

# Gentrification and the 15-Minute City: Tensions between Proximity, Sustainability and Spatial Justice in Contemporary Urban Transformation.

Jose Luis de Diego Vega\*

Correspondence: [joseluis.dediego@edu.upct.es](mailto:joseluis.dediego@edu.upct.es) Tel: +34 650 86 47 88

Technical University of Cartagena, UPCT, Department of Civil Engineering

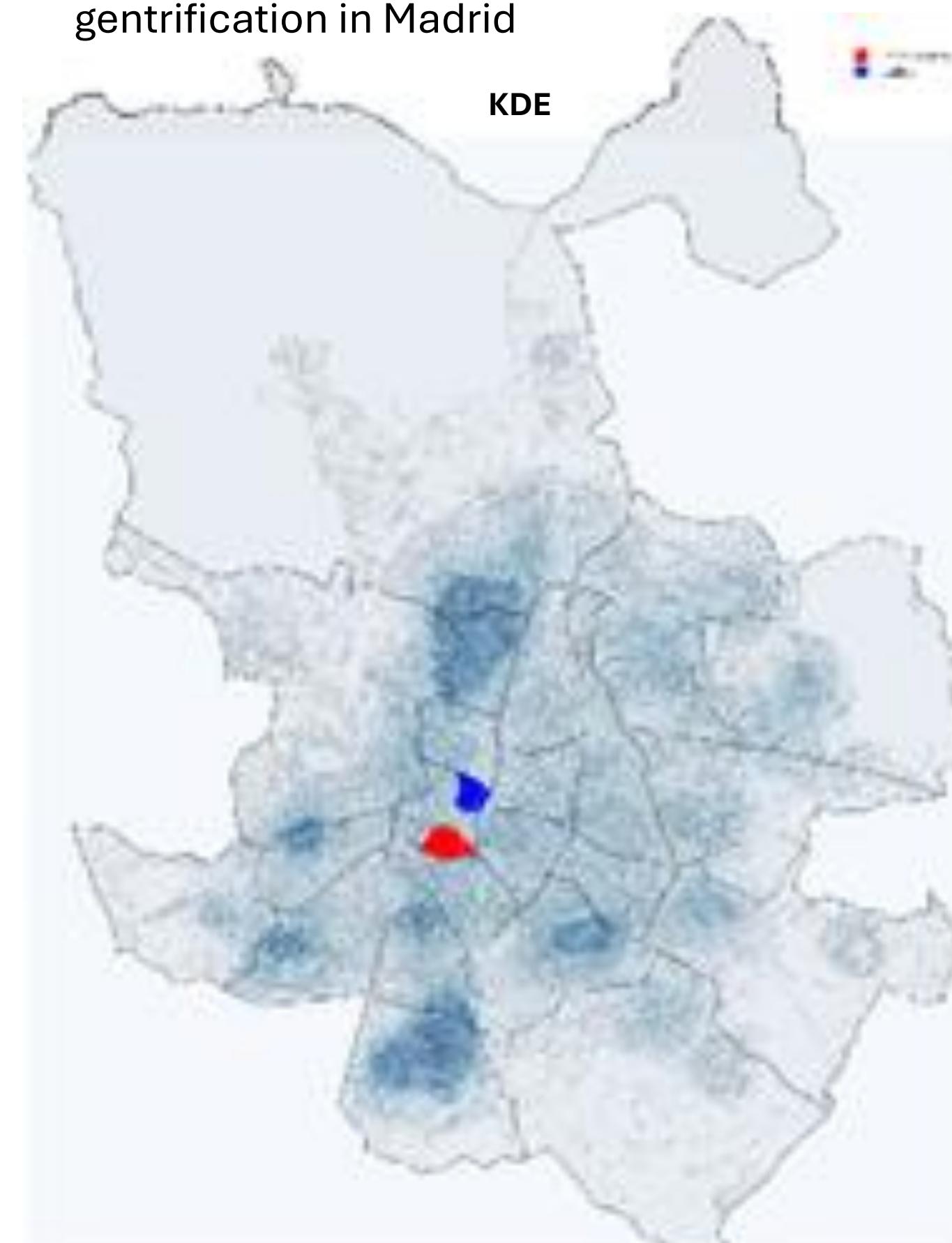
## ABSTRACT

This study examines how the 15-Minute City (FMC) proximity model relates to gentrification dynamics in Madrid (Spain). Using composite indicators and GIS-based analysis, results reveal a strong centre-periphery accessibility gradient that partially overlaps with areas under gentrification pressure.

Findings suggest that proximity policies may improve sustainability, but without safeguards they can reinforce exclusionary trends.

## INTRODUCTION

- Urban proximity is increasingly used to reduce motorised mobility and improve access to daily services
- The FMC promotes neighbourhoods where essential needs can be reached on foot or by bike
- However, improved accessibility and urban quality may trigger land revaluation and social displacement
- Goal:** analyse how proximity can coexist with gentrification in Madrid



## STUDY AREA

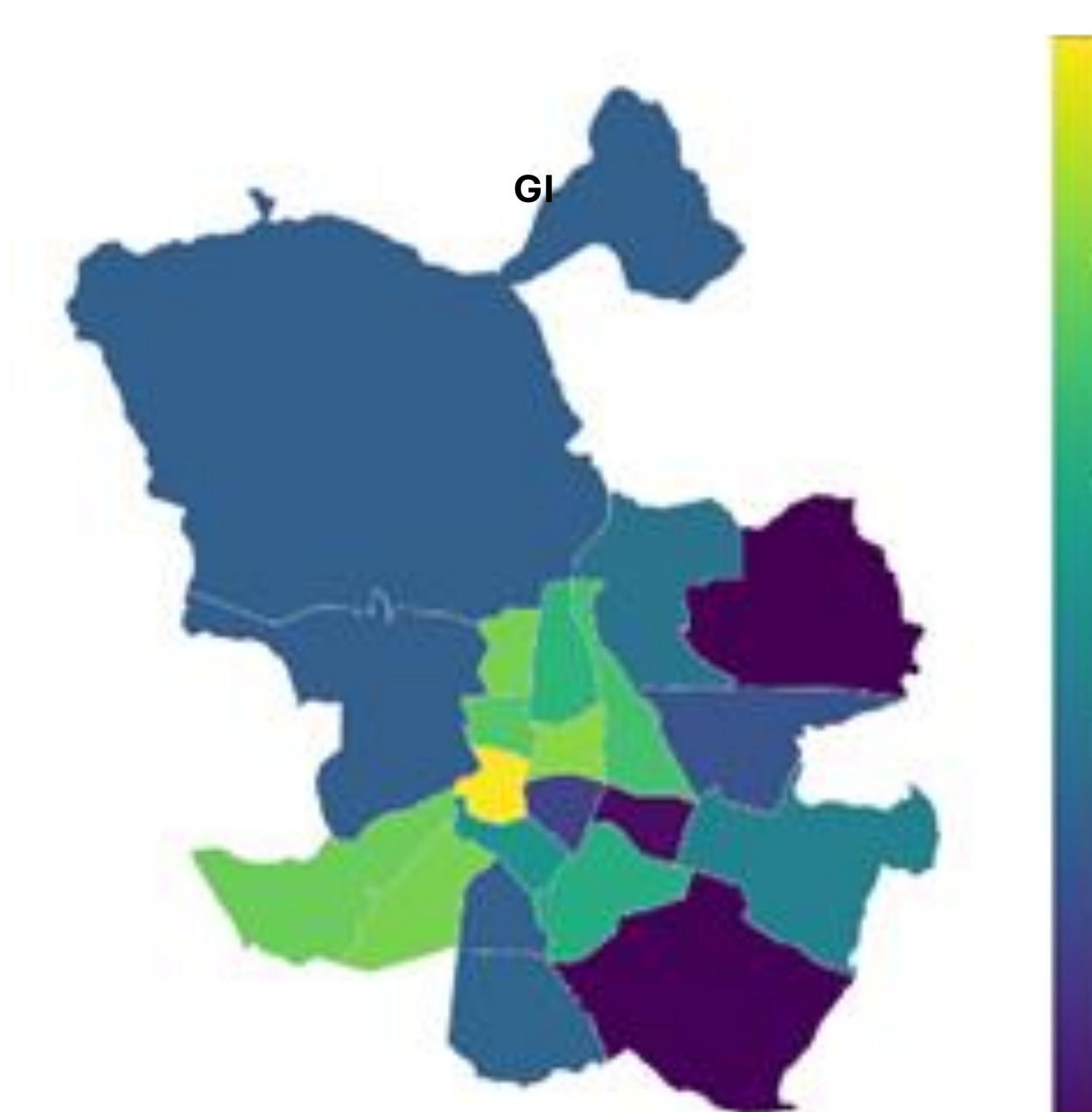
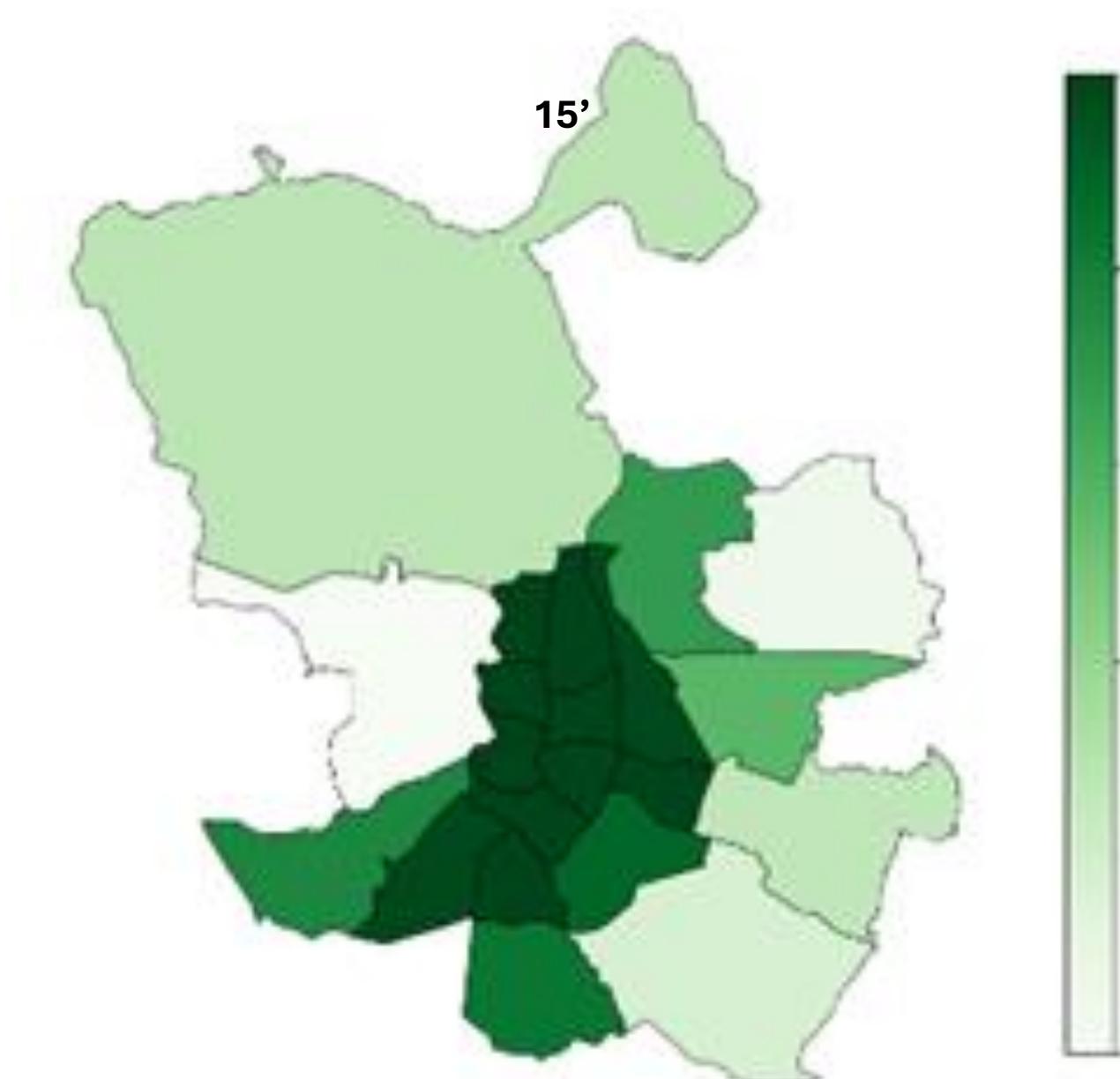
- Gentrification combines reinvestment, socio-demographic replacement and commercial change
- The FMC promotes accessibility and decentralisation of services, but outcomes depend on institutions and real estate markets
- Madrid is a clear centre-periphery case, with documented pressures in Embajadores (Lavapiés) and Justicia (Chueca)

## METHODOLOGY

- 1. 15-Minute City**
  - Walkable network from **OpenStreetMap**
  - Dijkstra +1,200 m** isochrones ( $\approx$  15 min-walk)
  - PCA** synthesis  $\rightarrow$  index 0-1
- 2. Gentrification Index (district level)**
  - Variables\_sociodemographic + economic+ housing market & tourism pressure
  - Processing: **z-score  $\rightarrow$  tanh smoothing  $\rightarrow$  PCA**  $\rightarrow$  index 0-1
- 3. Gis Analysis**
  - Univariate mapping (both indices)
  - Bivariate choropleth 3x3**
  - KDE** network density + two representative neighbourhoods

## RESULTS

- Accessibility shows a clear **centre-periphery gradient**: central districts concentrate higher pedestrian coverage
- Gentrification follows a different pattern but **partly overlaps** with accessibility
- Embajadores** and **Justicia** stand out due to demographic replacement and real-state pressure
- The bivariate map identifies four key types:
  - High accessibility / High gentrification
  - High accessibility / Low gentrification
  - Low accessibility / High gentrification
  - Low accessibility / Low gentrification



## DISCUSSION

- Urban proximity does not automatically imply spatial justice**
- In central districts, high accessibility can coexist with **rent capture** and **displacement**
- Real-estate pressure may even anticipate service improvements
- FMC should be treated as a **social and political project**, not only a mobility strategy

## POLICY IMPLICATIONS

To avoid proximity-driven displacement, FMC implementation should include:

- Affordable housing linked to development gains
- Tourist rental regulation
- Inclusive zoning
- Commercial stabilization measures

## CONCLUSIONS

- FMC can support healthier and more sustainable cities
- In unequal contexts, it may also reinforce **gentrification and exclusion**
- Equity-oriented governance is essential to ensure proximity policies deliver **spatial justice**

## FUTURE WORK

- Extend the model to other cities
- Add longitudinal data to anticipate displacement
- Apply clustering / non-linear methods to detect hybrid typologies

**The 15-Minute City can improve sustainability and accessibility, but without equity safeguards it may intensify gentrification and displacement**

