Analysis of Vulnerability Indicators for Community Revitalizing Project

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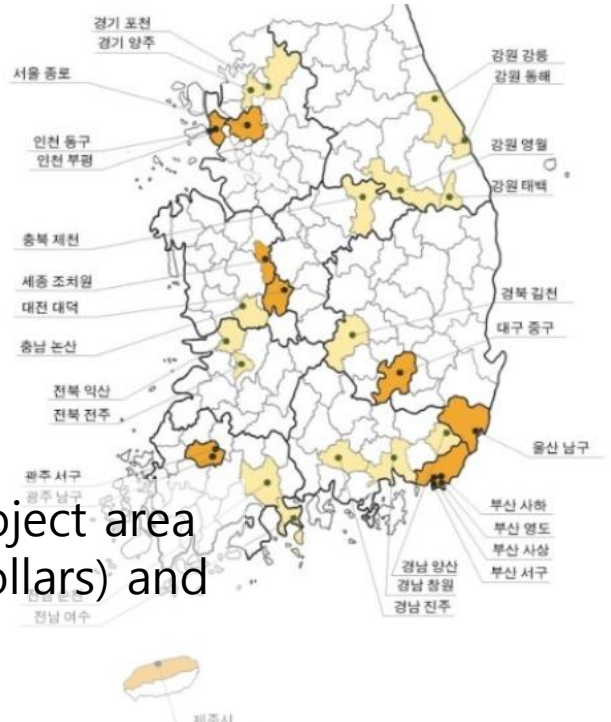
I . Background : Community revitalizing project

- Korea government has been promoting a policy for the revitalizing community environment.
- Residential welfare, public transportation, infrastructure, safety and other such concepts are being emphasized as goals for territorial policies as well
- The study is focused on
  developing vulnerability index
  in terms of measuring quality of life.

Community revitalizing project status

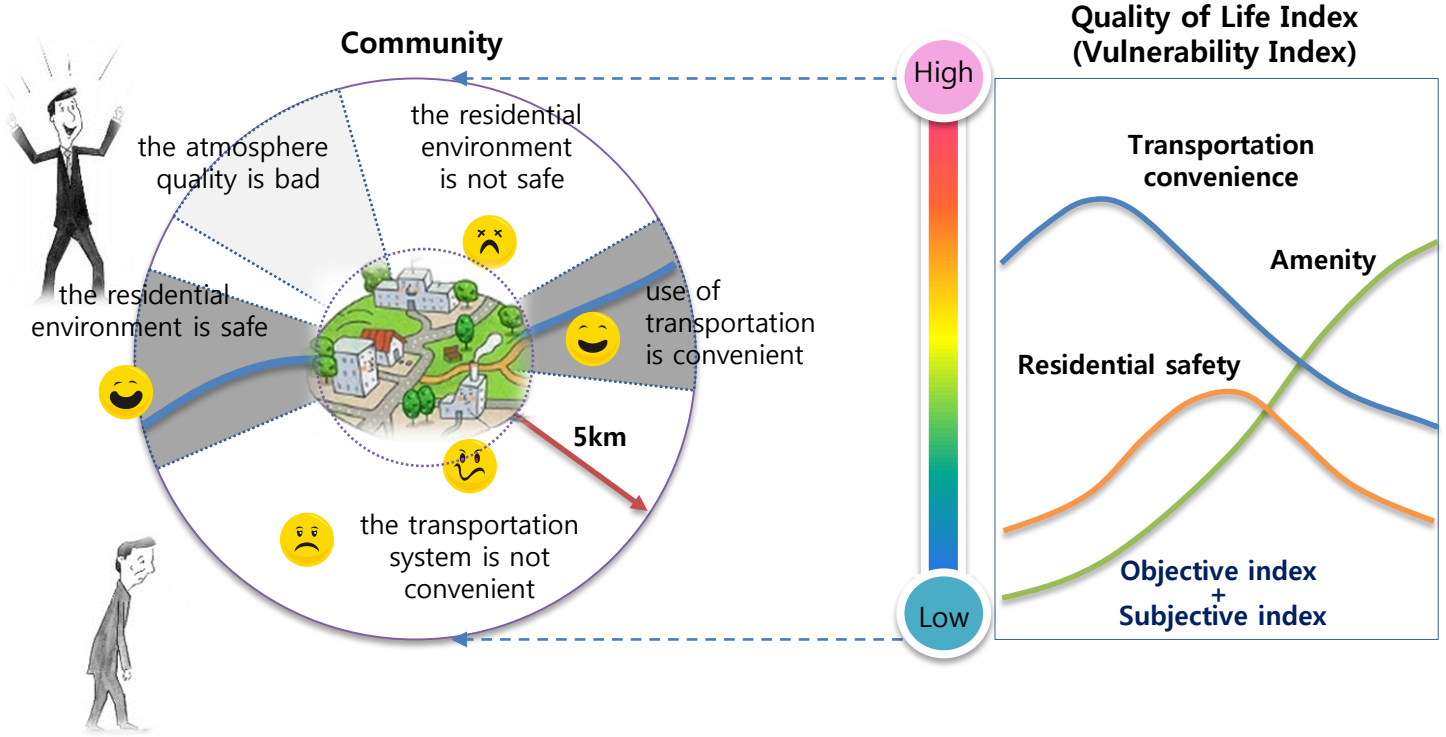


- Using vulnerability index for selecting revitalizing project area
- Government supports 5,500million won(4.8million dollars) and 32billion won in 4years

I . Background : What is Vulnerability of Life Indicators?

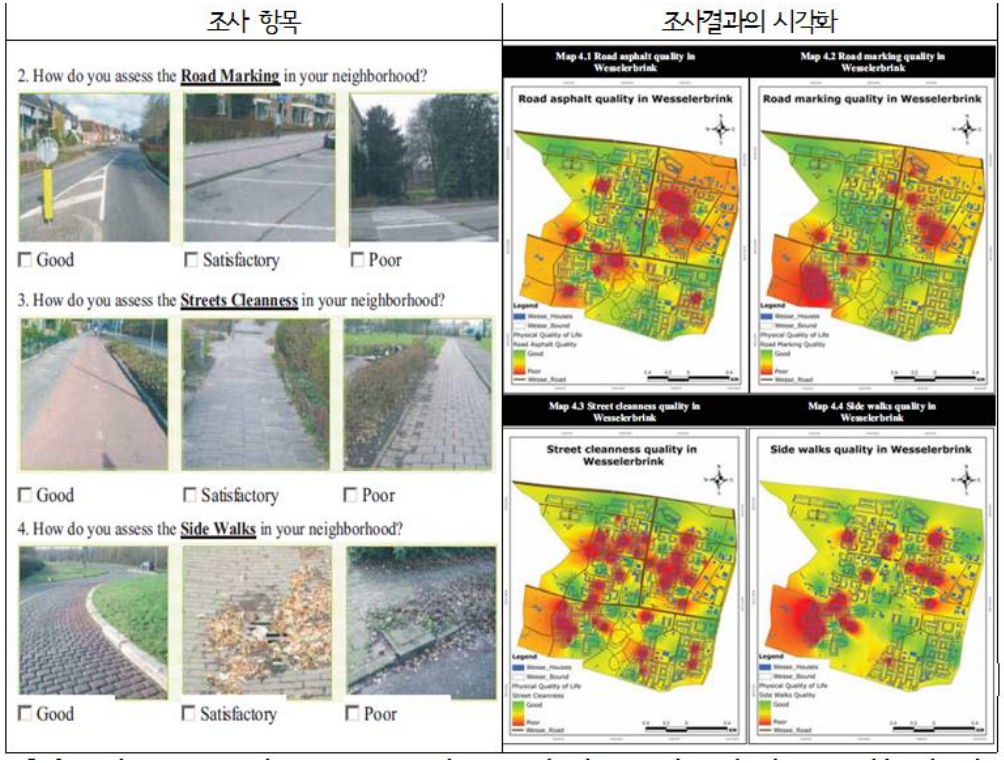
- **Vulnerability of life** Indicators encompasses both objective factors and the subjective perception one has of life environment (e.g. health, infrastructure, living conditions and many others).
- It depends significantly on citizens' needs of life

Ex> How long does it take to the nearest library from home?
How close to the welfare facilities?



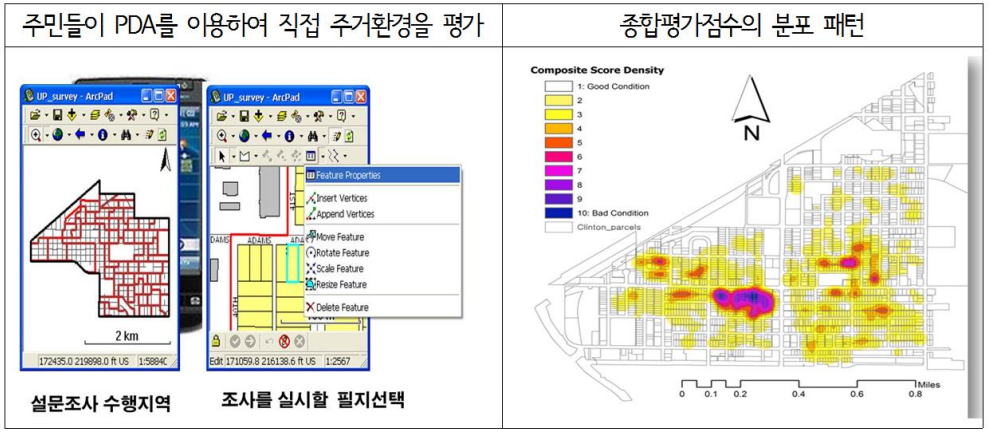
Ⅱ. Methodology : Measuring Vulnerability of Life

- Netherlands : Example of Study on Level of Satisfaction for Evaluation of Quality of life in Urban Areas



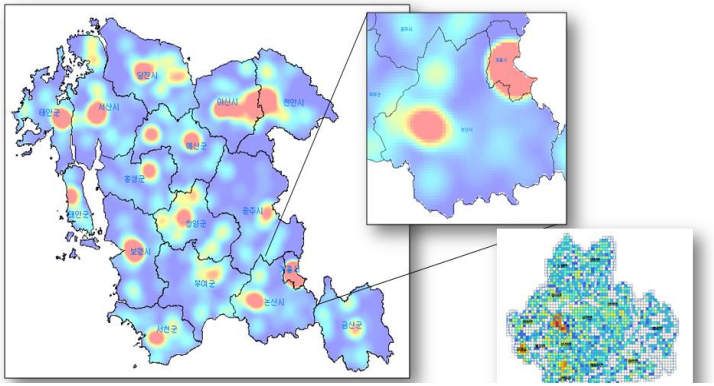
Source: Lalit Kumar Dashora, 2009. Visualization of Urban Quality of Life at Neighborhood Level in Ensched, International Institute for Geo-Information Science and Earth Observation

- The U.S. : Example of Evaluation on Living Environment of Lincoln Neighborhood by the citizens



Source: Nam, Yoon-woo. 2012. Lincoln Community SCAN

- Chungnam : Example of residents' evaluation on accessibility to medical service



Source: Im, Eunsun, et al. 2013.

Ⅱ. Methodology : Measuring VoL(Vulnerability of Life)

- **objective indicators and subjective indicators for estimating vulnerability of life on demand-side**

As is

Gross-quantity Indicators
(administrative boundary index)

•Library(count) + pop(count)

+

+To be

Objective indicators

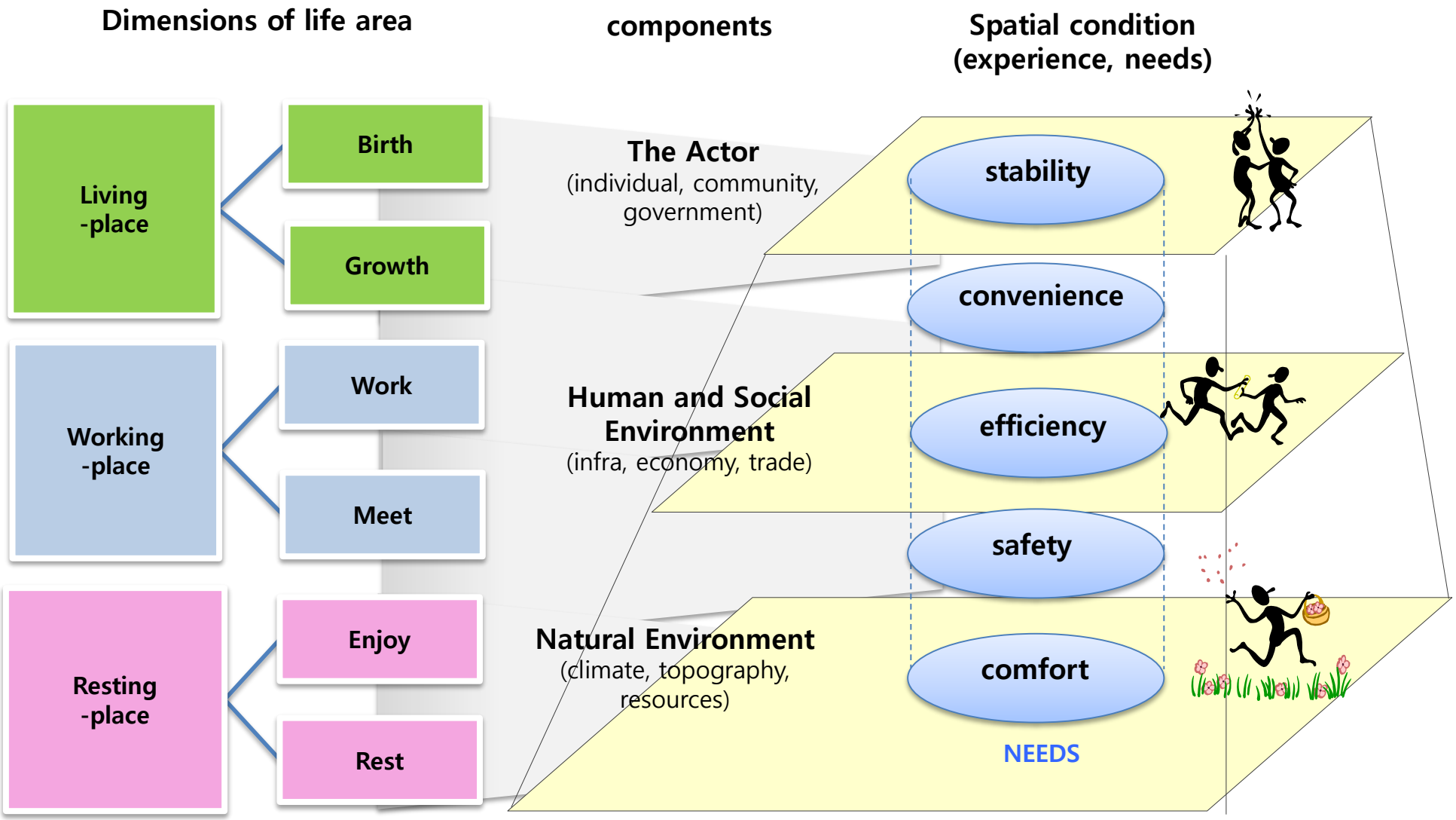
•Accessibility to library
•Population in walking distance of library

+

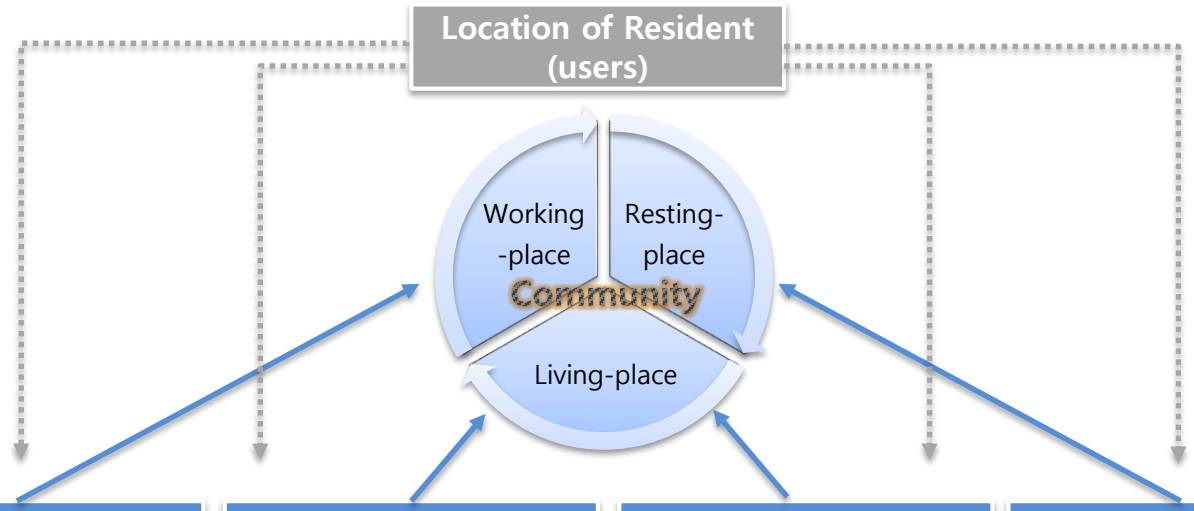
Subjective indicators

•Degree of satisfaction on using library

Ⅱ. Methodology : Framework of VoL indicators



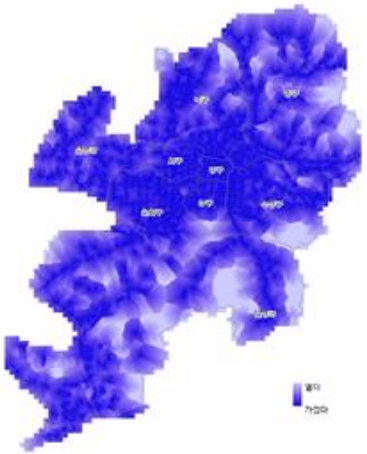
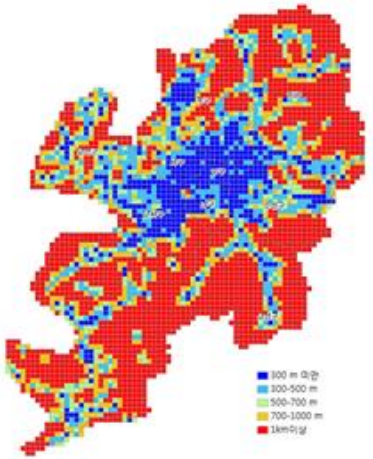
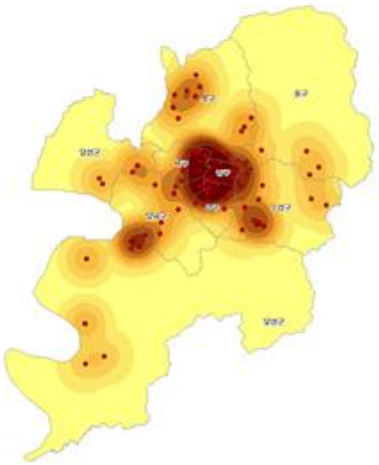
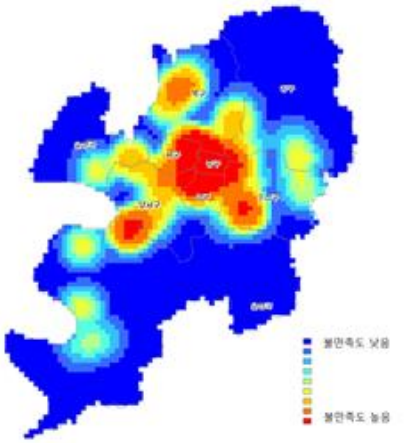
Ⅱ. Methodology : Framework of VoL indicators



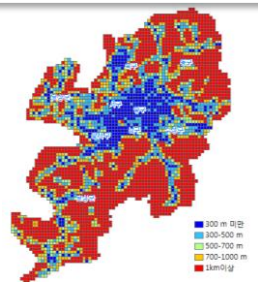
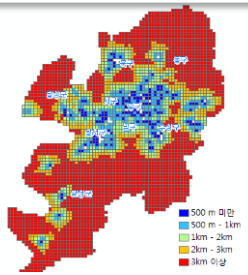
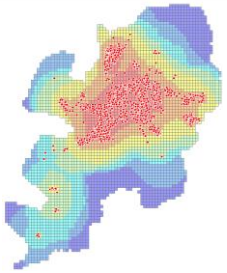
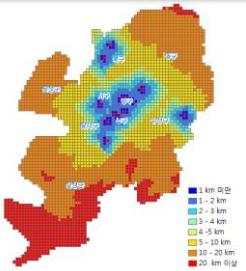
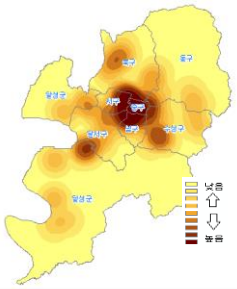
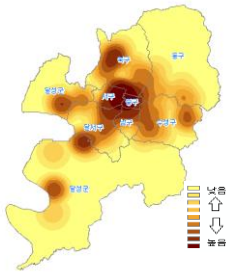
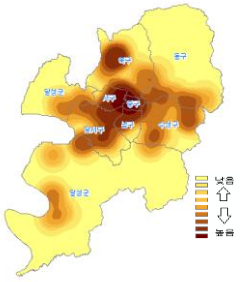
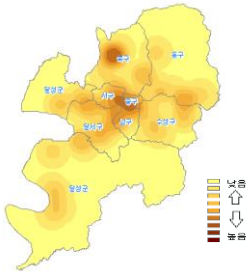
	Public transportation accessibility	Cultural facility use convenience	Welfare facility use convenience	Emergency medical facility accessibility
Objective indicators	Is **bus stop** conveniently close from home?	Is **library** close from home and therefore convenient to use?	Is **childcare facility** close from home and therefore convenient to use?	Is **medical facility** close from home and therefore convenient to use?
Subjective indicators	which regions feel dissatisfaction in **public transportation?**	which regions experience dissatisfaction about **cultural facilities?**	which regions experience dissatisfaction about **welfare facilities?**	which regions feel dissatisfaction about **medical facilities?**

Ⅲ. Results of Analysis

- Measuring Public transportation accessibility

Objective Indicators	① bus stops locations	⇒ ② distance calculation	⇒ ③ Objective indicator(Average distance)
			
Subjective Indicators	① respondent (dissatisfaction in public transportation)	⇒ ② calculation on density (frequency of response)	③ Subjective indicator (level of dissatisfaction in public transportation)
			

Ⅲ. Results of Analysis

Public transportation accessibility	Cultural facility use convenience	Welfare facility use convenience	Emergency medical facility accessibility
Is **bus stop** conveniently close from home?	Is **library** close from home and therefore convenient to use?	Is **childcare facility** close from home and therefore convenient to use?	Is **medical facility** close from home and therefore convenient To use?
			
			
which regions feel dissatisfaction in **public transportation?**	which regions experience dissatisfaction about **cultural facilities?**	which regions experience dissatisfaction about **welfare facilities?**	which regions feel dissatisfaction about **medical facilities?**

OBJECTIVE INDICATOR

SUBJECTIVE INDICATOR

III. Results of Analysis

Degree of satisfaction	Public transportation accessibility (bus stop)	Cultural facility use convenience (library)	Welfare facility use convenience (childcare facility)	Emergency medical facility accessibility
100	~500m	~1.0km	~500m	~2km
90	500m~600m	1.0km~1.2km	500m~600m	2km~3km
80	600m~700m	1.2km~1.4km	600m~700m	3km~4km
70	700m~800m	1.4km~1.6km	700m~800m	4km~5km
60	Over 800m	Over 1.6km	Over 800m	Over 5km

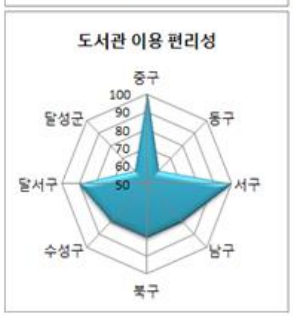
- Evaluating life infrastructure convenience indicators

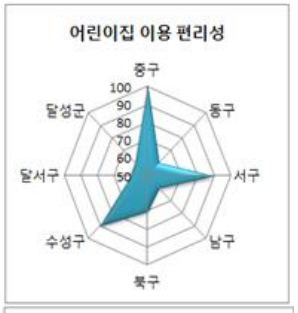
- Calculating convenience of accessibility to cultural facility (e.g. library)

Gu	Dong	Min. distance	Max. distance	Ave. distance
Ex. Nam-gu	A	706.9	1295.8	1051.7
	B	84.1	1639.4	71.1
	C	50.0	1455.1	825.7
	D	194.3	1615.4	895.2
	E	775.8	1597.1	1193.7
	F	1099.9	3656.7	2145.5
	G	52.8	4701.2	1701.8
	H	1023.6	1894.7	1527.9
	I	1452.7	2699.1	2003.3
	J	135.6	4407.8	1615.0
	Average	**465.8**	**2388.0**	**1343.7**

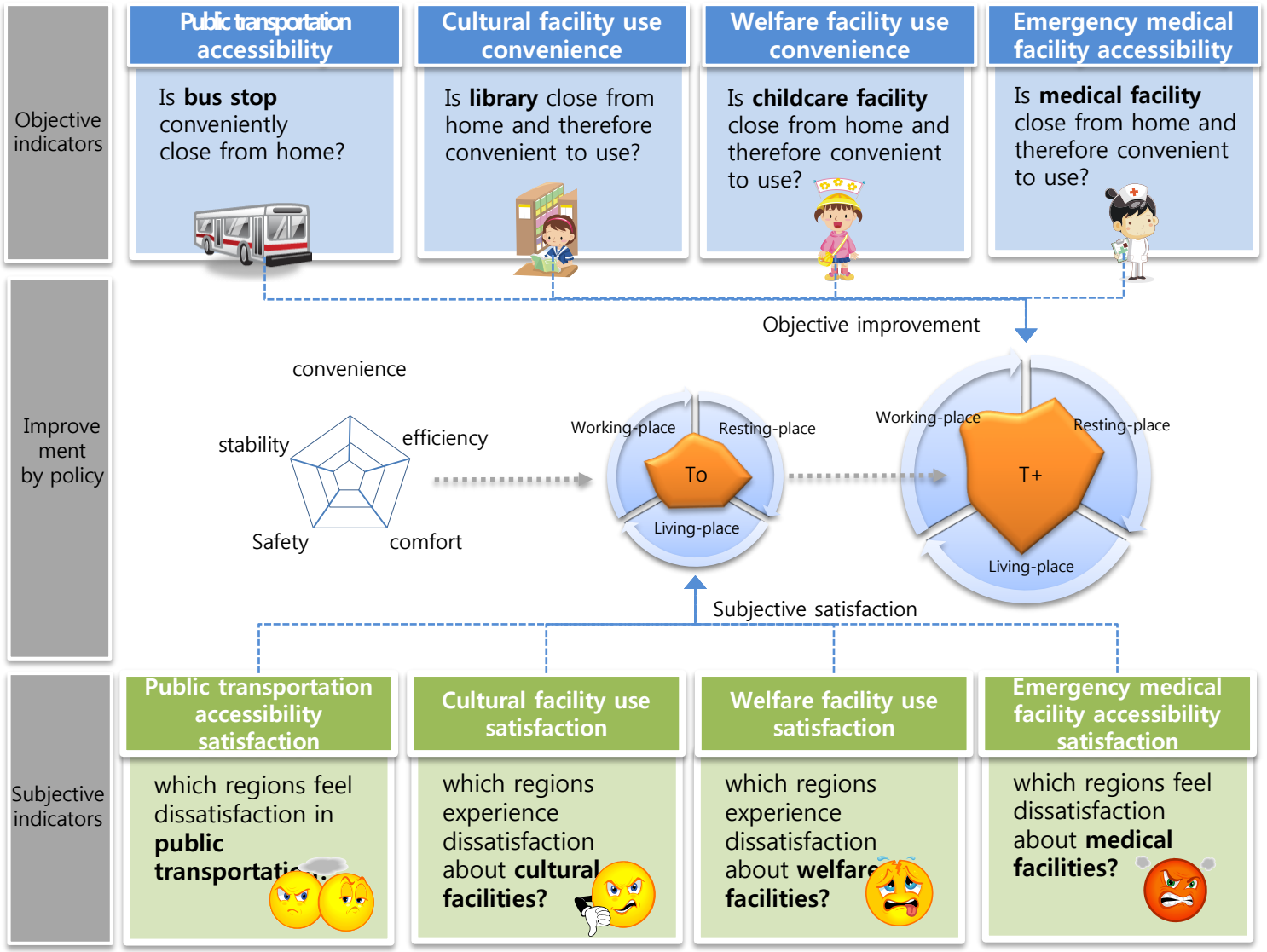
Ⅲ. Results of Analysis

- Objective Indicators(accessibility/convenience)
- Subjective Index(satisfaction)





IV. Implications and Further Research



Ⅳ. Implications and Further Research

- Developing 'Vulnerability of Life Indicators' can be adaptable from the level of community to metropolitan regions

- Verifying to utilizing vulnerability indicators for policy decision making support

- Improvement of sampling method for reliability of subjective indicators

- Developing data collection and transformation for production of the indicators, standardizing, managing metadata, developing visualization methodology, etc.

Thank you for your attention