

## Urban Fabric, Configuration of the Street Network and Spatial Distribution of Retail

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Retail activity presence in urban space is of paramount importance when considering the vivacity, livability and walkability of streets and neighborhoods (Jacobs 1961). Urban designers, planners and geographers highlight how some urban morphological characteristics might define those urban spaces where higher retail densities are detected. Space Syntax and Multiple Centrality Assessment (MCA, Porta et al 2008) are two well-known approaches for studying the configuration of street networks, which have been used for this purpose. Based on the hypothesis of natural movement, these methods propose advanced calculations of proximity, accessibility and centrality-based measures, at the intra-urban level. Studies where these techniques were implemented showed how retail distribution may also be explained by network configurational properties.

Nevertheless, these studies only focus on one aspect of the urban environment (i.e., the configuration of the street network). It might well be, though, that also the urban fabric could be closely related to the location of retail and economic activities. The configuration of the street network and the urban fabric might thus represent two complementary aspects. To some extent, previous empirical works considered both aspects as they focused on areas with a continuous urban form. For example, Omer and Goldblatt (2015), highlighted how traditional studies examined urban networks “mainly in cities characterized by either a deformed grid-like street pattern or by a planned perfect grid”. The same authors studied how the presence of retail and configurational properties varied across neighborhoods which had undergone different processes of urban growths (i.e., planned vs self-organized). Svetsuk (2012) focused his analysis on “dense urban environments”, where the characteristics of the urban fabric could be considered homogenous.

However, as of today, a methodology that quantitatively analyses the configuration of the street network and the urban fabric in relation to the spatial distribution of retail across an entire urban region is missing.

In this work, we propose a novel approach based on: (i.) the use of both the MCA and the Multiple Fabric Assessment (MFA, Araldi and Fusco 2017), a method that identifies specific urban fabrics within cities; (ii.) the implementation of advanced statistical analysis and data mining techniques, to assess the relationship between the configurational aspects of the street network, computed through the MCA, the different urban fabrics, computed through the MFA, and the spatial distribution of retail. This approach is then applied to a large metropolitan region, that of the French Riviera, a unique conjunction of natural and urban landscapes, originated by the combined effect of a highly diversified topography and several socio-political and historical events.

The resulting models show that the importance of the configurational aspects of the MCA in explaining density of retail varies according to the different urban fabrics detected by the MFA. For example, the same value of Betweenness centrality, one of the MCA indicators, assumes different degrees of importance in the traditional, regularly-meshed fabric and in the suburban/modern one. Moreover, deviations from the model highlight street segments with an over/under-representation of presence of retail. We suggest that this might be due to other morpho-functional phenomena, which deserve future investigations.

## REFERENCES

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## KEYWORDS

Urban Form / Urban Fabric / Network Configuration / Retail distribution