CROSS/
ROADS\
LINKING MOBILITY SOLUTIONS

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Benchmarking accessibility for urban mobility systems

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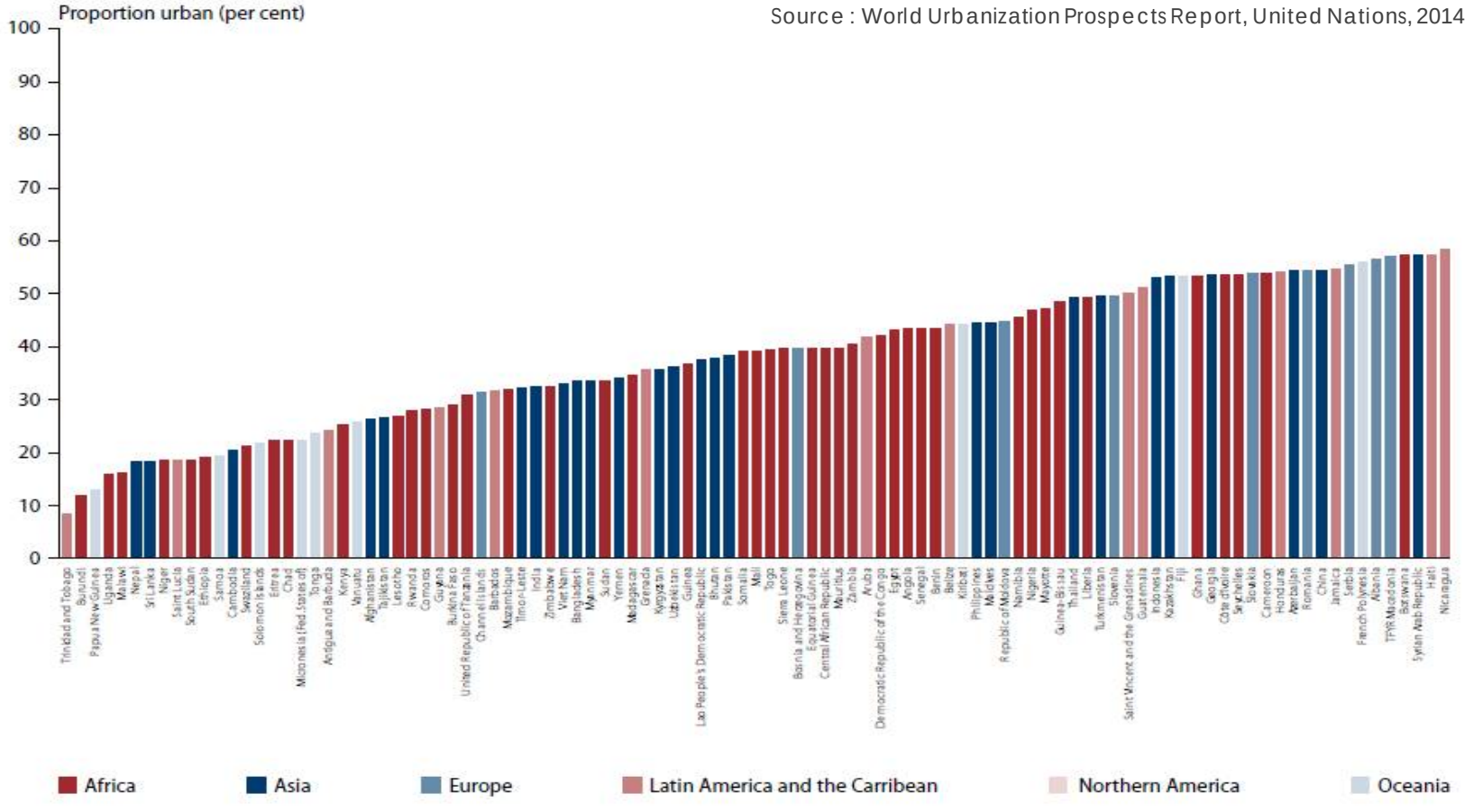
Introduction



Source : World Urbanization Prospects Report, United Nations, 2014

Accessibility ? For whom ? Why ?

Accessible public space is one to where many different people can come, but also one where many different people can do many different things: it is an accessible node, but also an accessible place.
(Bertolini and Djist, 2003)

Conventional mobility-based planning places *automobiles at the center of the transport system.* The new accessibility based paradigm places *people at the center.*

People with disabilities (PwDs), elderly, and other population diversities require and utilize the urban space as other able bodied humans do.

Perspective with respect to India and UN

United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), to which India is a signatory, under Article 9 casts obligations on the Governments for ensuring to PwDs accessibility to

(a) Information,

(b) Transportation,

(c) Physical Environment,

(d) Communication Technology and

(e) Accessibility to Services as well as emergency services.

(Department of Empowerment of PwDs, Government of India)

Aim

To integrate and translate a mobility perspective into an inclusive value of accessibility, through identification and evaluation of the accessibility parameters of an urban mobility system.

Objectives

- Review and assessment of tools and methods of benchmarking urban street systems.
- Identification of diverse parameters responsible to benchmark accessibility in the urban spaces for the users.
- Understanding and correlation of the identified parameters through case studies.

Questions

How to asses accessibility in an urban space ?

What parameters would assist in assessing the accessibility ?

Do the results signify a certain gap in the assessment of the urban space and what major outlooks are foreseen in future ?

Methodology

Gap and Parametric Identification

NETWORK CONNECTIVITY

TRANSPORT ACCESSIBILITY LEVEL

INTELLIGIBILITY

PEDESTRIAN FOOTWAY COMFORT

SPACE ELEMENT ACCESS

Selection of Urban Space

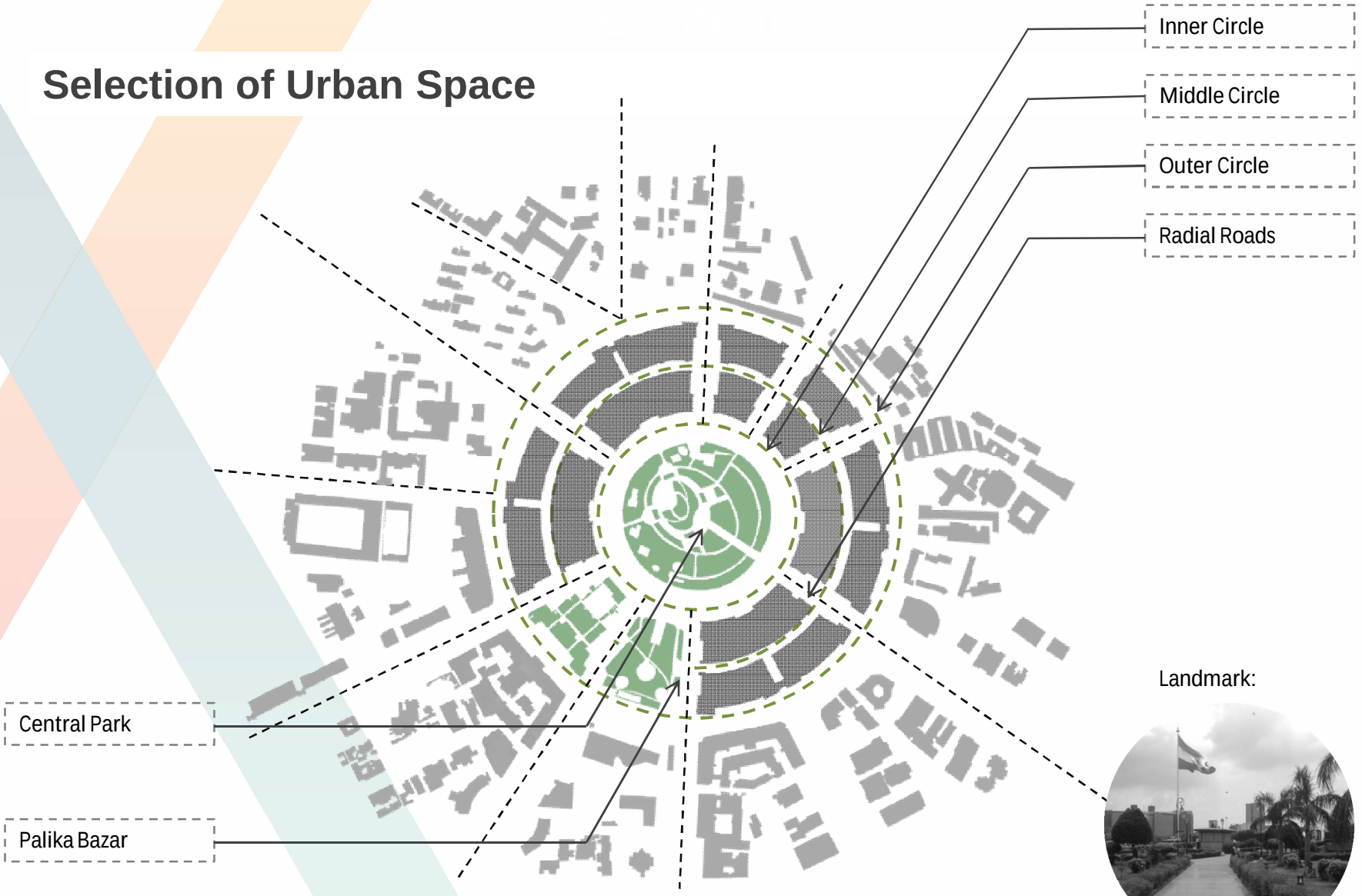


Figure Ground Map – Connaught Place, New Delhi,India

Selection of Urban Space

Figure Ground Map – Luisenplatz, Darmstadt, Germany

Landmark:

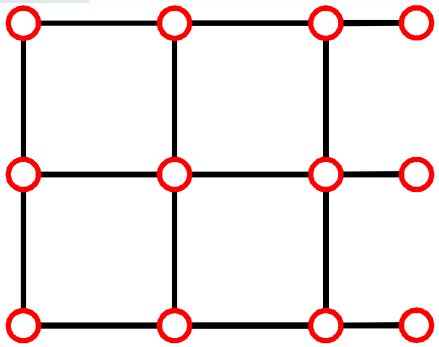
Parametric Analysis

NETWORK CONNECTIVITY

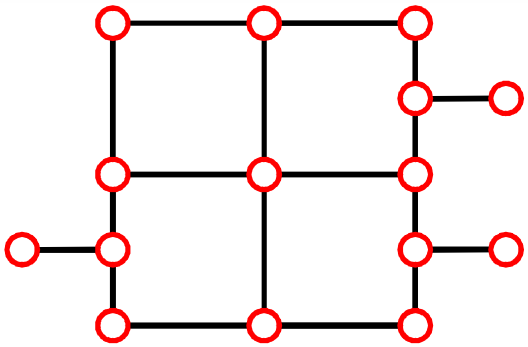
Network Connectivity

• Connectivity Index is computed by dividing the number of roadway links by the number of roadway nodes.

• Ewing (1996) suggests that a link-node ratio of 1.4, about halfway between extremes, is a good target for network planning purposes. At least three cities have adopted the link-node ratio as a standard, with values of 1.4 and 1.6 (Handy et al., 2003).



Links (L) = 15
Nodes (n) = 12
Cul-de-sac = 3
Connectivity Index (L/n) = **1.25**

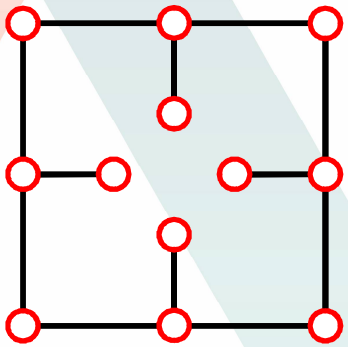


Links (L) = 18
Nodes (n) = 15
Cul-de-sac = 6
Connectivity Index (L/n) = **1.20**

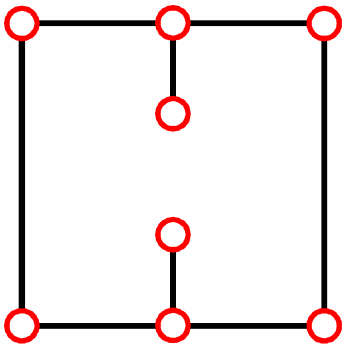
Network Connectivity

- The Connected Node Ratio (CNR) is the number of street intersections divided by the number of intersections plus cul-de-sacs. *[Allen (1997) and Song (2003)]*

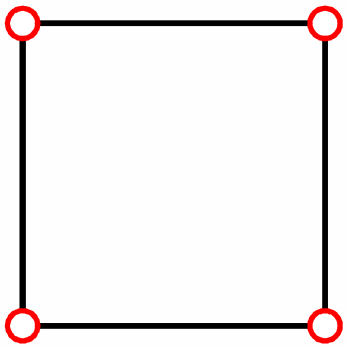
- Higher numbers indicate that there are relatively few cul-de-sacs and, theoretically, a higher level of connectivity. Values of 0.7 or higher are favoured (Criterion Planners Engineers, 2001).



Links (L) = 12
Nodes (n) = 12
Cul-de-sac (c) = 4
CNR(n/n+c) = **0.75**



Links (L) = 8
Nodes (n) = 8
Cul-de-sac (c) = 2
CNR(n/n+c) = **0.80**



Links (L) = 4
Nodes (n) = 4
Cul-de-sac (c) = 0
CNR(n/n+c) = **1.00**

Network Connectivity in Connaught Place

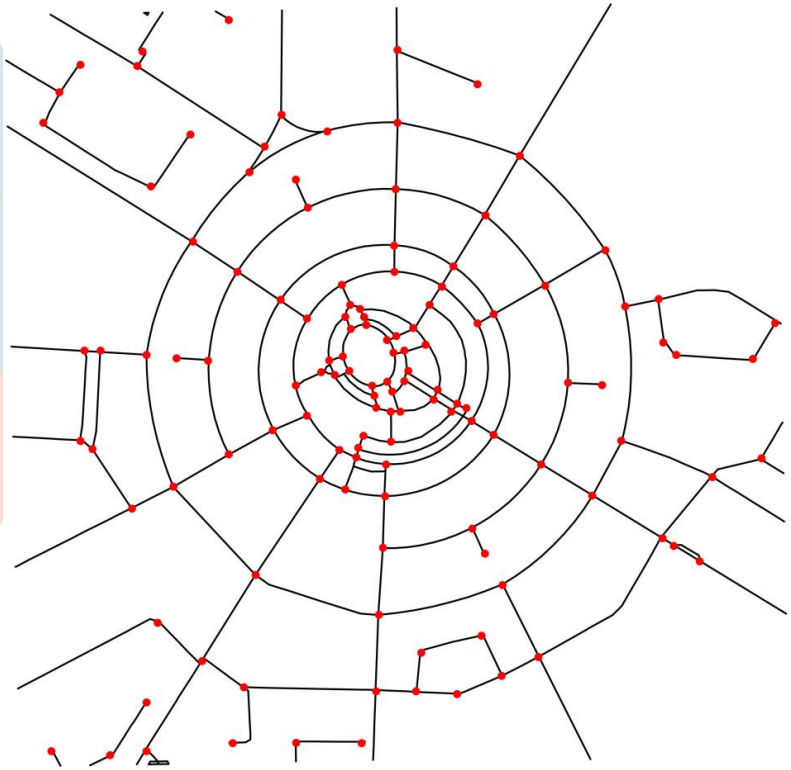


Fig. Node Density Mapping

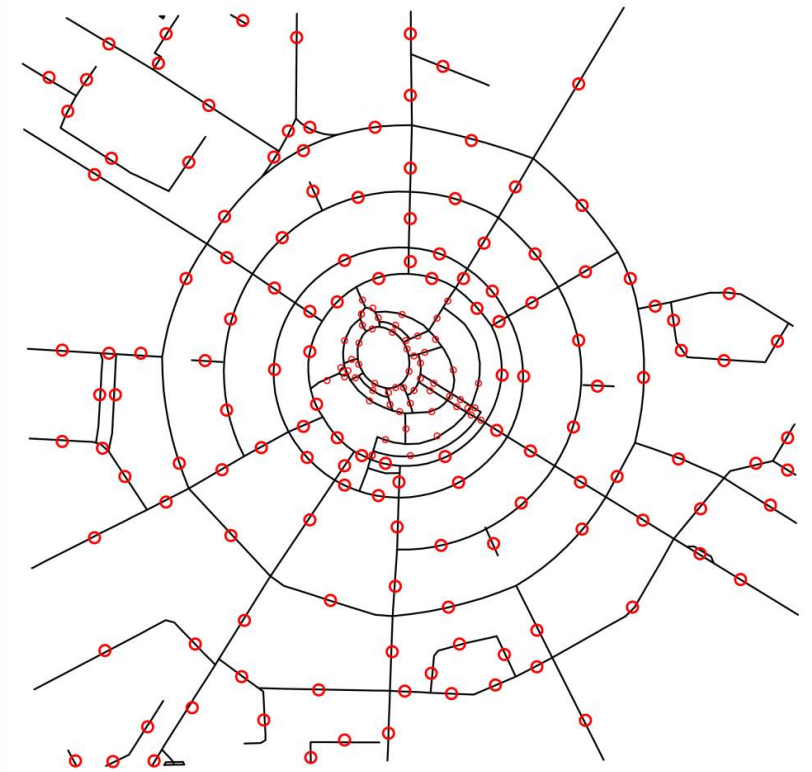


Fig. Link Density Mapping

Links (L) = 198 Nodes (n) = 128 Cul-de-sac (c) = 15

Connectivity Index (L/n) = 1.5468

Connected Node Ratio (n/n+c) = 0.89

Network Connectivity in Luisenplatz

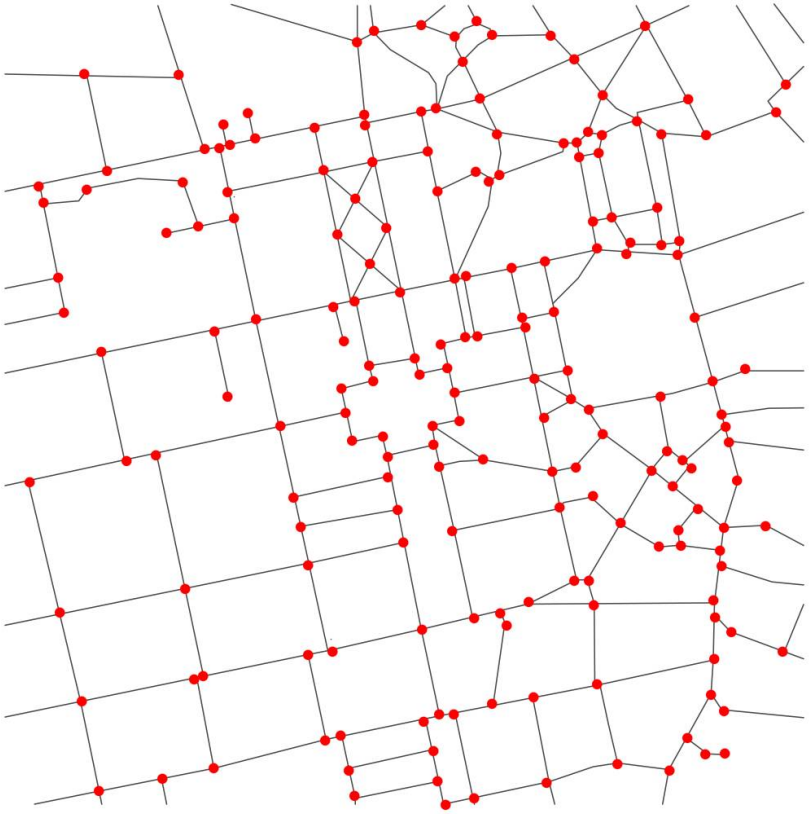


Fig. Node Density Mapping

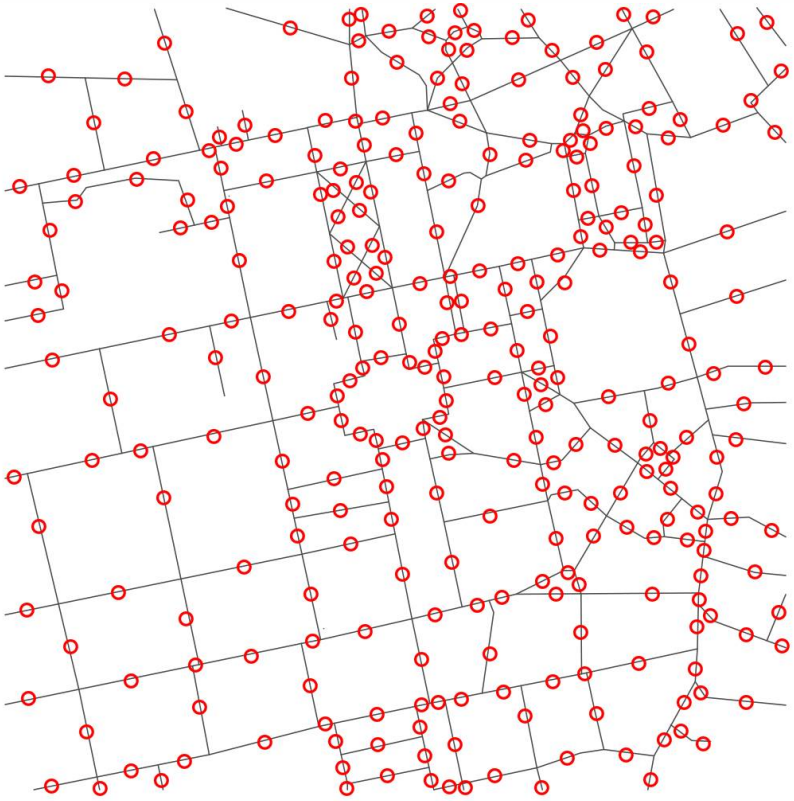


Fig. Link Density Mapping

Links (L) = 296 Nodes (n) = 192 Cul-de-sac (c) = 7

Connectivity Index (L/n) = 1.5416

Connected Node Ratio (n/n+c) = 0.96