Measuring Territorial Effects of High-Speed Trains on Metropolitan Areas
A methodological proposal using path capillarity indices

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The old topic of links between transport and territorial development

Relationship is neither deterministic nor mechanical process

“The myth of structuring effects” (Offner 1993)

Importance of supporting policies and territorial project

www.bahn-ville.net
The old topic of links between transport and territorial development

Some non-economic effects are imperfectly measured

“Useful” accessibility

“Tunnel effect” (Plassard 1991) and interstitial spaces

Providing access to interstitial spaces can be useful to the functioning of a territory
Potential for territorial functioning

Speed losses due to transport fineness (stops) are counterbalanced by a territorial gain.

TRANSPORT NETWORKS

ACCESSIBILITY (SPEED)  CAPILLARITY (FINENESS)
Purpose

Develop a prospective approach cooperating with territory players

Assess territorial functioning measuring “territorial effects” (Plassard 2003)

Quantify transport service fineness
Method: scheduled graph modelling

Whole daily transport schedule for “useful” accessibility

Path capillarity indices

Minimum paths provided by an algorithm, located in space and time

A list of places where one has to stop during simulated trip
Path capillarity as the transport service fineness

What can be worth stopping in a path between A and B?
Path capillarity as the transport service fineness

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Adherence (Amar 1993)
Path capillarity as the transport service fineness

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What can be worth stopping in a path between A and B?
Path capillarity indicator

Synthetic indicator broken down into several indices

\[ O = (\alpha N_1 + \beta N_2 + \gamma N_3) + (\delta F_1 + \zeta F_2 + \theta F_3) + R + K \]

\[ O = T + I \]

Indices that territorial actors can make theirs defining assessment method
Tests

Distance

R² = 0.2305

140 kms

R² = 0.5298

R² = 0.0055

NPdC
PACA
Interpolation line < 140 km
Interpolation line < 140 km PACA
Interpolation line < 140 km NPdC
Exemple : High-Speed Rail in french PACA region

Modelling of 2 scenarios thanks to transport oriented GIS
Exemple : High-Speed Rail in french PACA region

Modelling of 2 scenarios thanks to transport oriented GIS
# Results

For an Aix - Nice trip

<table>
<thead>
<tr>
<th></th>
<th>8 AM Arrival</th>
<th>9 AM Arrival</th>
<th>5 PM Departure</th>
<th>6 AM Departure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transit time</td>
<td>Transit time</td>
<td>Transit time</td>
<td>Transit time</td>
</tr>
<tr>
<td>Current situation</td>
<td></td>
<td></td>
<td>3h01</td>
<td>1h50</td>
</tr>
<tr>
<td>Scenario 1</td>
<td>2h04</td>
<td>2h04</td>
<td>1h50</td>
<td>1h50</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>1h44</td>
<td>1h44</td>
<td>1h30</td>
<td>1h30</td>
</tr>
</tbody>
</table>

- Current situation
- Scenario 1
- Scenario 2

![Graph showing standardized transit times](image-url)
Concluding comments

An opportunity to involve territorial players before transport project assessment

An original method to put forward capillarity in the debate

A lead for future researches, to be taken with care