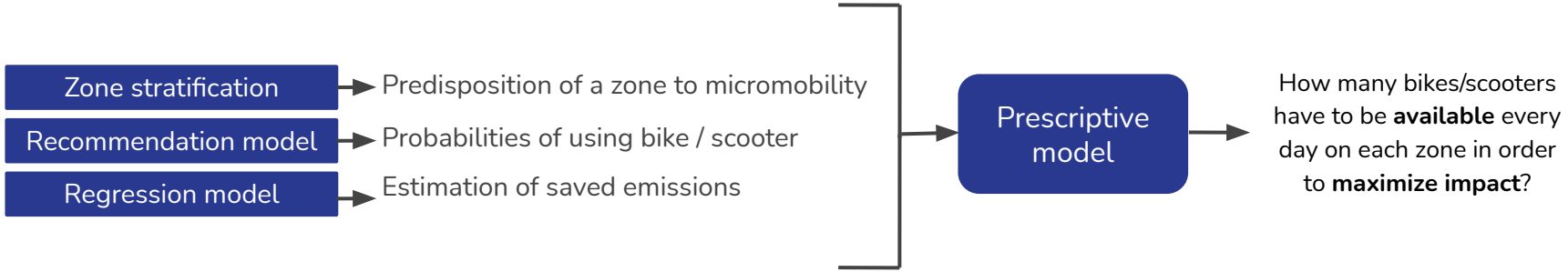


# Now, we are able to focus on supporting City Hall decision makers to make the best decisions for their fleet distribution



# The City Hall can support all their decisions and structure their KPIs based on our prescriptive model that identifies the optimal flows per zone, for highly probable transitions




## Maximum potential

Matosinhos could be **saving 199 kg/day of $CO_2$** , 73 Tons/year, with micromobility (**3.5x** more than the impact generated in the pilot)

(with a maximum 5% penetration rate, per zone)

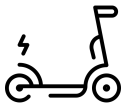
# What could the City Hall and CEiiA do?

## A. User engagement

Improve experience, retention and acquisition with **cash back** (Emissions model) and **recommendations** (Recommendations model)

## B. Effective targeting

Increase efforts to acquire new users in the target zones (**130801003, 130808004, 130807007**), including marketing strategies, new pilot programs, etc.



## C. Fleet optimization

Use the fleet distribution information as **support to decide** how many bicycles and scooters to **place in each zone**, taking into account the impact goals.

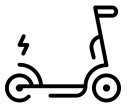
# There is plenty of room for improvement in terms of data consideration

## A. User engagement

Integrate **user data** to do **user profiling** and target people that have higher predisposition to micromobility.

## B. Effective targeting

Use **more data** to create **predisposition** score (updated demographic, topography granularity, public transportation, economic activities).



## C. Fleet optimization

Include **public transportation** data to integrate micromobility with stations and routes, promoting **alignment** of all options.

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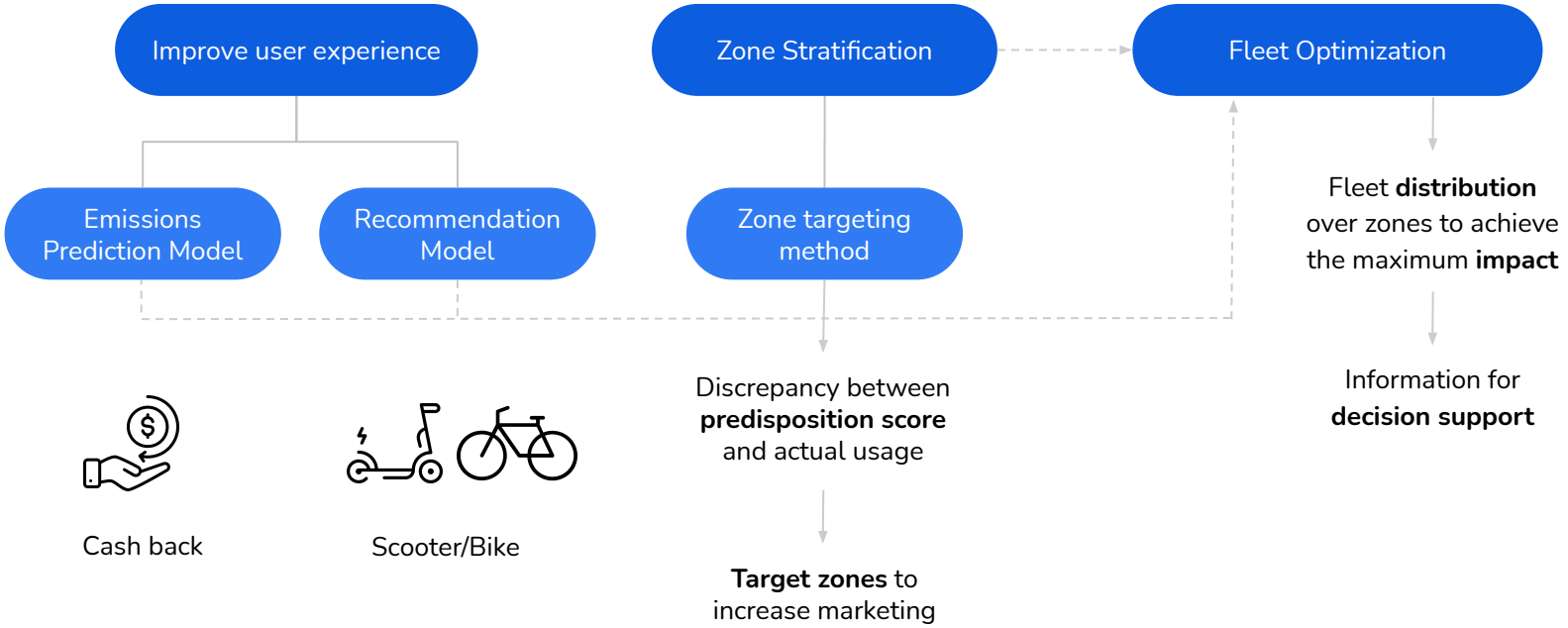

# Thank you!

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# More information

# User encouragement