# Final Report: Identifying Urban Functional Regions

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Key: to be deleted | to do | ask Padraig

# Abstract

# Acknowledgements

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# Introduction

* Define socio-economic
* Define Quality of life (Mercers chart)
* Define Functional region
* Define POI

# Background

## 2.1 Why is Urban Planning and Layout Important

<https://www.archistar.ai/blog/the-importance-of-urban-planning-the-seven-key-reasons/#:~:text=Cities%20rely%20on%20urban%20planning,city%20area%20layout%20and%20density>

* "Cities rely on urban planning to remain functional, grow in population, and attract businesses. Every crucial aspect of an urban environment is under the effect of how its layout is planned."
* Urban planning matters cos: planned city growth, improved health and quality of life, less environmental impact, better economy and resource utilisation, national development, disaster prevention and greater credibility, more efficient problem solving

<https://www.revistaespacios.com/a17v38n24/17382416.html>

* "the characteristics of an "ideal urban layout system" that would have existed in the absence of external disturbances: political, social and economic"

## 2.2 Existing Views on the Socio-Economic Impact of Urban Layout

<https://www.archistar.ai/blog/the-importance-of-urban-planning-the-seven-key-reasons/#:~:text=Cities%20rely%20on%20urban%20planning,city%20area%20layout%20and%20density>

* "Highly developed cities largely contribute to the economic health and productivity of society. On the other hand, poor urban planning can bring on opposite, harmful effects like constant heavy traffic, insufficient infrastructure, inadequate housing options."
* "With a thoroughly planned layout, a city can provide its residents with access to all essential services, points of interest, and amenities. At the same time, the unfavourable aspects of urban life are reduced, leading to an overall healthier lifestyle and improved quality of life."

<https://www.centreforcities.org/blog/layout-city-affects-economic-success/>

* Street 'accessibility' score – a more accessible town creates better economy
* Lots of focus on street layout rather than POI or regional layout

<https://www.sciencedirect.com/science/article/pii/S2210670712000455>

* "Although the concept of quality of life has been in the development discourse for some time now, measuring it in a city is quite difficult as the aspects to be measured are still questionable"
* Table of quality of life criteria (Mercer)
* "The project adopts a decentralized and integrated approach to address three main substantive areas; shelter, basic urban services and local economic development;"
* A priority must be found for there to be a direct conclusion

<https://www.tandfonline.com/doi/full/10.1080/13574800903435651>

<https://www.tandfonline.com/doi/full/10.1080/13574801003638111>

* Views and critiques on public spaces seem to be partisan and impartial to the distortion of evidence to suit a specific thesis.
* Whether negative or positive, there seems negligible evidence to base upon

## 2.3 Research on Region Identification

<https://www.jstor.org/stable/43617893?seq=5>

* "Traditionally, geographers and other scientists have used two classificatory viewpoints in defining regions."
* " A region may be composed of areas or locational entities which in some specified respect are homogeneous."
* "the variable(s) upon which the region is defined are attributes of the area being grouped. – this is known as a formal region.
* "a region may be composed of areas or locational entities which have more connection with each other than with other in outside areas … this suggests that the areas comprising the region differ so as to be functionally complementary to each other. Such a region is termed a functional region."
* If one was to look at the interaction between areas and entities, it might skew the relation and location of the entity within a region in a way that is less binary (this or that region).
* (Brown and Horton 1970) – the flows used for delimiting functional regions are surrogate for the functional distance separating entities. Functional distance derives from mapping the n properties of each entity in an n-dimensional space, the computing a measure of distance separating any two nodes. This reflects the net effect of entity properties upon the propensity of the entities to interact.
* In practice, functional distance is derived directly from interaction patterns.
* Markov chain analysis to flow matrices. MFPT as a measure of functional distance.
* The resulting functional regions from this method was used to find much larger regions than what I would like to focus on in this project.

<https://www.sciencedirect.com/science/article/pii/S0303243422000794#ab005>

<https://www.tandfonline.com/doi/full/10.1080/13574801003638111#d1e195>

## 2.4 Research on POI & Socio-Economic Datasets

<https://location.foursquare.com>

<https://www.openstreetmap.org/#map=12/51.4828/-3.1610>

<https://www.precisely.com/product/precisely-points-of-interest/precisely-points-of-interest?utm_medium=cpc&utm_source=Online-Advertising&utm_campaign=Data-Integrity_Global_Digital-Ads-Google-Paid-Search-Brand-Campaign_2025&utm_content=>

<https://digimap.edina.ac.uk/roam/map/os>

<https://digimap.edina.ac.uk/roam/map/society>

* Societal data

## 2.5 Research on POI Data Handling and Analysis

# Implementation

# Results & Analysis

# Conclusion

# Reflections on Learning

# Appendices

# References