



EUROPEAN UNION

Co-financed by the European Regional Development Fund

South Europe at the crossroads

Are we making the right decisions about accessibility investments for the future?

Reflections on future accessibility scenarios

Prof. Pierluigi Coppola

Department of Enterprise Engineering
University of Rome Tor Vergata



Rome, 3 October 2017

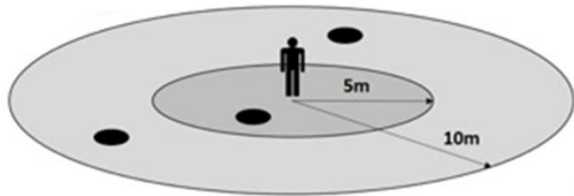
Summary

- Connectivity vs. Accessibility
- Integrated spatial development and transport planning
- Trends and future accessibility scenarios

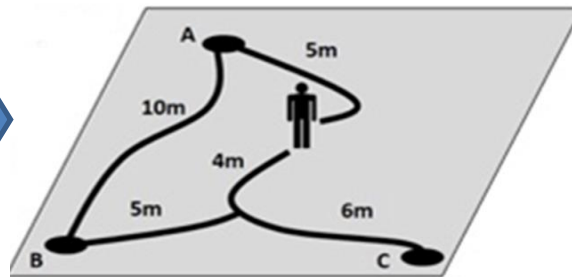
Connectivity vs. Accessibility

it is not only matter of distances, travel times, infrastructures and transport services but also of population and activities spatial distribution

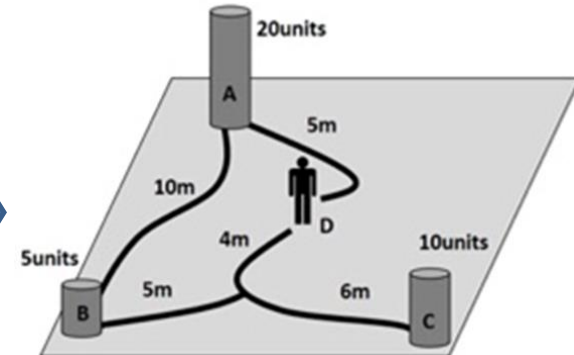
Accessibility metrics



Distance-based



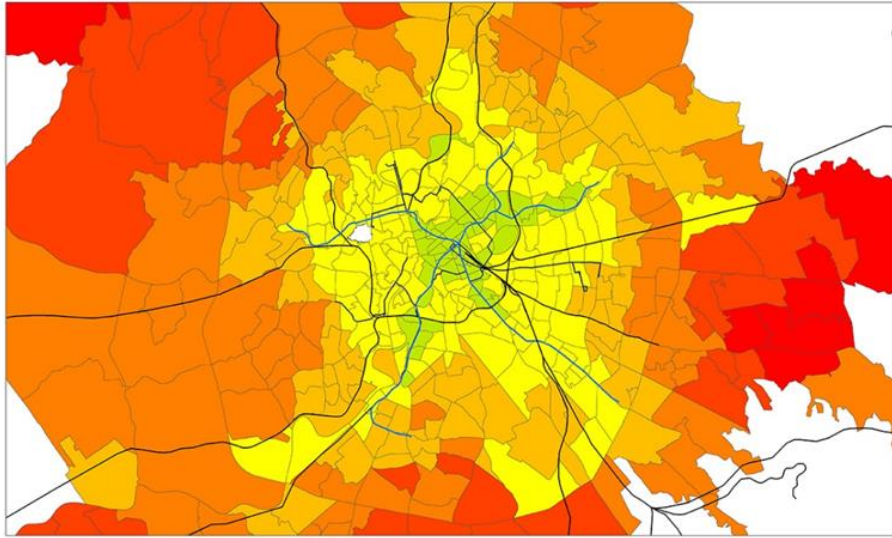
Network-based



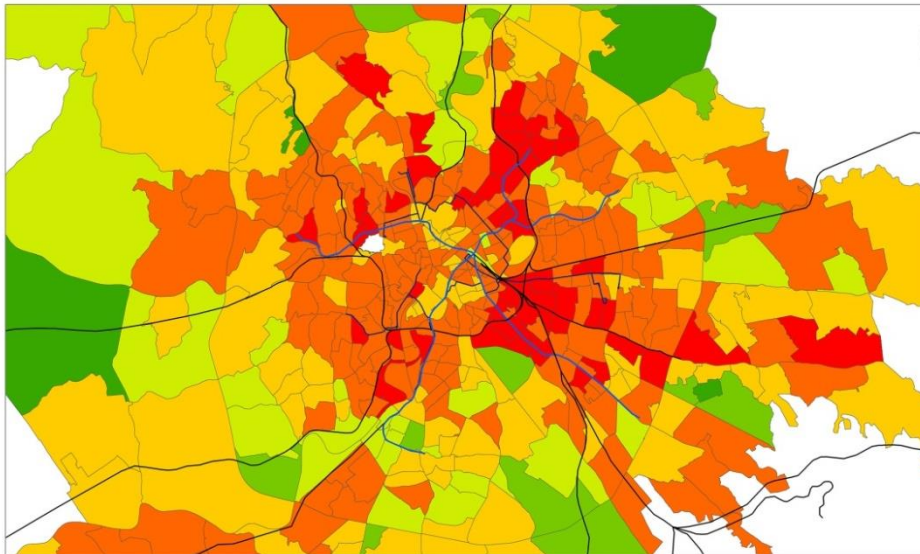
Potential

Example of different accessibility metrics for Rome

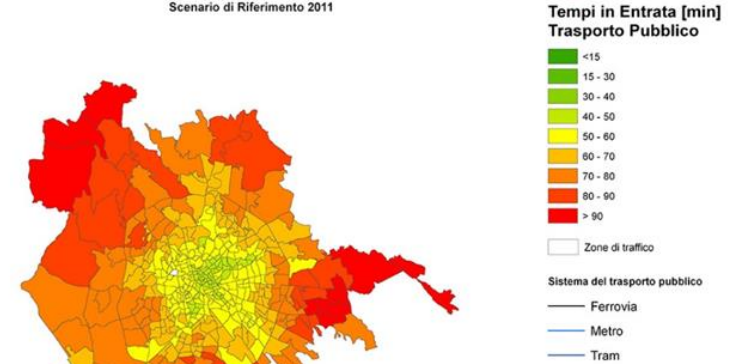
Tempi in Entrata Trasporto Pubblico
Scenario di Riferimento 2011



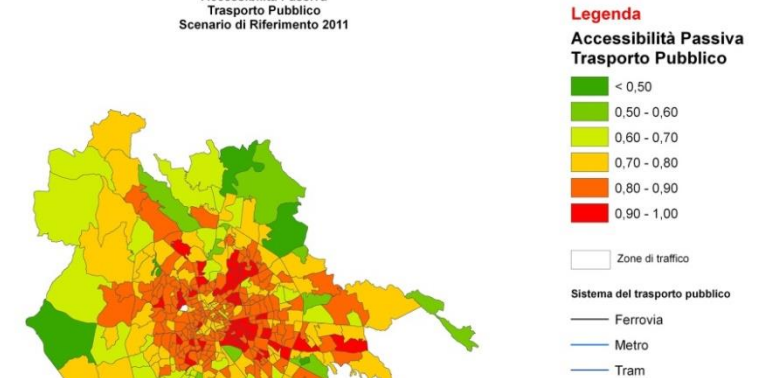
Accessibilità Passiva Trasporto Pubblico
Scenario di Riferimento 2011



Tempi in Entrata
Trasporto Pubblico
Scenario di Riferimento 2011



Accessibilità Passiva
Trasporto Pubblico
Scenario di Riferimento 2011



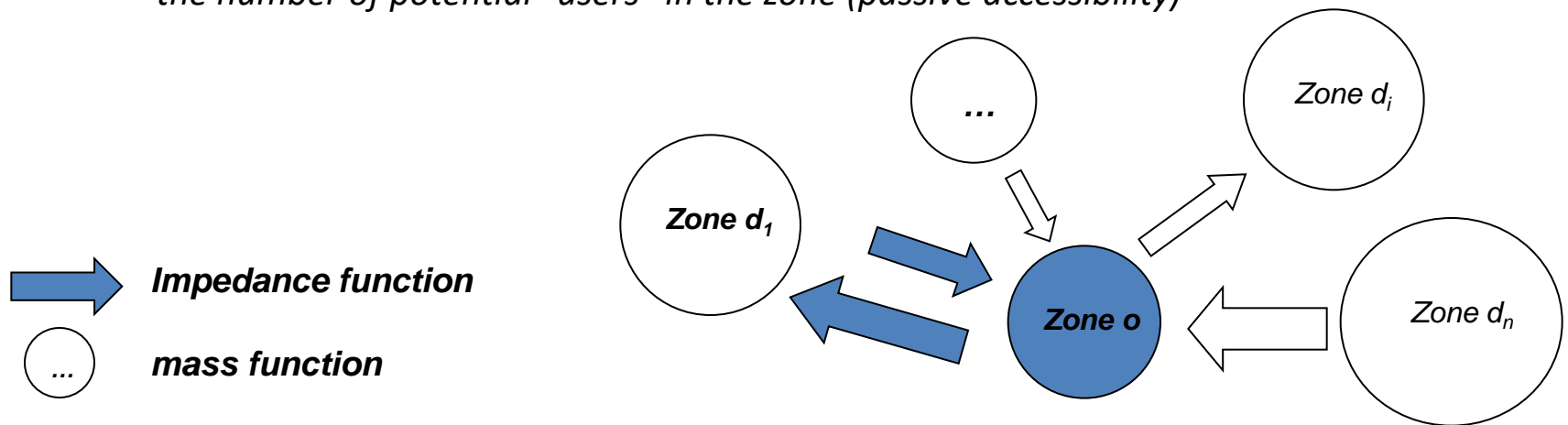
Accessibility as a potential

For the accessibility definition we need to specify:

- (accessibility) “of who/of what”
- “with respect to (w.r.t.) whom”

Accessibility measures include:

- **an impedance function between zones** representing typically the travel cost (or a proxy) from one zone to the others
- **a mass function of the zone** representing typically
 - the number of opportunities in the zone (active accessibility) or
 - the number of potential “users” in the zone (passive accessibility)



Potential Accessibility Indicators

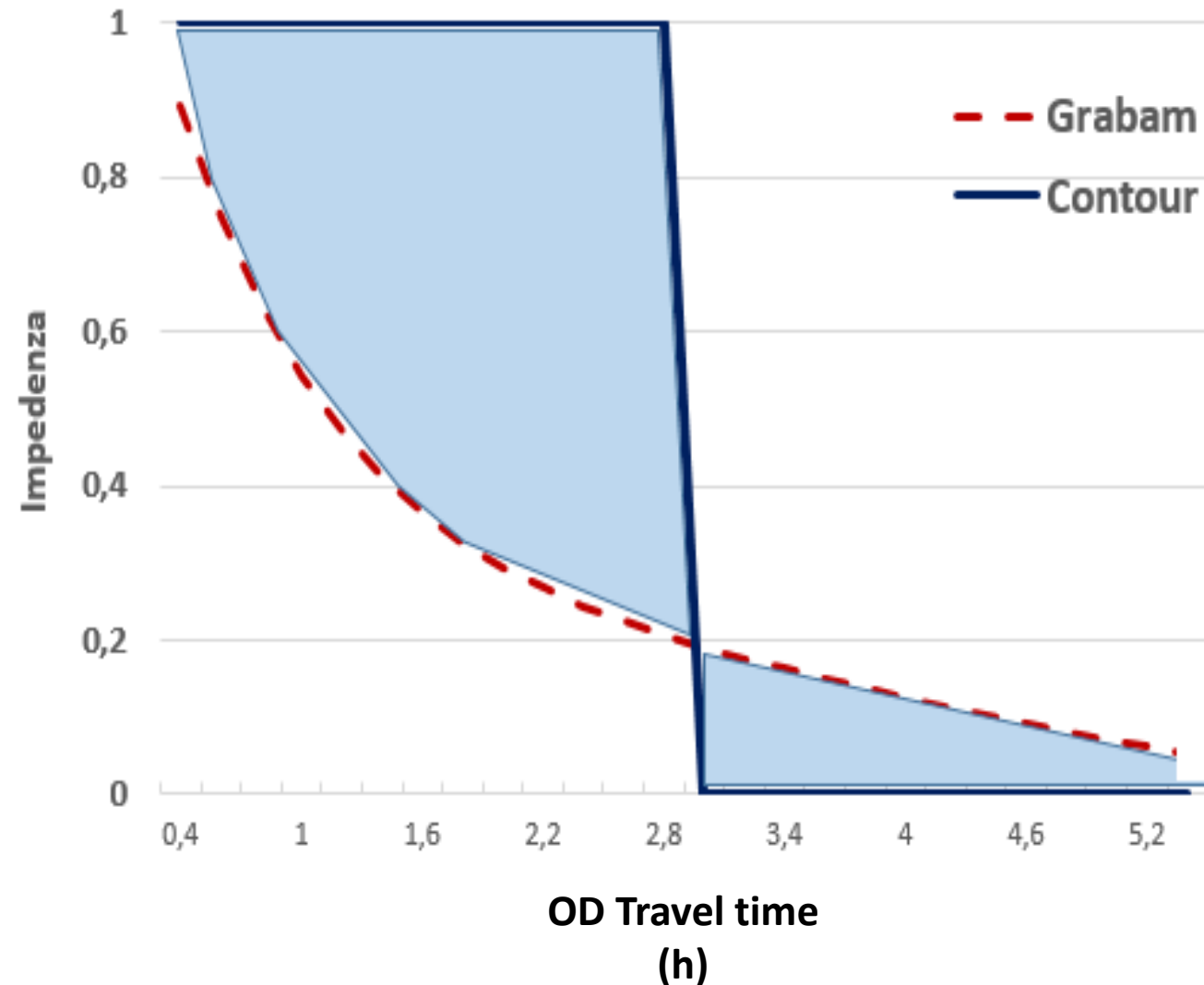
Impedance function

GRABAM (gravity-based) measures

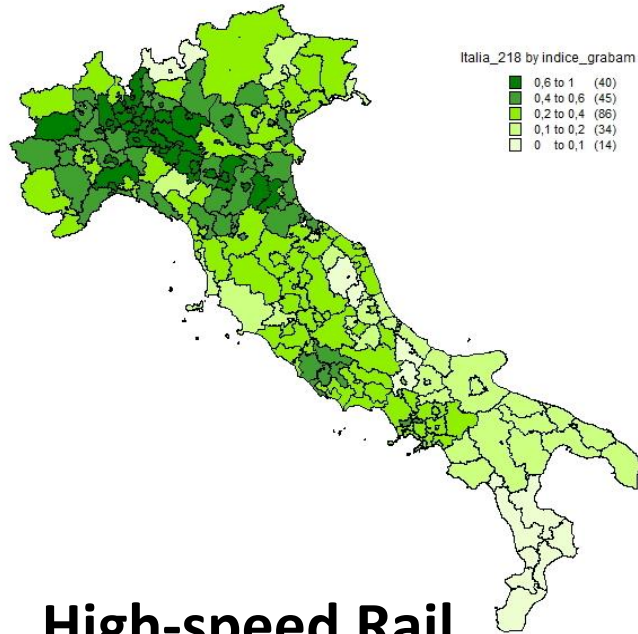
The impedance function decline with travel times between zones o e d

CONTOUR measures

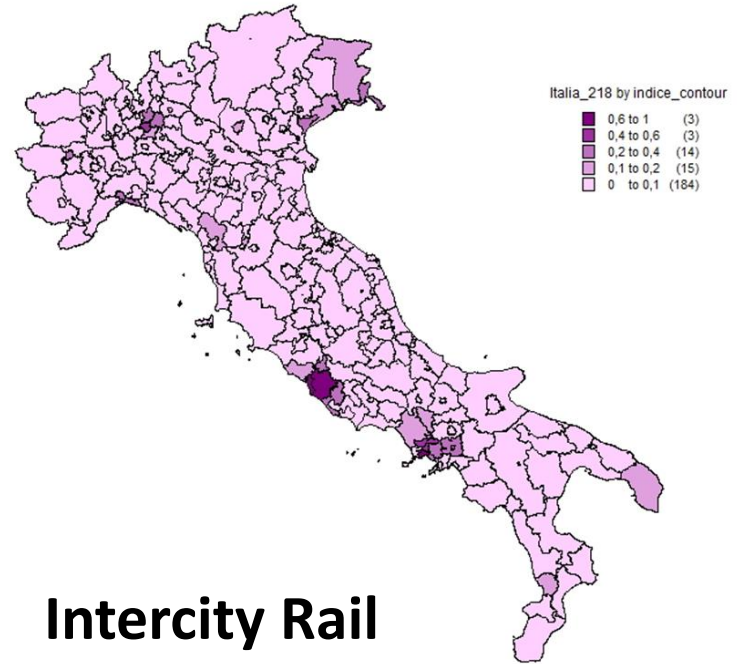
Include (sum up) activities and population under a given threshold



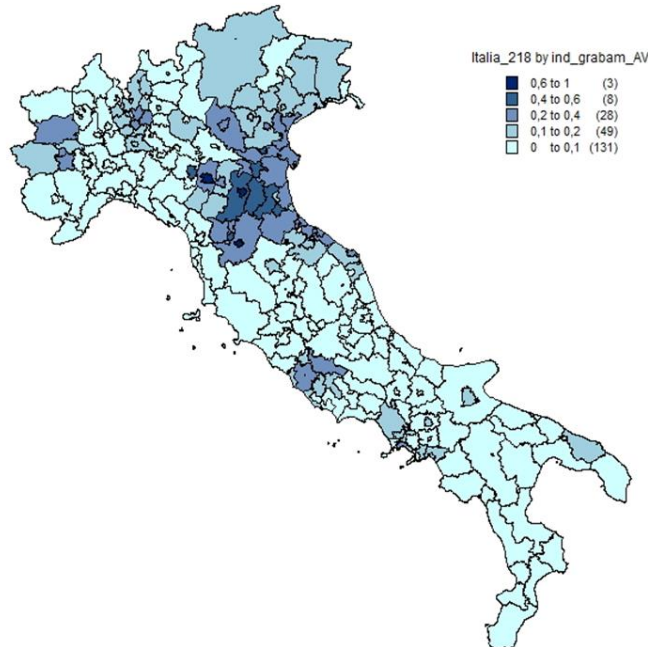
Auto



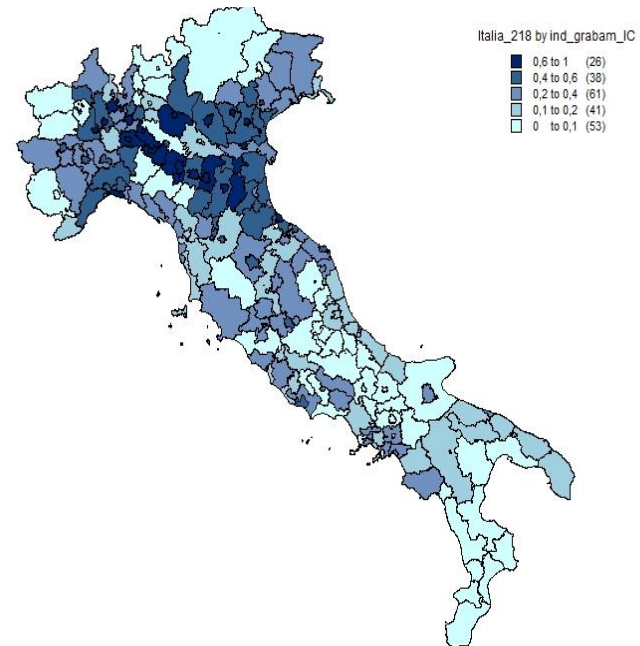
Air



High-speed Rail



Intercity Rail

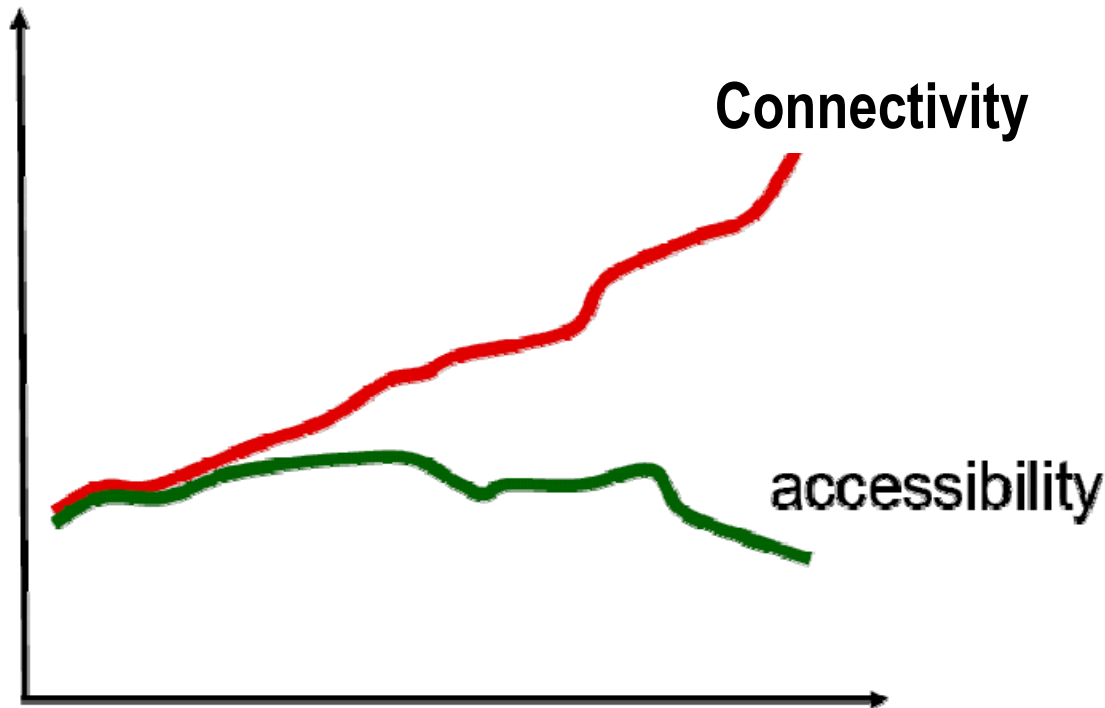


Are we making the right decisions about accessibility investments for the future?



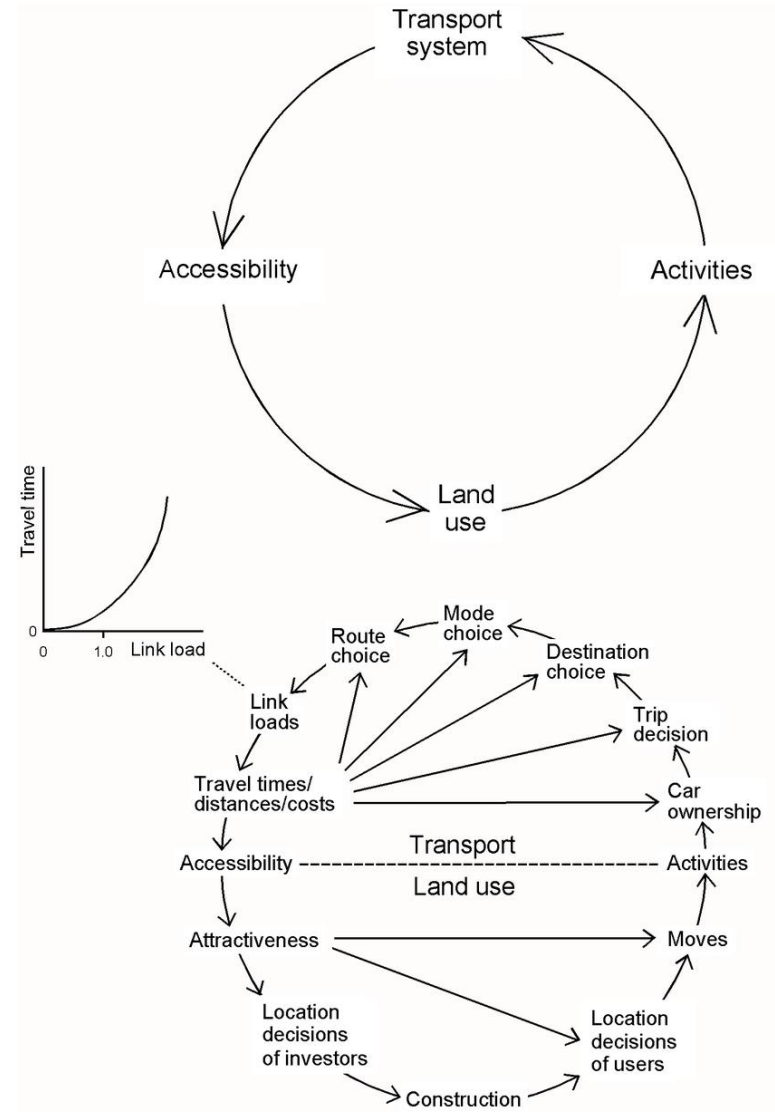
Does connectivity create accessibility ?

*there are cases in which transport infrastructures (connectivity)
induce economic growth and sustainable development
...but also cases where it does not !*



Land-use Transport Interaction cycle

Causal relationship between transport - accessibility – Land use and economic development – population/activities location

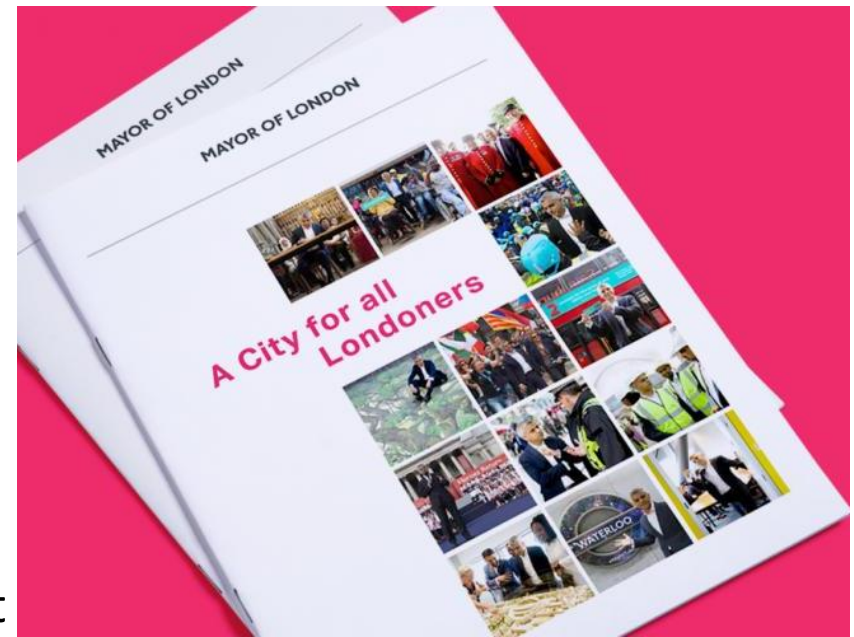


Wegener and Furst, 1999

Integrated spatial development and transport policies

good grow principles

- Reconciling competing land uses
- Securing employment land in central London and elsewhere
- Encouraging housing & mixed land uses
- Integrating housing & infrastructure investment
- Protecting the Green Belt and other designated open spaces
- Identifying land to accommodate at least 50,000 homes a year



**The London
Strategic Plan
(Oct, 2016)**

Transit Oriented Development



Case study: BART
(the regional metro of the San
Francisco Bay Area)

Trends and future scenarios

- concentration of population and of accessibility
- digital transformation and technological shifts
 - ➔ help to accommodate ‘mega-agglomeration’



Trends and future scenarios

- new (shared) modes of transport
- Real-time information and crowdsourcing
 - ➔ help to improve 'individual' accessibility



Trends and future scenarios

- focus on the metropolitan areas
- digital connectivity as mean to improve individual accessibility
- Social Dimension of Accessibility
 - Affordability
 - Social inclusion
 - ...

Conclusion: some research topic

- To develop integrated policies for sustainable and balanced growth
 - reconciling the need of connectivity for low density areas and the risk of congestion of highly accessible areas
- To understand the conditions where connectivity can or cannot create sustainable development
 - connectivity vs. affordability
 - accessibility and social inclusion
- To assess the impact of 'digital transformation' on individual accessibility



EUROPEAN UNION

Co-financed by the European Regional Development Fund

South Europe at the crossroads

Are we making the right decisions about accessibility investments for the future?

Thanks for attentions!

Pierluigi Coppola

coppola@ing.uniroma2.it