

Analysis of alternative data to monitor migration flows

: the case of housing districts in South Korea

Presenter | Dr. Bo Kyeong Lee (bkleee@krihs.re.kr)



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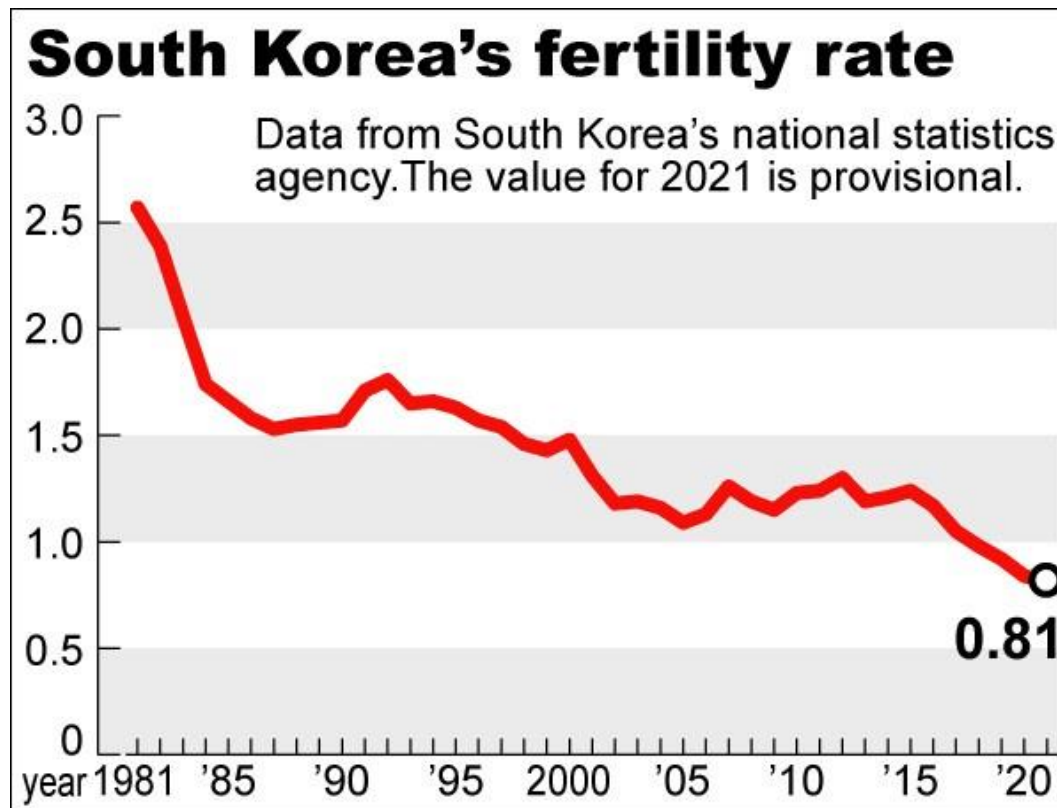
I

Analysis of alternative data to monitor migration flows

Research Background

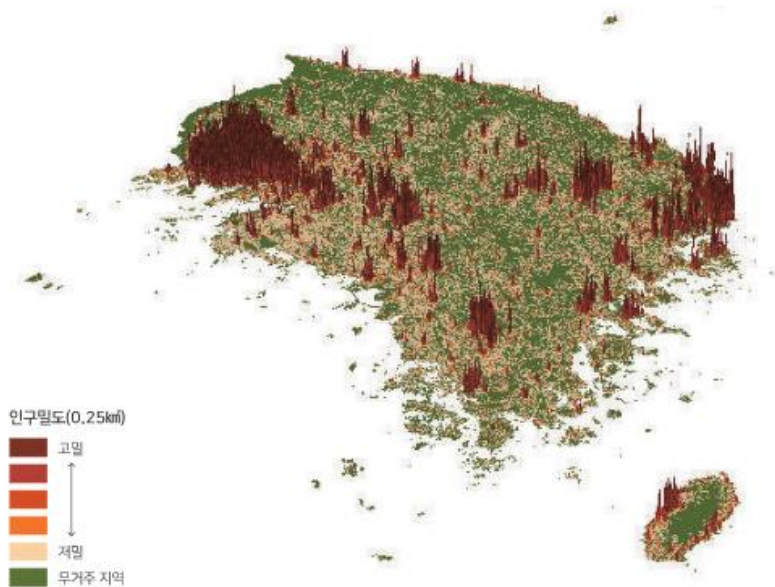
South Korea's birth rate hits fresh low every year

It may hit 0.7 this year and leads depopulation

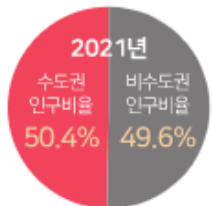
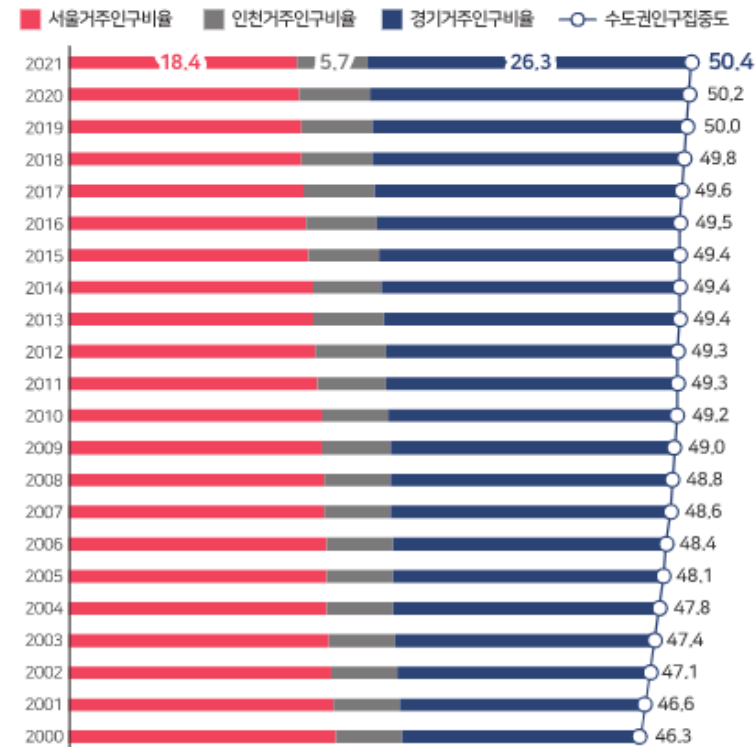


The capital area is home to more than 50% of the national population

Population density gap between capital area and non-capital area grows



◆ 수도권 인구집중도 변화(2000~2021)



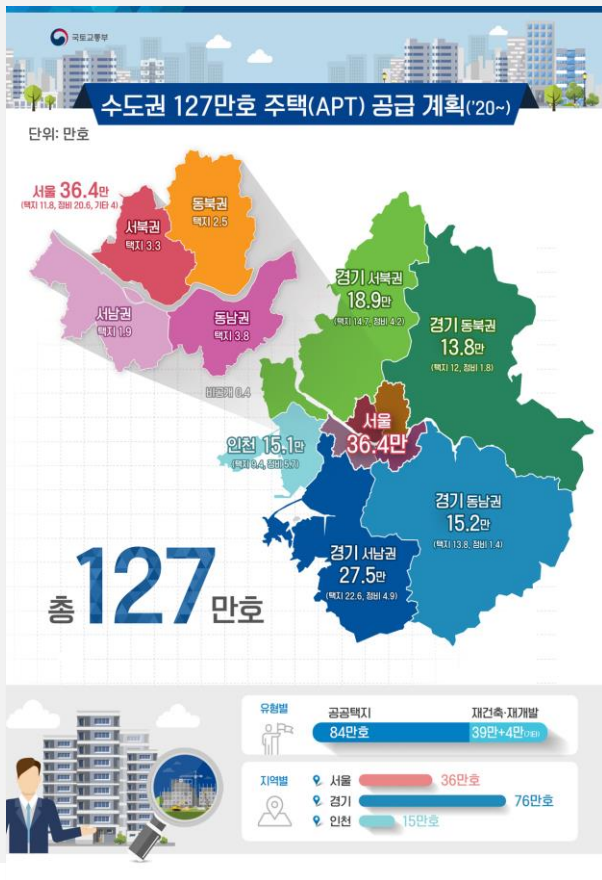
Population is a key factor in the sustainability of regions, but ...

Depopulation and population imbalance threaten the sustainability of most regions

- ✓ In the era of depopulation and ultra-low birth rates, local governments are making various efforts to prevent population outflow and increase inflow, and population migration between regions due to large-scale housing supply has a direct impact on the changes of the population size.
- ✓ Local governments establish spatial plan considering only the increase of the regional population due to the influx of population from other regions through the supply of **new housing**, but population decrease due to new houses in other regions is not reflected.

Necessary to monitor inter-regional migration in detail

“supply shock” will increase migration flows and have impact on population density.



- ✓ The government plans to supply 2.14 million new housing units in metropolitan by 2030, and it may seem natural to supply housing in the densely populated metropolitan area for **real estate market stability**,
- ✓ It will **inevitably trigger inter-regional migration across the regions**.
- ✓ It is necessary to monitor impacts of concentrated housing supply in the metropolitan area on national spatial structure.



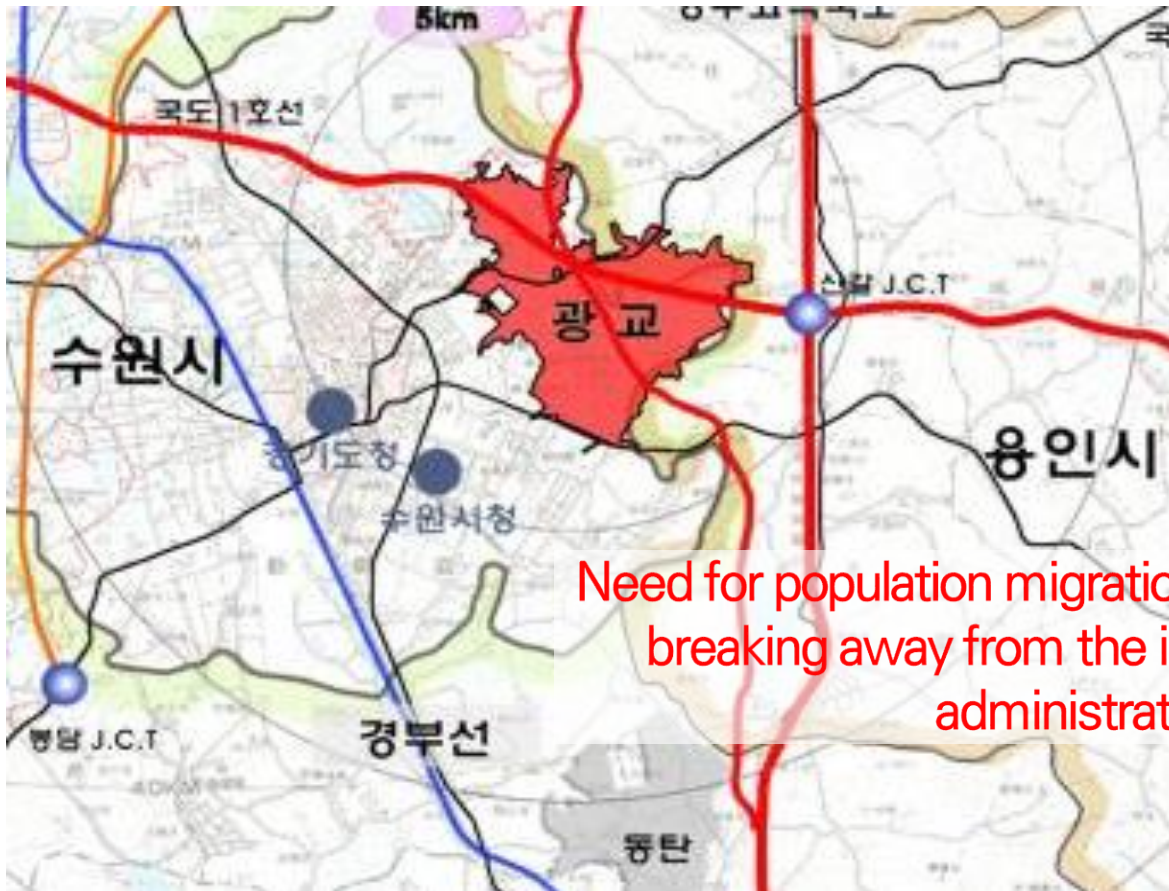
II

Analysis of alternative data to monitor migration flows

Framework

01 | Data issue

New housing district creates new administrative unit, making it impossible to accurately understand population migration with existing administrative district-level data



Need for population migration data at the individual level, breaking away from the inflexible statistical unit of administrative districts

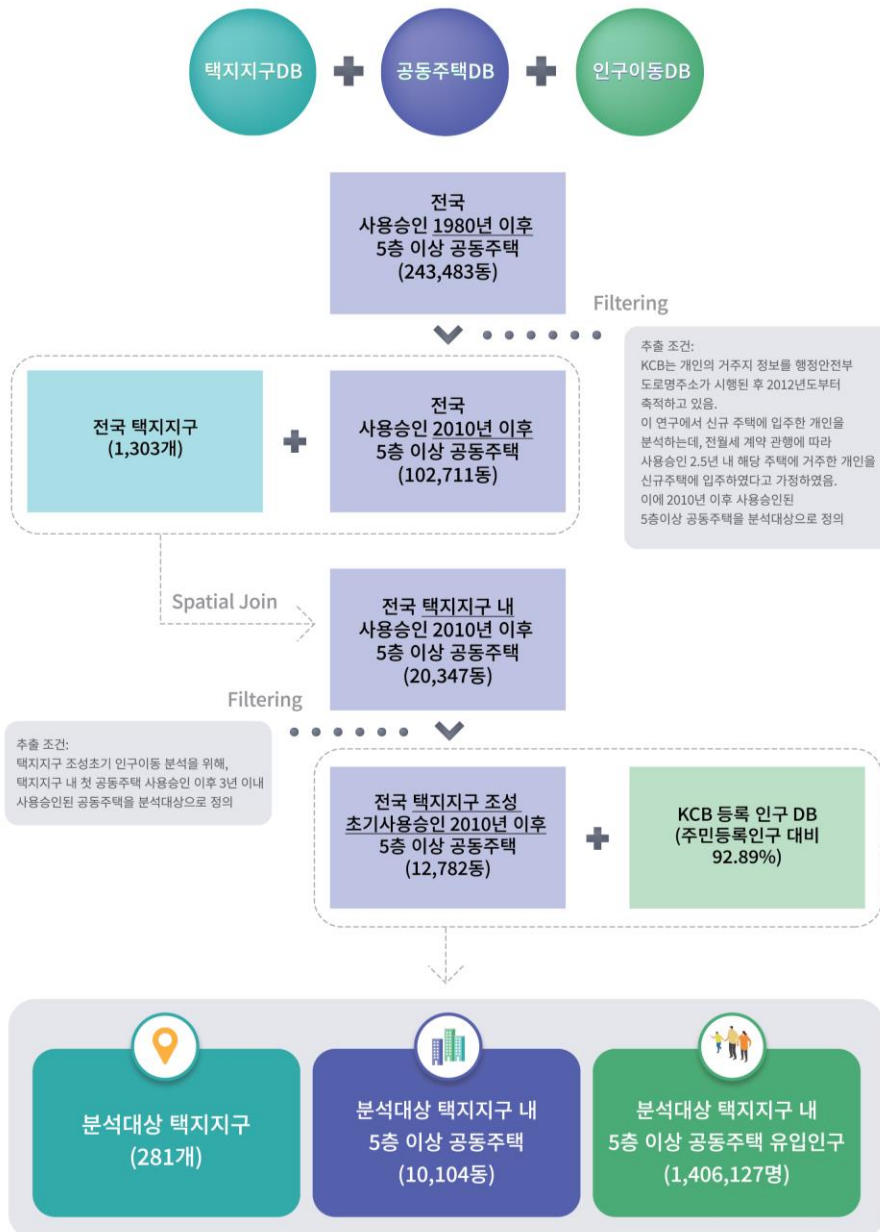
Another data issue is that the statistics used for population movement do not contain information about individual characteristics other than age and gender.



Various characteristics such as commute route to school and work , income level, or types of house ownership would be of great help in building related policies.

Personal attribute information (age, income level, credit card spending level, and residence change history) from Korea Credit Bureau (KCB) is processed according to research purposes as an alternative data.





The boundaries of the land development district, the address information of multi-unit housing (5 floors or more), and the address history information of individuals who have moved to the land development district are converted into spatial information and integrated based on location.



III

Analysis of alternative data to
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Results

01 | Who will live in the new housing districts

New housing supply stimulates the 30s and 40s influx

New houses + jobs show higher proportion of young people moving into region

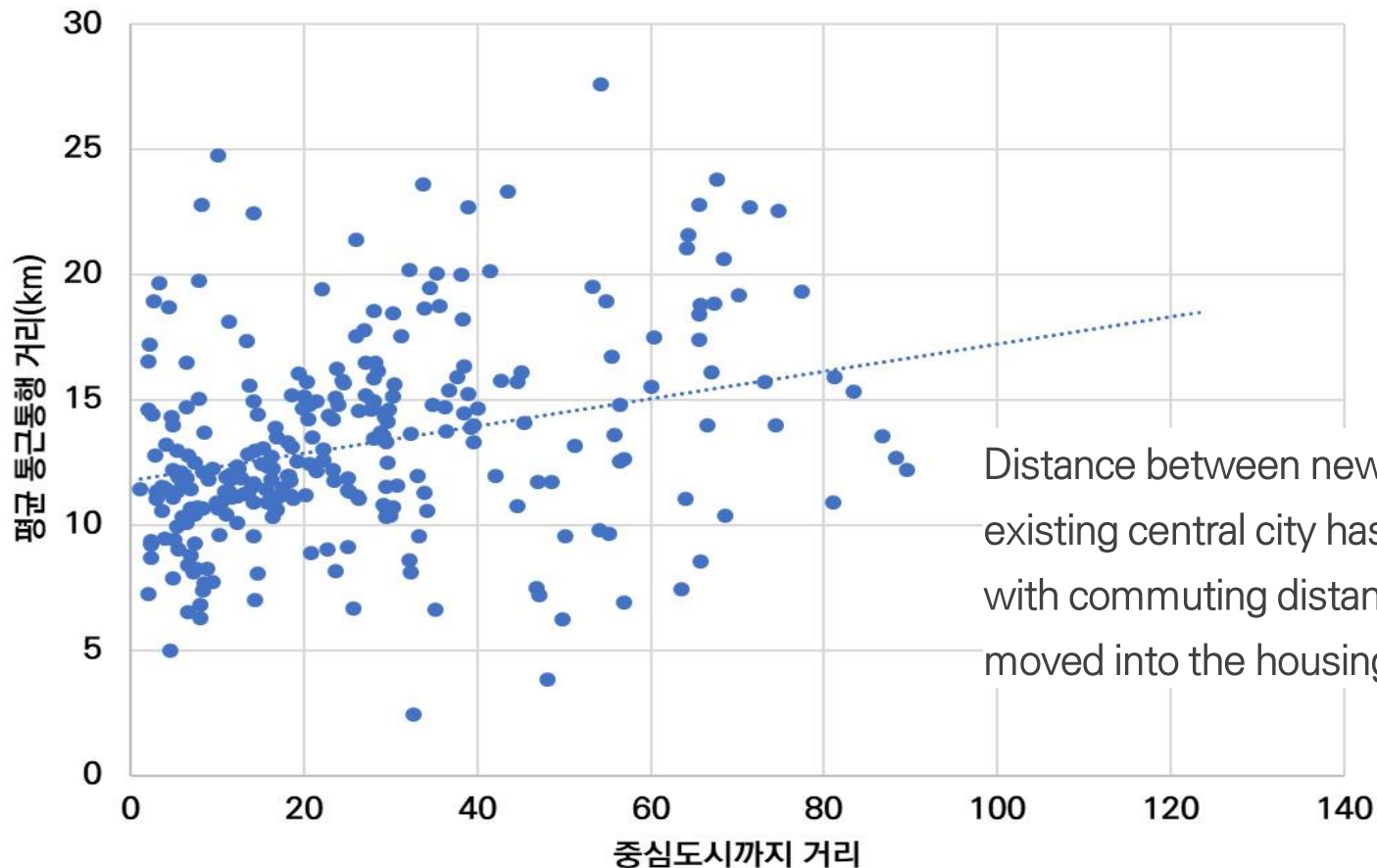
구분		Total	10s	20s	30s and 40s	50s	Over 60s
New housing districts	Individuals	1,406,139	36,850	197,287	839,606	217,390	115,006
	Proportion(%)		2.62%	14.03%	59.71%	15.46%	8.18%
General cases	Individuals	7,441,389	1,417,363	1,482,039	2,795,402	904,514	842,071
	Proportion(%)		19.05%	19.91%	37.57%	12.16%	11.31%

주1: 데이터 구조에 따라 60대의 경우 50/60대와 65세 이상에 65~69세가 중복 집계된 것임

주2: KCB 데이터는 금융 활동이 없는 개인 정보를 수집하지 않아 일부 10대 이하 개인의 정보 누락이 있음

자료: KCB데이터 및 통계청 국내이동통계 자료를 분석하여 저자 작성

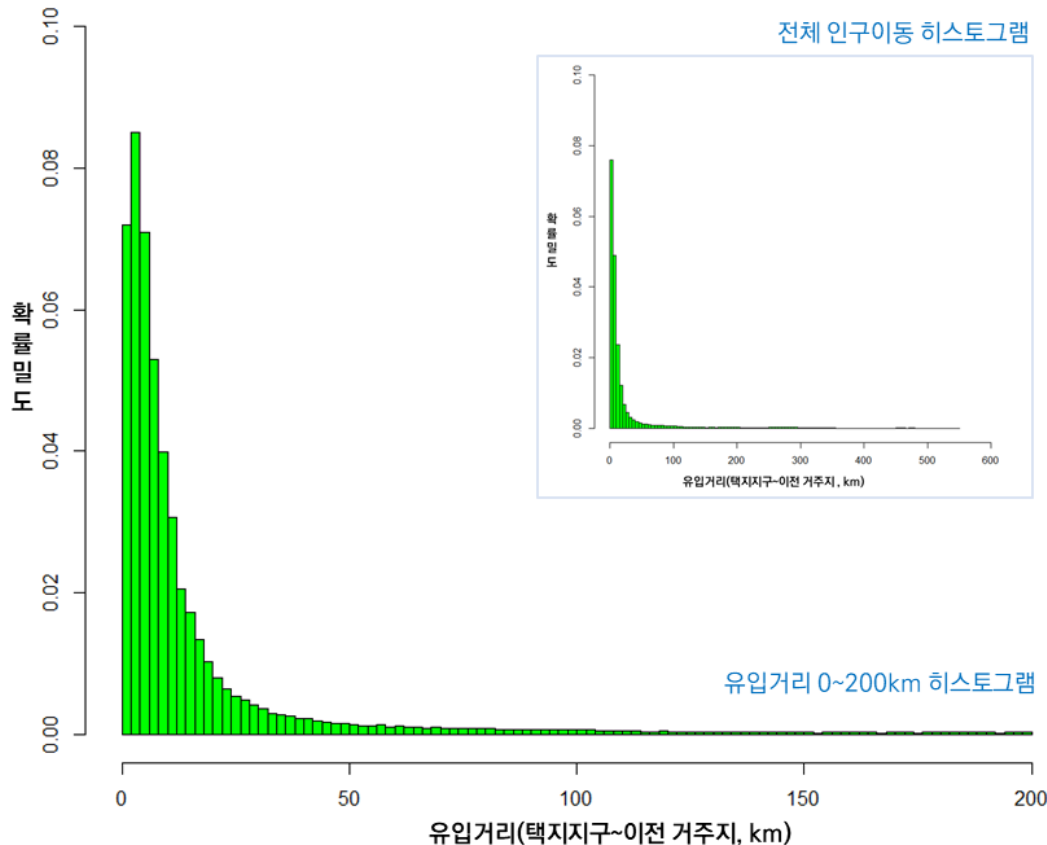
Average commuting distance is 13.3km



02 | Where they are from?

50% of population moved within a 7km radius

Measuring 1.4 million people's migration distance shows...



구분	통계량(km)
Min	0.06
1 quartile	3.3
Median	7.01
Average*	22.64
3 quartile	15.46
Max	549.89

*제주도 택지지구 포함시 평균 이동거리는 20.97km

Different migration patterns by its location and purpose

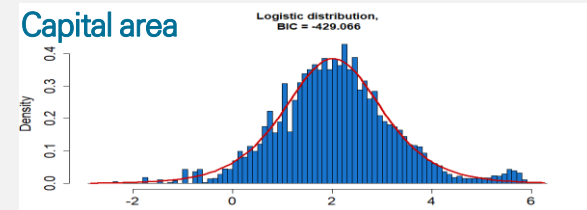
Differences between housing districts in capital area and non-capital area

Inflow distance	Average of cumulative proportion of population inflow distance(%)		
	Capital area(110개)	Non-capital/Innovation city and Multifunctional administrative city(10개)	Non-capital area/General(158개)
4km	34.16	23.83	42.62
8km	55.30	44.68	62.78
12km	67.42	54.92	73.16
16km	74.36	61.66	78.36
20km	79.20	65.49	81.40
24km	82.71	68.24	83.10
28km	85.33	69.38	84.12
32km	87.21	70.16	84.99
36km	88.48	70.93	85.58
40km	89.61	71.75	86.04
50km	91.66	73.29	87.18

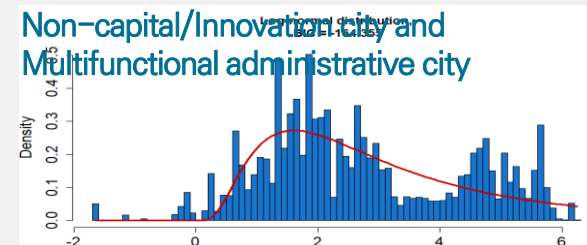
주: 제주도 택지지구 3개 제외

자료: 택지정보시스템택지정보시스템 지구정보와 KCB데이터 자료를 융합·분석하여 저자 작성

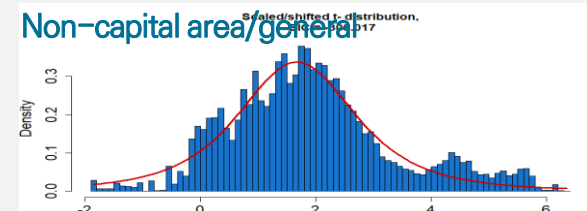
Capital area



Non-capital/Innovation city and Multifunctional administrative city

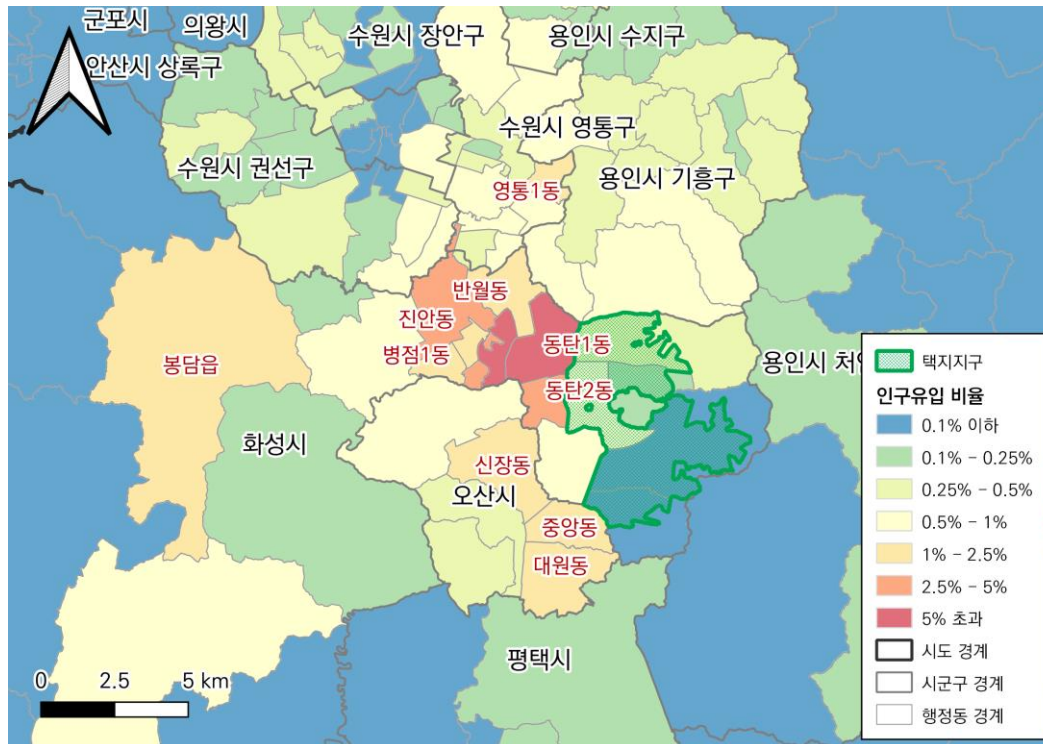


Non-capital area/general



Case of housing district in Hwaseong, Gyeonggi

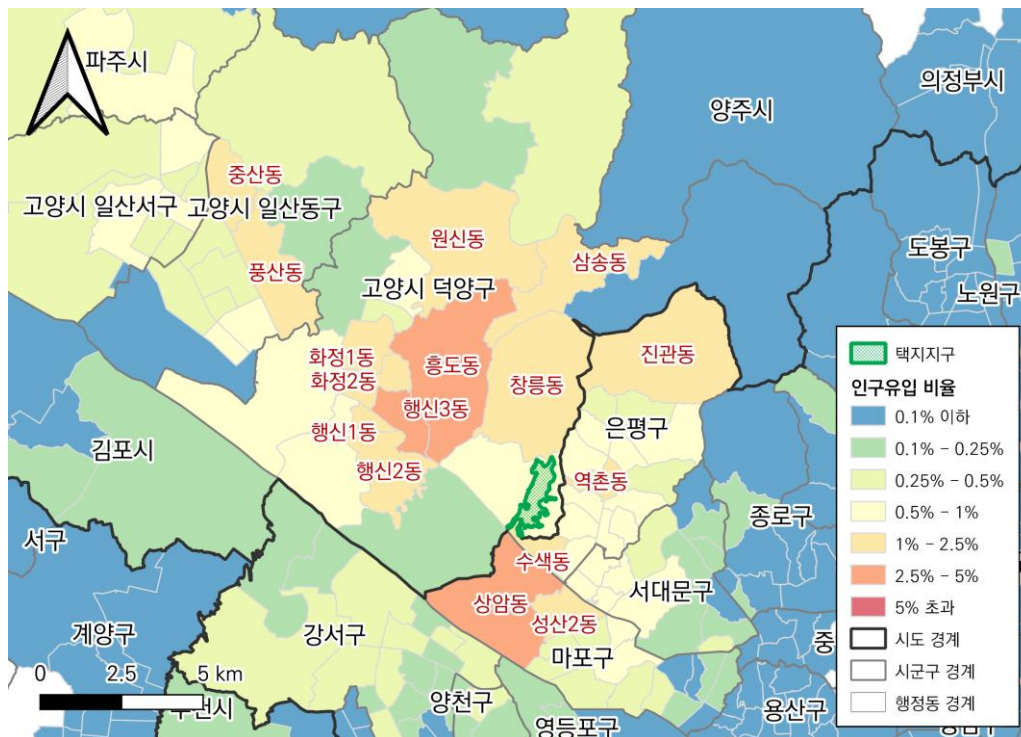
Hwaseong Dongtan is a city where the population is rapidly increasing due to the presence of various large companies such as Samsung Electronics.



Hwaseong Dongtan District stimulates population movement in the southern part of Gyeonggi Province, but has little impact on population movement from Seoul.

Case of housing district in Goyang Hyangdong, Gyeonggi

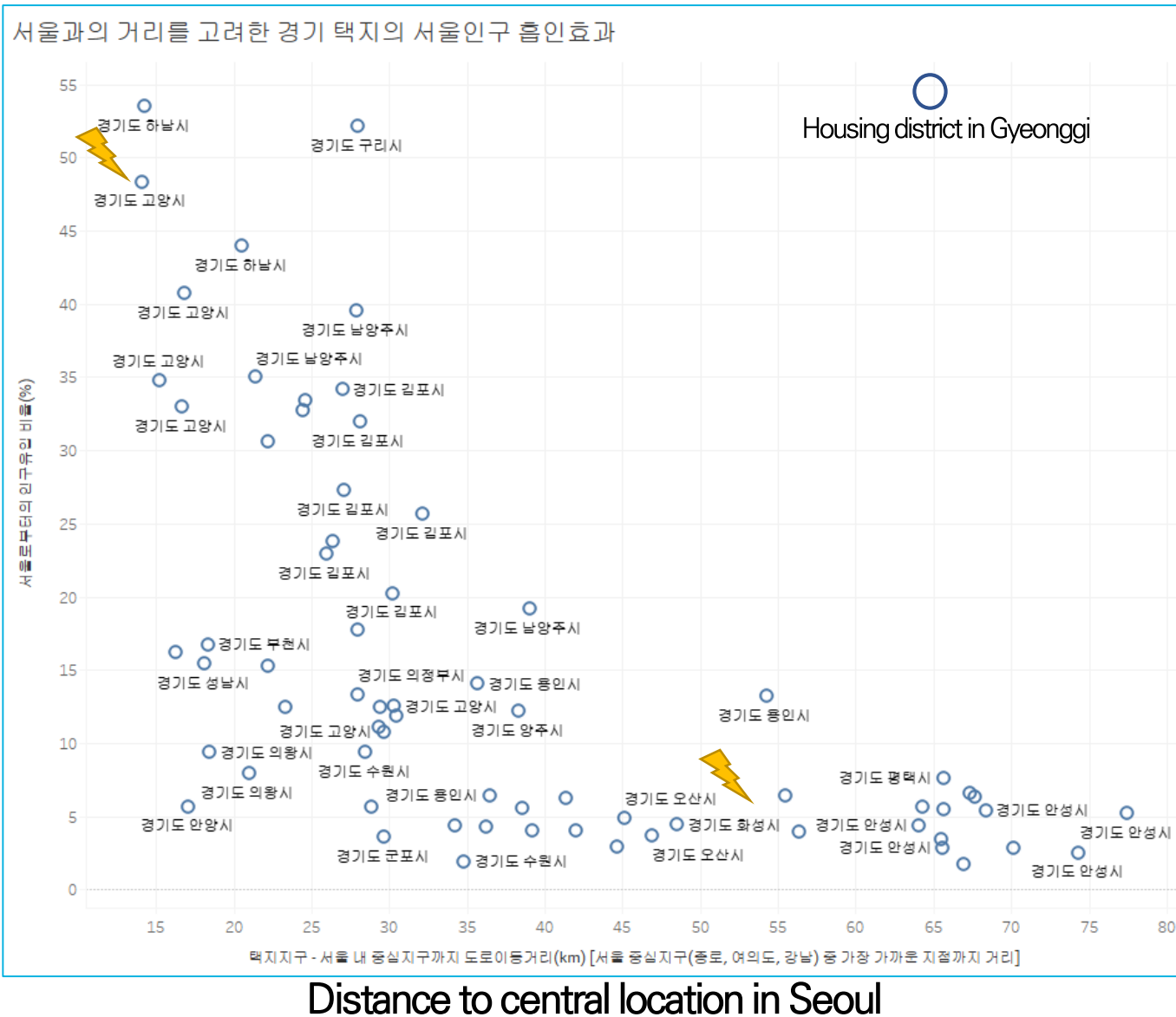
New town in Goyang Hyangdong, Gyeonggi is located Seoul very closely



Confirmed the effect of attracting population from adjacent Seoul!

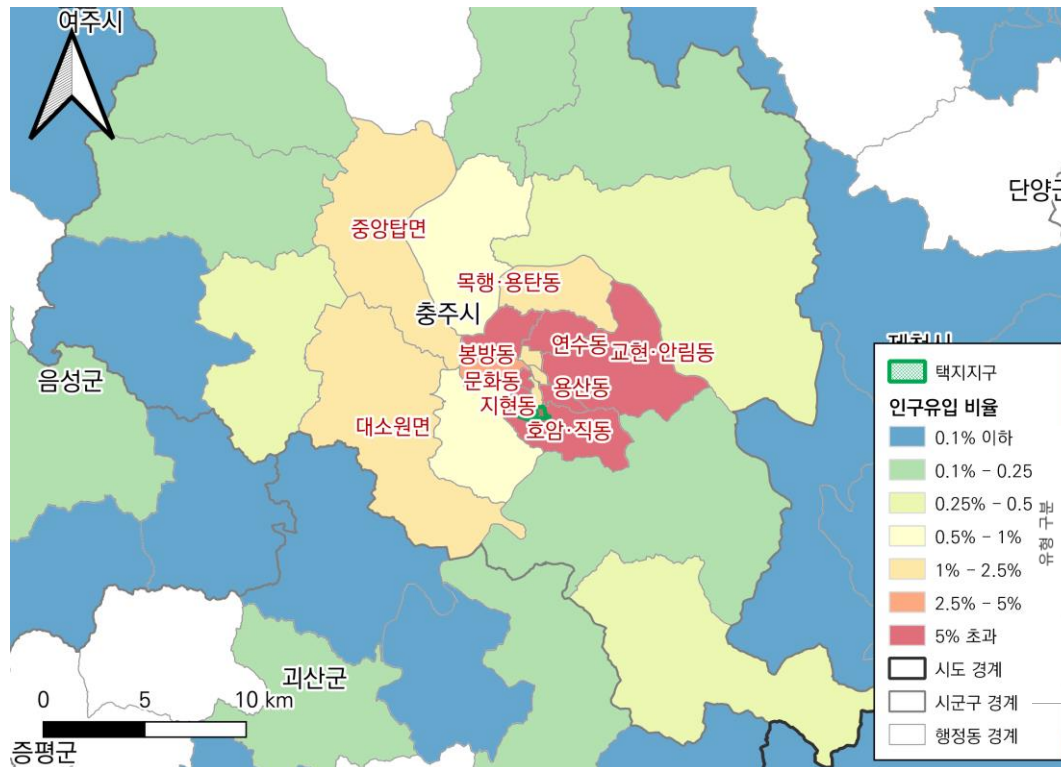
Positive impact on relieving the overcrowding of Seoul, but most of the commuting to Seoul is expected to increase related congestion costs.

Proportion of population inflow from Seoul



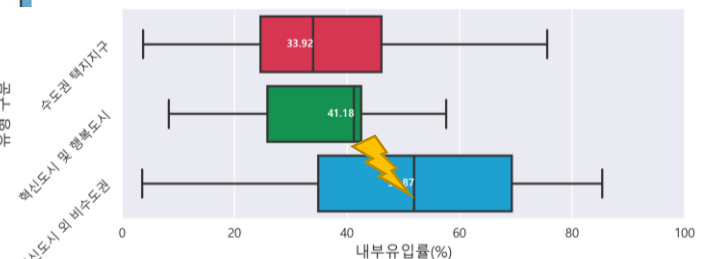
Case of housing district in Chungju, Chungcheongbuk-do

The Hoam district in Chungju shows that the proportion of internal migration overs 85%



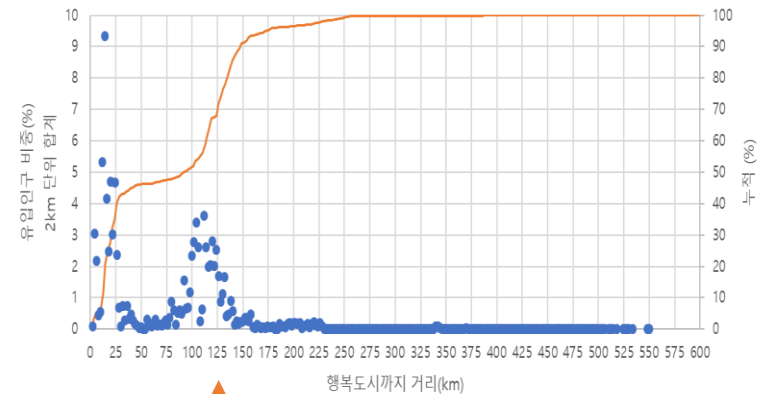
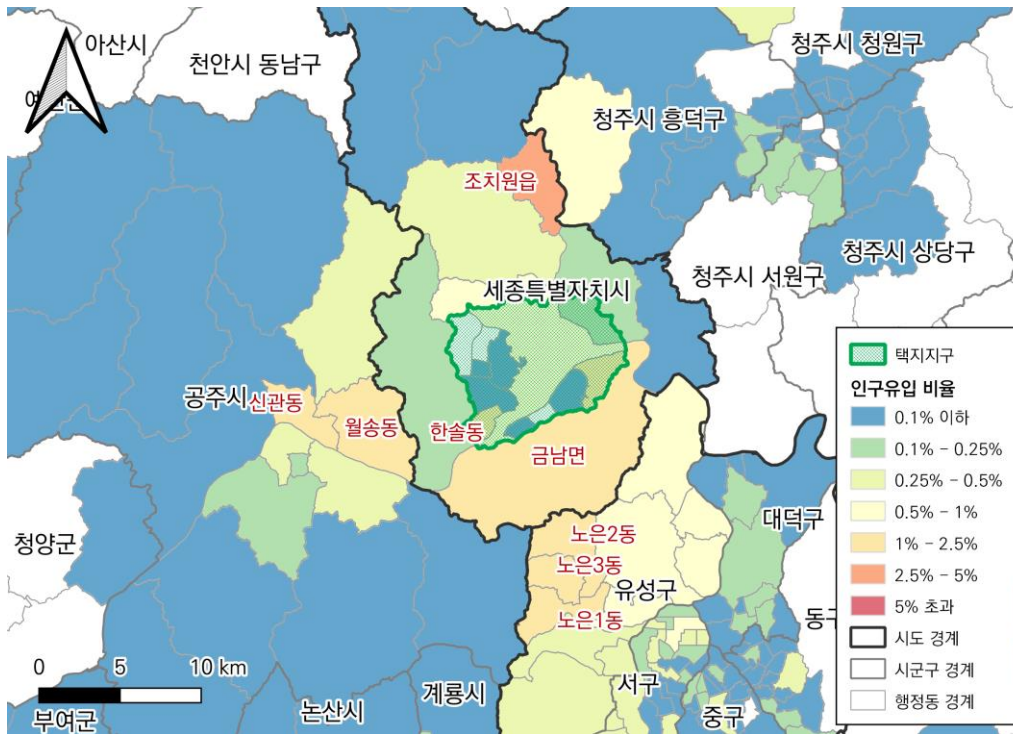
Population movement within the same city or county accounts for the majority in non-capital areas' housing districts

Proportion of internal migration



Case of Sejong(Multifunctional administrative city)

The proportion of migration distance 100km~120km is higher than others



경기도 군포시, 의왕시, 안양시, 과천시, 부천시 등



IV

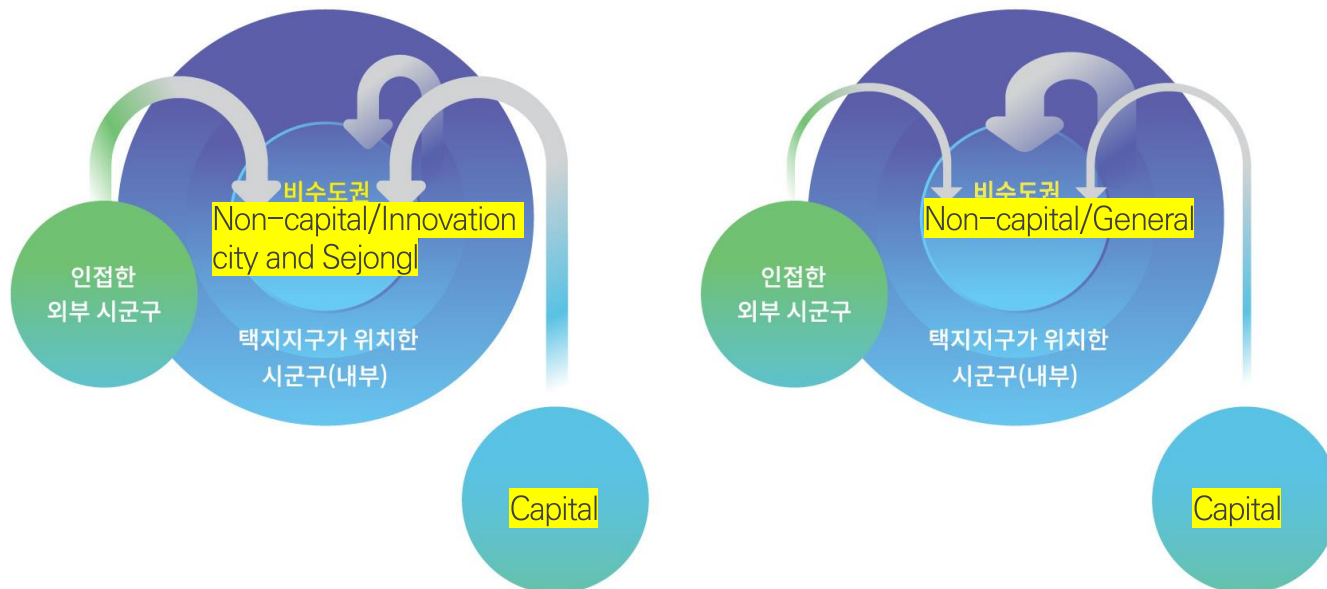
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Discussion & Conclusion

01 | Short Discussion

Comparing the internal inflow rate of housing districts according to its type of 'capital area', 'non-capital area/ innovation city and Sejong(multifunctional administrative city)', and 'non-capital area/general' shows

- (1) The housing districts in 'capital area' has the effect of attracting population from other regions,
- (2) The innovation city and Sejong in 'non-capital area' has the effect of stimulating population movement from long distances (over 20km)
- (3) The general housing districts in 'non-capital area' has the effect of stimulation population migration within the same city or county.



It is necessary to design evidence-based policy with data to adapt to the population decline era

- ✓ At the planning stage, we can comprehensively review the housing supply plans of the central government and local governments to predict areas where the population will increase or decrease due to population movement and support the establishment of necessary plans in advance.
- ✓ At a time when discussions on various metropolitan area plans such as super-regional linkage and mega-cities are becoming active, the data and analysis framework proposed in this study can be used as a useful tool for measuring linkages between.

감사합니다

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