A Study on the Spatial Accessibility of Adult Day Care Centers in the Seoul Metropolitan Area

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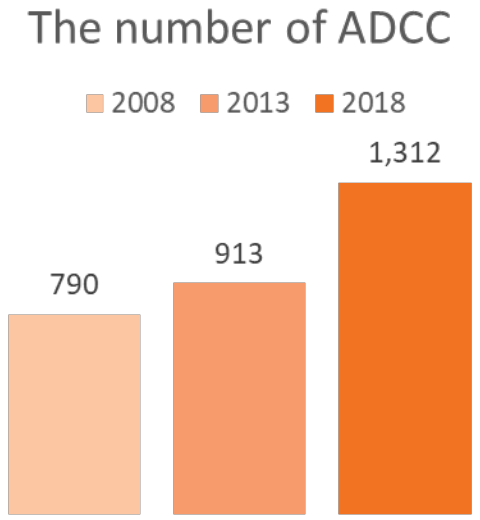
Research statement

- The elderly population ratio in South Korea is 14.3%, and 37.5% of Korean elderly people live in the Seoul metropolitan area (Statistics Korea, 2018)
- Senior care facilities are essential in the daily life of the elderly in the metropolitan area
- Among senior care facilities, adult day care center (ADCC) differs from other senior care facilities in that old adults travel to the supply to receive services
- Therefore, the location and accessibility of ADCCs should be considered for the elderly to use services

Research statement

- Adult day care center (ADCC)
  - Aging in Place
    - “Remaining living in the community, with some level of independence, rather than in residential care” (Davey, Nana, de Joux, & Arcus, 2004, p. 133)
  - Providing various social services to people over 65 of long-term care beneficiaries including dementia
  - Supporting the elderly and to reduce the burden of family and caregivers for a period of time

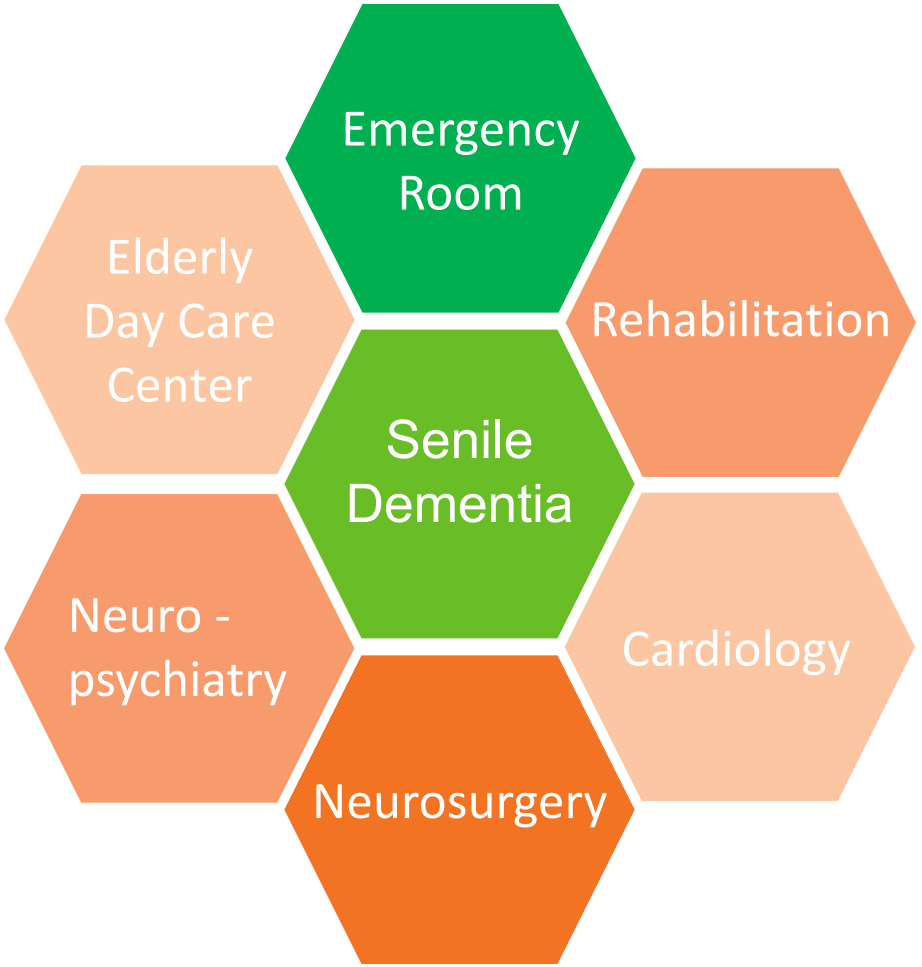
Does ADCC are properly distributed?



Does ADCC help to decrease dementia symptoms?

Research statement

- Measuring spatial accessibility to healthcare facilities related to dementia
- Investigating socio-economic factors that are potentially associated to health outcome
- Identifying whether dementia is slowed down



Method

- Two-step Floating Catchment Area(Radke and Mu, 2000)

$$R_j = \frac{S_j}{\sum_{k \in (d_{kj} \le d_0)} P_k} \quad (1)$$

- R_j is the demand-to-supply ratio within supply location j
- P_k is the demand at location k that falls within catchment area
- S_j is the capacity of supply at location j , d_{kj} is the distance between k and j

$$A_i^F = \sum_{j \in (d_{ij} \le d_0)} R_j = \sum_{j \in (d_{ij} \le d_0)} \frac{S_j}{\sum_{k \in (d_{kj} \le d_0)} P_k} \quad (2)$$

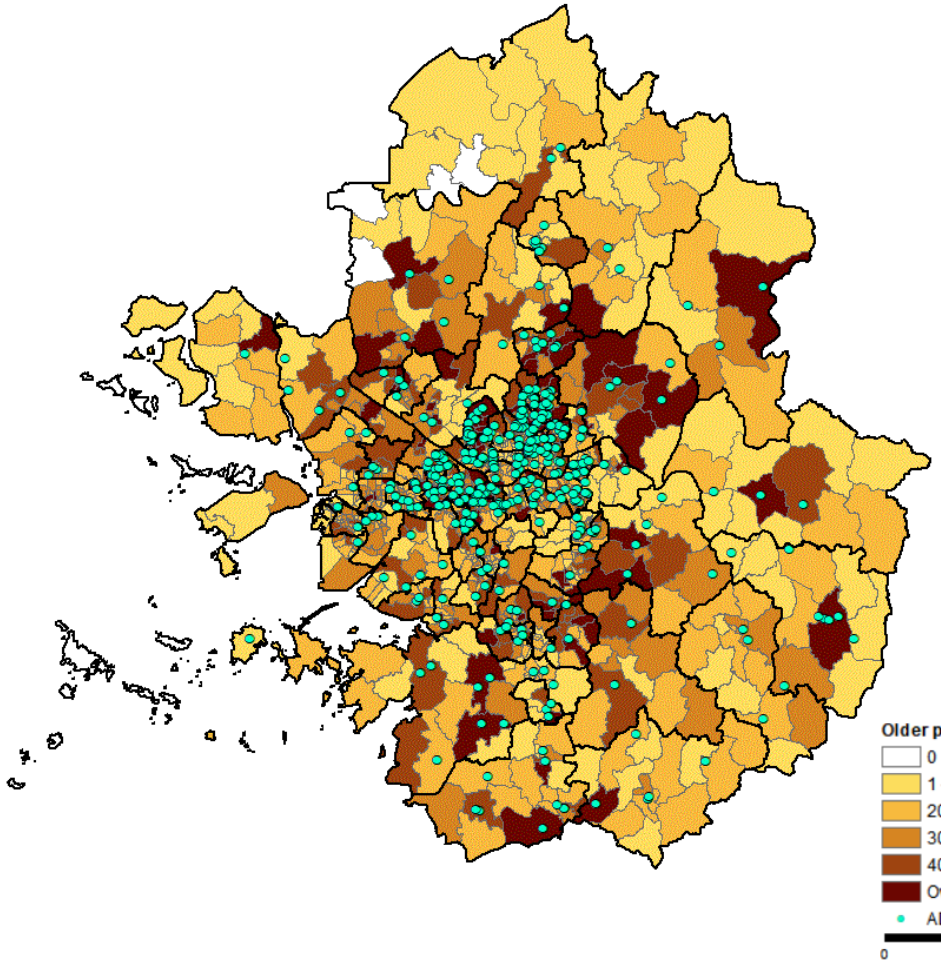
- A_i^F is the value of spatial accessibility

Data

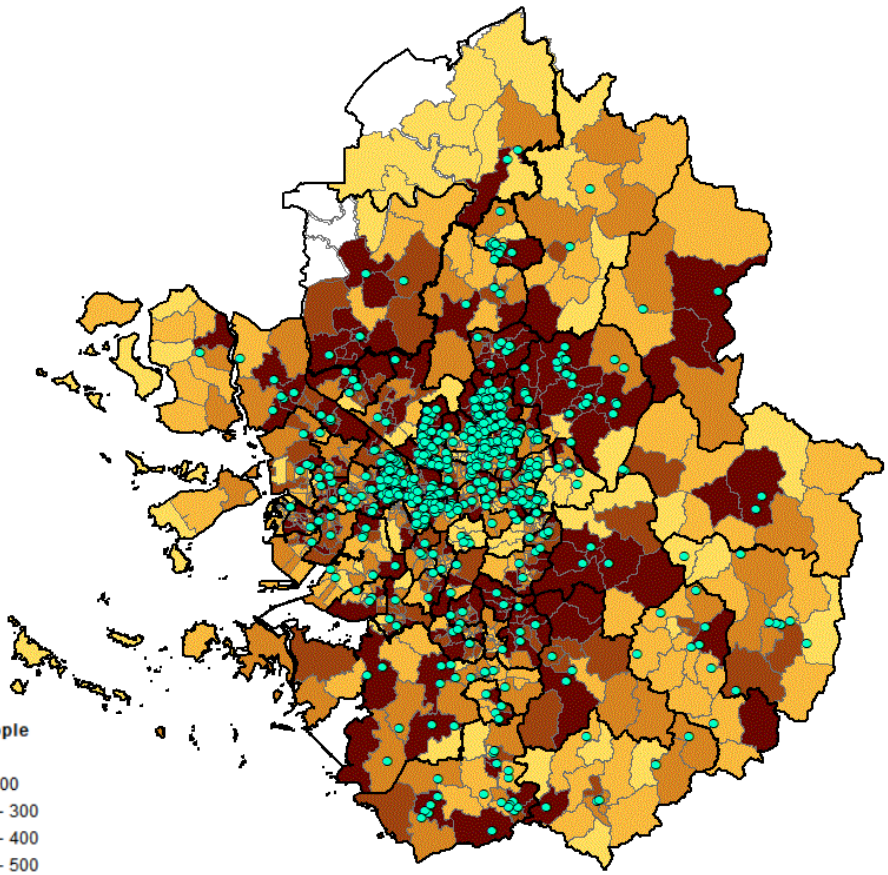
- Unit of Analysis
  - 77 cities (Eup·myeon·dong) 2013 & 2018
- Data
  - Demographic and socio-economic variables
  - Adult day care centers
  - Road Network
- Analysis
  - Spatial accessibility by using 2SFCA
  - Regression analysis of ADCC accessibility

Pilot study

The estimated older people and ADCC in 2013



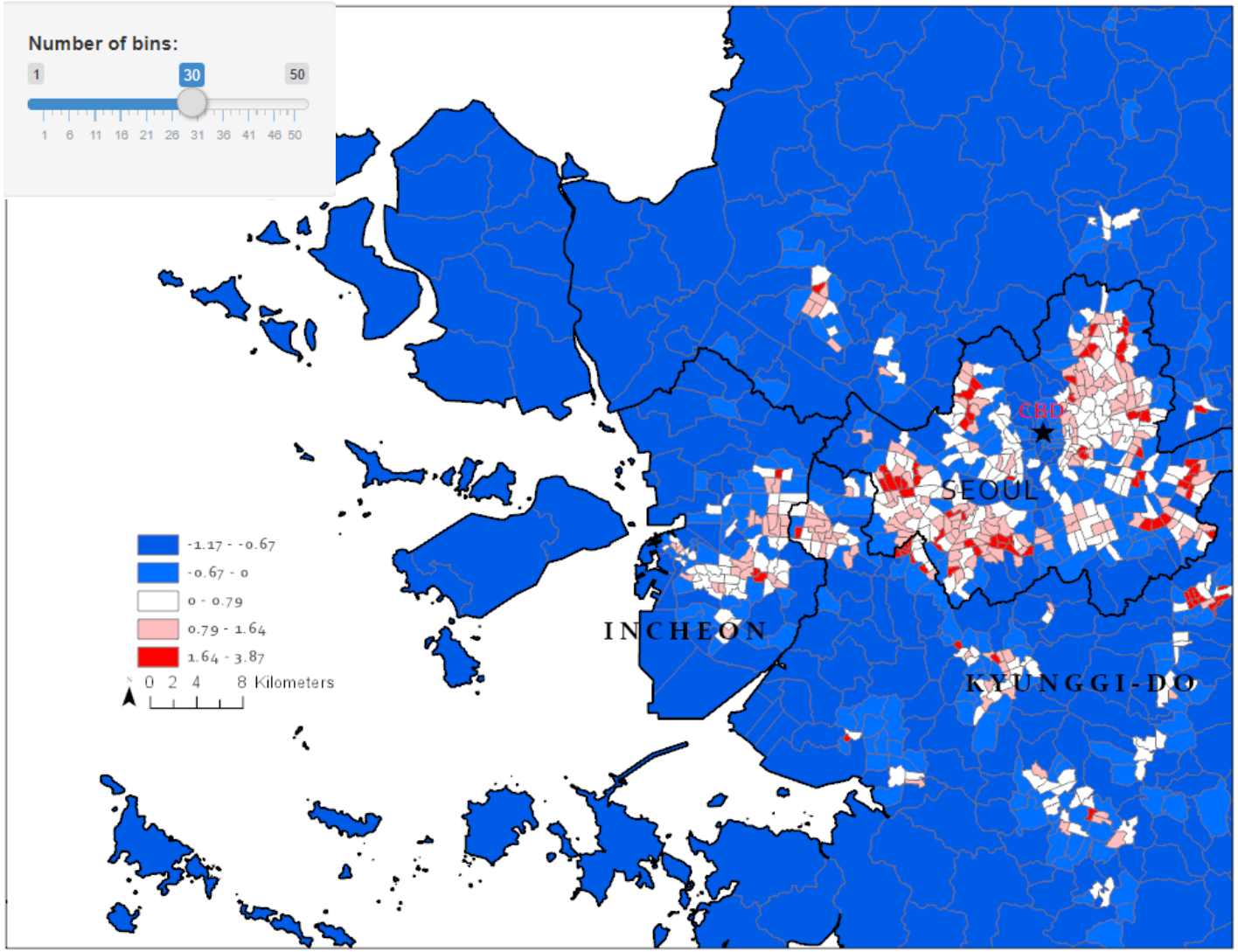
The estimated older people and ADCC in 2018



Visualization methods

- spplot
- ggplot
- quantile method for setting class intervals
- mapColorRamp

Layout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30
50
1 6 11 16 21 26 31 36 41 46 50
-1.17 - -0.67
-0.67 - 0
0 - 0.79
0.79 - 1.64
1.64 - 3.87
0 2 4 8 Kilometers
CBD
SEOUL
INCHEON
KYUNGGI-DO

Thank
you