Spatial Data Mining and Three Dimensional Visual Perceptions of Product Variety and Retail Rents on Central Urban Shopping Areas: results from Ximending District of Taipei City*

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*This research is funded by the Ministry of Science and Technology of Taiwan, ROC. MOST: 104-2119-M-305 -001 -
I. Introduction: product variety and agglomeration economies

- **Product variety** or diversity has been one of the main stream research concerns in spatial agglomeration economics.
- Retail agglomeration economies is a crucial source of spatial productivity and **positive environmental atmosphere**: retail amenity, attractions, shopping atmosphere.
- **Consumer preferences**
I. Introduction: gravity and spatial pattern

- Sources of gravity: customer drawing power of a shopping area
- Pedestrian flow/ Shoppers’ circulation: spatial patterns of a shopping area
Introduction: visualization of data

- All of the above influential spatial/nonspatial features of product variety within urban or spatial environment are intangible

- Features of product variety?
- Spatial patterns?
II: Research Design and data: Retail shopping area (POI Survey)
II. Research Design and data

- Data mining:
  - Principal Component Analysis/Factor Analysis
  - Regression
  - Clustering

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<th>Core</th>
<th>Regression</th>
<th>Performance/Rents</th>
<th>Clustering</th>
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II. Research Design and data

- Geostatistical analyst:
  - Exploring data: trend analysis
  - Inverse distance weighting (IDW)
  - Kriging/CoKriging
II. Research Design and data

- ArcGIS: ArcMap/3D ArcScene
- Google Earth Pro
III. Results: store density distribution
III. Results: Visualization of intangible features
IV. Conclusions

1. The effects of the features of product variety to retail rents
2. Agglomeration economies: store density to retail rents
3. Negative effects
4. Pedestrian effects
5. Visualization of the intangible features