Determination of catchment areas to be used in the site selection in segmented geographies

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**Display of socio-demographic segmentation at the neighbourhood level and nationwide**
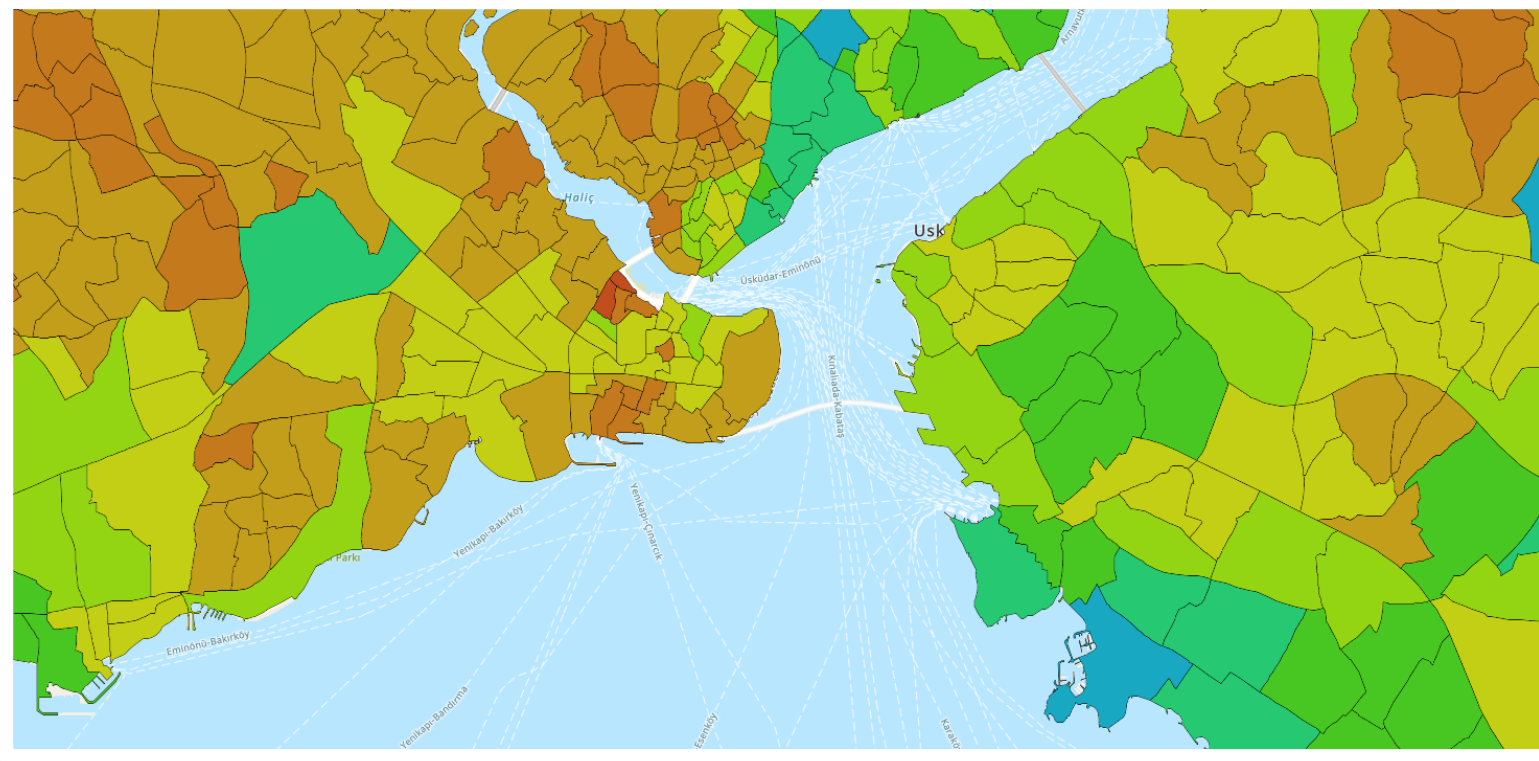
Source: ESRI Turkiye

- Demographic data restricted by legal borders
- Defined catchment areas are not always inclusive when considering regional or national location decisions

When these are used for site selection, the same efficiency cannot be obtained for all urban areas.

5 – 10 – 15 minutes walking zones

Fringe of Istanbul

Urban Area in Istanbul
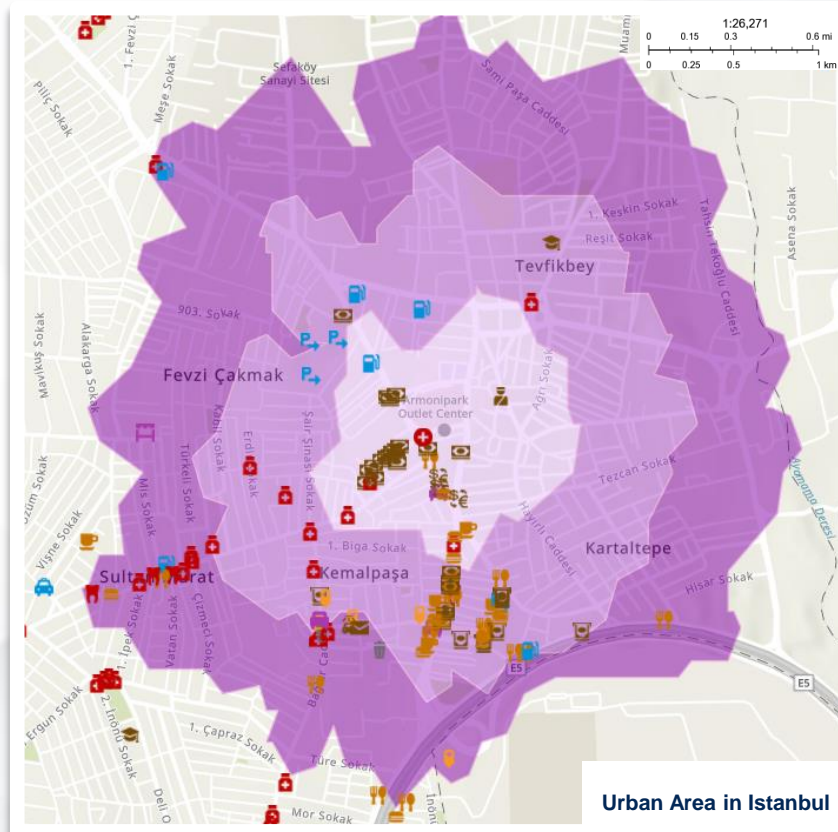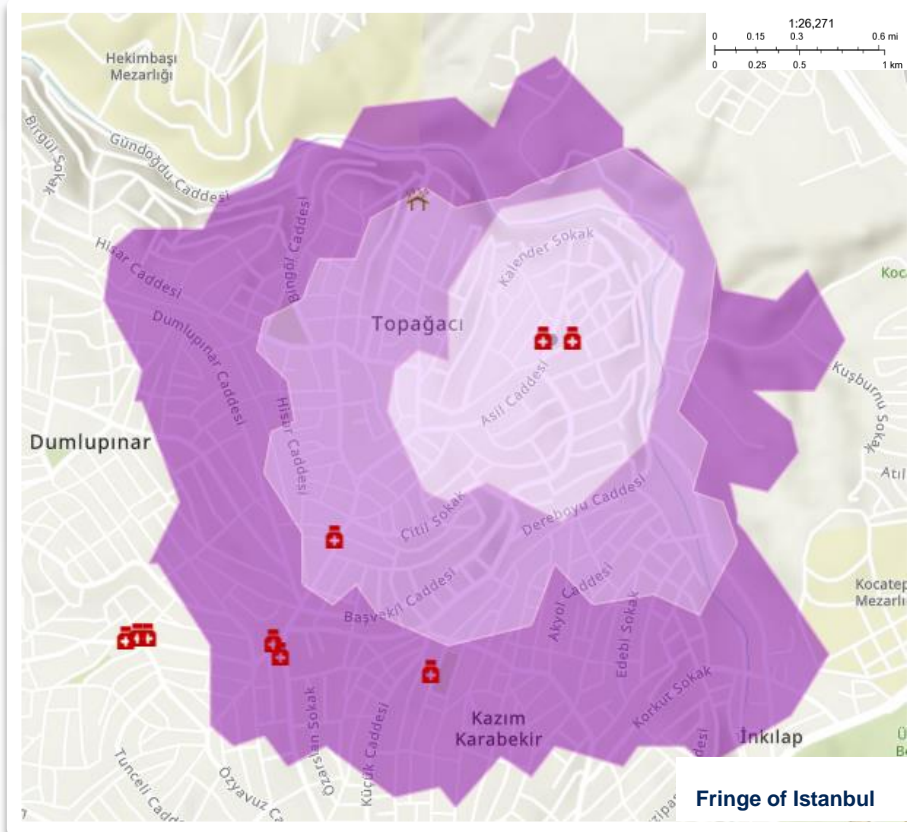
Mapping Source: ESRI Turkiye

POI Source: Open Street Map – Amenities for Europe Dataset

Measurement values: Ian and Simon (2003)

Research Question

Would the creation of an estimated catchment area extend to obtain statistics of segmented geographies to be used in site selection decisions and allow for modelling at large geographies?

Author	Year	Method & Findings
Birkin and Clarke	1998	Provided various locational models for a **financial service firm** using geodemographic systems, coupled with spatial location models and GIS.
Wee et all.	2001	Included **job competition** in the employment market in the residential catchment area analysis. They determined that **the public transport service may need a 10% wider catchment area** when they include competition in the employment market.
Bauer, Groneberg	2016	Introduced a **variable distance decay function** within the floating catchment area (FCA) methods. They also provide effective **variable catchment sizes for Healthcare Providers**.
Langford	2021	Used the enhanced **two-step floating catchment area** (E2SFCA) methodology to reveal the variability in access that may be experienced amongst residents living within a constituency boundary in Wales.
Langford and Giggs	2021	Re-iterated the potential use of spatial analytical tools, in a period of continual rationalisation and change in the provision of both public and private services, for monitoring the implications on those most dependent on banking facilities.

Author	Year	Method & Findings
Andersen and Landex	2009	Stated that the level of detail varies from simple circular buffer approaches to more complex approaches taking barriers and travel time into account.
Ian and Simon	2003	Showed that defined catchment areas are misleading in that **people walk different distances in suburban, regional centres and central cities**.
Okabe and Okuniki	2001	Developed a computational method for estimating demand using the network Huff model.
Dolega et all.	2015	Provided a national extension to single-store or shopping centre retail catchment estimation techniques and presented a model for a national network of retail centres in the UK. Their model considered the spatial interactions between potential customers and a hierarchical network of retail centres to estimate patronage probabilities and catchment extents.
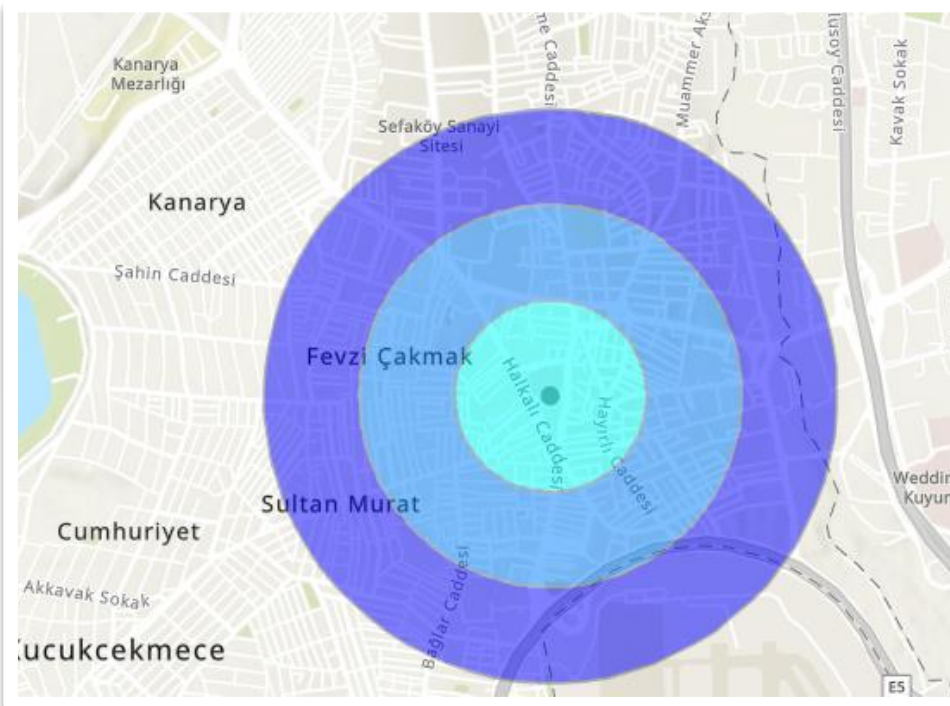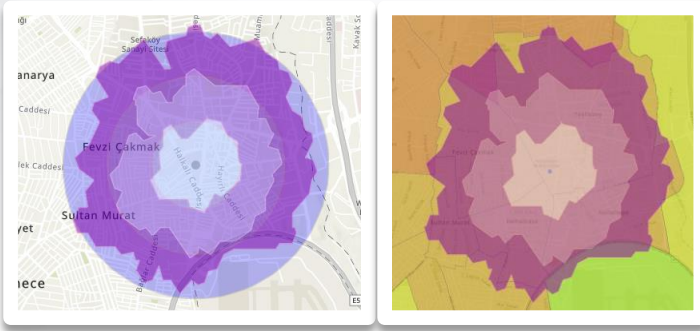
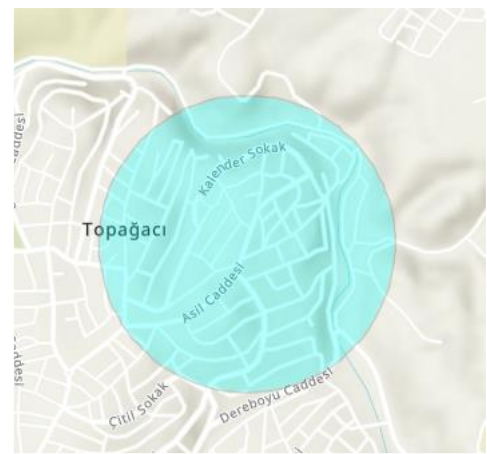**400 – 800 – 1200-meter buffers**
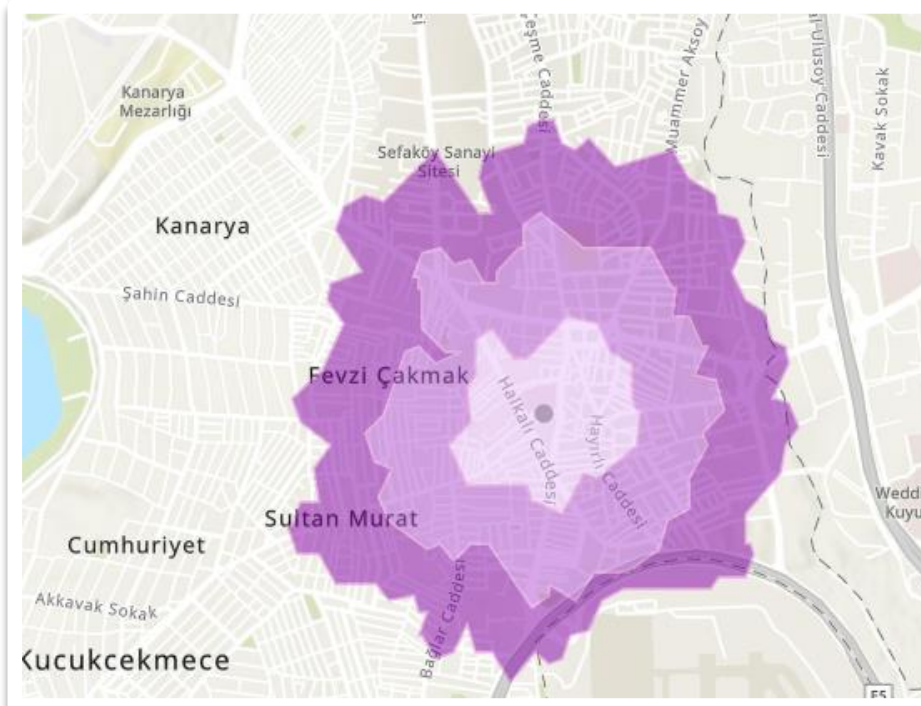
5 – 10 – 15 minutes walking zones

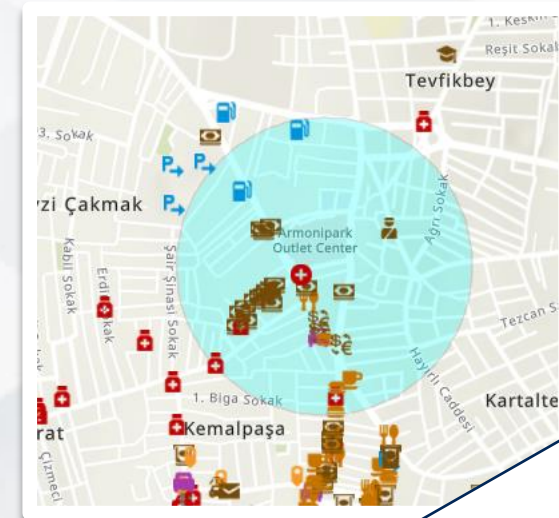Source: ESRI Turkiye

Measurement values: Ian and Simon (2003)

400-meter buffer

Prime adjustment input

Urban Density Score

Alternative adjustment input

Attractiveness Score

5 minutes walking catchment area

Urban Density Score

Defined catchment area

Adjusted catchment area

Attractiveness Score
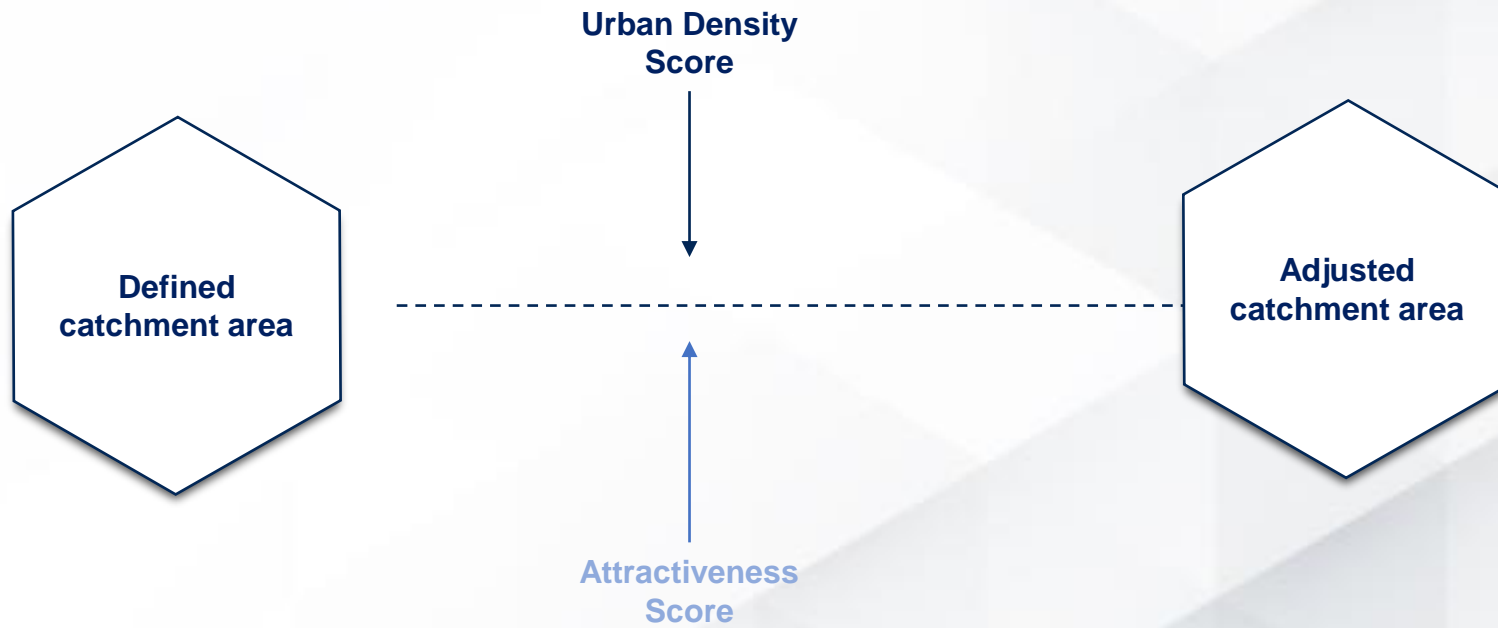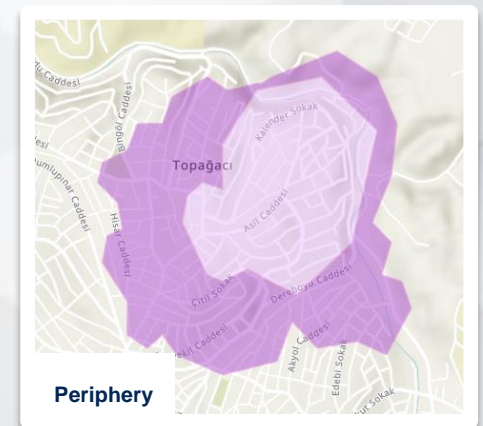
10 minutes walking catchment area

Thank you

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