Healthy Urban Planning in Seoul, Korea

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Background

Rapid Urban Changes in Seoul

- **1953, the year of ending the Korean War**
  - Population: 1,010,416 (Seoul)
  - Per capita national income: 67 US Dollars

- **2013, now**
  - Population: 10,438,000 (Seoul Metropolitan Area) (as of March 2013)
  - Per capita national income: 23,745 US Dollars (as of Year 2012)
Background

Population concentration and density in Seoul

A quarter of the South Korean population resides in Seoul

The highest population density among OECD capital cities

Highest population among OECD capital cities (person/km²)

<table>
<thead>
<tr>
<th>Ranking</th>
<th>City</th>
<th>Population Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Seoul</td>
<td>16700</td>
</tr>
<tr>
<td>6</td>
<td>London</td>
<td>5100</td>
</tr>
<tr>
<td>7</td>
<td>Tokyo</td>
<td>4750</td>
</tr>
<tr>
<td>10</td>
<td>Berlin</td>
<td>3750</td>
</tr>
<tr>
<td>12</td>
<td>Paris</td>
<td>3550</td>
</tr>
<tr>
<td>17</td>
<td>Rome</td>
<td>2950</td>
</tr>
<tr>
<td>20</td>
<td>Toronto</td>
<td>2650</td>
</tr>
<tr>
<td>25</td>
<td>Sydney</td>
<td>2100</td>
</tr>
<tr>
<td>27</td>
<td>New York</td>
<td>2050</td>
</tr>
<tr>
<td>30</td>
<td>Luxembourg</td>
<td>1600</td>
</tr>
</tbody>
</table>

Population concentrations in Seoul and the capital region (1975-2010)

Information source: Korea Research Institutes for Human Settings, 2010
Areas of urban forest in Seoul

- Total area of Seoul: 605.25 km²
- Total park area: 169.79 km²
- Per capita park area: 16 m²
  (Mountains in Seoul are included)
- Per capita urban forest area: 3.05 m²
- WHO recommendation of per capita urban forest area: 9 m²
- Other countries’ per capita urban forest area:
  - Paris 13 m²; New York 23 m², London 7 m²

Per capita Urban Forest Area
In Korea
(㎡/person, 2009)

<table>
<thead>
<tr>
<th>City</th>
<th>Per capita Urban Forest Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeonbuk</td>
<td>16.41</td>
</tr>
<tr>
<td>Kangwon</td>
<td>12.71</td>
</tr>
<tr>
<td>Pusan</td>
<td>12.36</td>
</tr>
<tr>
<td>Jeonnam</td>
<td>11.70</td>
</tr>
<tr>
<td>Kwangju</td>
<td>11.36</td>
</tr>
<tr>
<td>Chungbuk</td>
<td>10.55</td>
</tr>
<tr>
<td>Incheon</td>
<td>10.34</td>
</tr>
<tr>
<td>Ulsan</td>
<td>9.74</td>
</tr>
<tr>
<td>Kyeongbuk</td>
<td>9.59</td>
</tr>
<tr>
<td>Daejeon</td>
<td>8.92</td>
</tr>
<tr>
<td>Chungnam</td>
<td>8.16</td>
</tr>
<tr>
<td>Gyeonggi</td>
<td>7.35</td>
</tr>
<tr>
<td>Kyeongnam</td>
<td>6.39</td>
</tr>
<tr>
<td>Jeju</td>
<td>5.86</td>
</tr>
<tr>
<td>Daegu</td>
<td>5.27</td>
</tr>
<tr>
<td>Seoul</td>
<td>3.05</td>
</tr>
</tbody>
</table>
Health Risks in Seoul

Prevalence of Obesity by Gender

- Obesity rate: adults over 19 years old: average 30.8%
  (male 36.3%; female 24.8%)
  (30s~40s male 42.3%; 60s~70s female 43.3%)

Prevalence of Obesity by groups of age and gender
### Prevalence of Metabolic Syndrome

**Korean National Health and Nutrition Examination Survey (KNHANES) 2007-2010**

- **Adults over 30s**: Male 31.9%; Female 25.6; Total Average 28.8%

- **Risk of Metabolic Syndrome by gender and professions**: Groups with highest risk
  - Female: House-wives
  - Male: Office workers

<table>
<thead>
<tr>
<th></th>
<th>Prevalence rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>31.9</td>
</tr>
<tr>
<td>Female</td>
<td>25.6</td>
</tr>
<tr>
<td>Total</td>
<td>28.8</td>
</tr>
</tbody>
</table>
• **Prevalence rate of recommended physical activities of moderate intensity, including walking, decreases every year**

• **Smoking and alcohol use are increasing, whereas physical activity is decreasing and nutrition is getting unhealthy at the same time during 2008-2010.**

2010 Korean National Health and Nutrition Examination Survey (KNHANES)
Health Risks in Seoul

Changes in adults' walking amount according to the recommendation of 30 minutes per day

Korean National Health and Nutrition Examination Survey (KNHANES)

Between 2005 and 2010, walking decreased by 19.6%
Changes of urban planning paradigms in Seoul

• During the compressed urban growth period, urban planning in Seoul contributed to the fast provision of housing, roads, water supply, sewage treatment, and other urban infrastructures.
• Conserving natural environment and cultural heritages tended to be a relatively lower priority to pro-development projects.
Urban Planning in Seoul

Changes of urban planning paradigms in Seoul, around late 1990s

New Constructions
Renewal, Redevelopment

Pro-growth, growth-focused developments

Productive values
Business, economic values efficiency, top-down, elite
Automobile- oriented
Physical environment

Regenerations

Smart growth, or growth managements
Balancing, redistribution of wealth welfare
Cultural values social appropriateness, bottom-up, community
Pedestrian-oriented
Physical and Social environments

“Sustainable Development”
Healthy Urban Planning in Seoul

Model projects pursuing the quality of life and livability in Seoul


After the Korea war, the stream and environs

1960s and 70s, new constructions, covering the stream

2005. Restoration completed

1980s, 90s. Crowdedness with cars

sources: http://naver.com
Healthy Urban Planning in Seoul

Model projects pursuing the quality of life, livability in Seoul

Street improvements for walking and biking

- Re-arranging street environment for pedestrians
- Providing bike lanes
- Participatory designs, community actions
- About 610,000 USD for bike path budget
- A case of Mangwon-ro bike path, 2007
Healthy Urban Planning in Seoul

Model projects pursuing the quality of life, livability in Seoul

Landscape agreements, a participatory neighborhood design case (2009)

- From top-down redevelopment approaches
- To bottom-up, participatory neighborhood improvement approaches
## WHO’s Healthy Cities Program in Seoul

### Representative model projects of 2010

- **Healthy Living Environment Projects**  
  (40.7% of the total Healthy Cities Projects)

- **Healthy Lifestyle Projects** (18.6%)

<table>
<thead>
<tr>
<th>Items</th>
<th>Healthy Cities Projects</th>
<th>Amounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>Healthy cities application and approval</td>
<td>3(5.1%)</td>
</tr>
<tr>
<td>Infra</td>
<td>Healthy cities networks, preparation for works</td>
<td>8(13.6%)</td>
</tr>
<tr>
<td></td>
<td>Healthy cities profiles</td>
<td></td>
</tr>
<tr>
<td>Healthy life styles</td>
<td>Health promotion: reducing smoking, alcohol, encouraging physical activities, nutrition</td>
<td>11(18.6%)</td>
</tr>
<tr>
<td>Healthy living environment</td>
<td>Residential neighborhoods, schools, work places, hospitals, restaurants, markets etc</td>
<td>24(40.7%)</td>
</tr>
<tr>
<td>Green transportation</td>
<td>Healthy transportation, green transportation, road safety</td>
<td>6(10.2%)</td>
</tr>
<tr>
<td></td>
<td>Green industry</td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td>Minority groups, handicapped,</td>
<td>3(5.1%)</td>
</tr>
<tr>
<td>others</td>
<td>others</td>
<td>4(6.8%)</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>59(100%)</td>
</tr>
</tbody>
</table>

Source: 2010 Healthy Cities Report, Korea Ministry of Public Health and Welfare

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**Health education**  
**Spatial improvement**  
Appx. 1,800,000 USD/year 2010
1) Healthy Living Environment projects of 2010

- Representative model project of Healthy Cities in Seoul
- Settings: Schools, work places, apartment complexes, shopping centers, traditional markets, residential neighborhoods, hospitals
- Goal: To improve health by improving environments
- Coordinator: Local Public Health Center
- In 2010, about 30 model projects were implemented
- In 2010, schools were the major project setting with 10 cases (33%)

Source: 2010 Healthy Cities Report, Korea Ministry of Public Health and Welfare
2) Healthy Living Environment projects of 2010:

The Case of Dobonggu-District

Provision of neighborhood exercise facilities

Neighborhood walking circles

Health education through forums (2010)

Preparation – Health Education Programs – Capacity Building – Improvement of Environment - Evaluation

source: http://h-cities.dobong.go.kr
3) Healthy Living Environment projects of 2010:

The Case of Gangdonggu-District: urban green way routes

Establishment of urban green way routes

Encouraging physical activities

Supporting Walking clubs

Award Winning Project: 2012, 5th WHO West Pacific Healthy Cities Alliance Conference, Improving Physical Activities Section

source: http://www.gangdong.go.kr
4) Healthy Living Environment projects of 2010: 
**The Case of Gangnamgu-District : Ubiquitous Health Park Project**

- RFID (Radio Frequency Identification) installed along the Yanggaaechon stream of 3.75 Km. U-health Management system established every 300 m in the park along the stream (2010. October)
- Gangmangu-District Public Health Center and the visitor center of the Yanggaaechon Stream : U-Health Centers, RFID environment
- With RFID cards, residents get health checks, physical activity consultations, nutrition advices

Photo source: http://naver.com
5) Healthy Living Environment projects of 2012:

The Model Project of Health-Friendly Neighborhood in Seoul: Yechon Village

2 model projects in 2012; 50 model projects in 2014, supported by the City of Seoul

Survey of Local Health Behaviors and Needs
Residents’ participation in stopping smoke and alcohol
Female Health Education for Walking and Nutrition
Village Health Festival involving residents and health professionals
Review of Healthy Cities Programs in Seoul

Efforts for Residents’ Health in Neighborhoods

- Positive collaboration between the City of Seoul and the District Offices
- Various projects and programs targeting to improve both residents’ health conditions and neighborhoods’ living environment
- The model cases of the District Offices of Dobonggu, Gangdonggu, and Gangmangu, represent different merits respectively, and provide positive possibilities for further integrations.

Effective Integration of urban planning and public health

- For residents’ sustainable health promotion, more effective integration of urban planning and public health components is needed.
- To supplement the aspects of impacting the general urban planning policies in Seoul, research-based, interdisciplinary approach to healthy urban planning is necessary, too.
A Collaboration Research between urban planning and public health in 2011

Objective: to examine the relationships among the environmental characteristics of residential neighborhoods, residents’ actual walking activities, and residents’ health indicators in two contrasting residential areas in Seoul, Korea.

The goal is to draw meaningful implications and practical guidelines for more walkable neighborhood design.
# Site Description

## Characteristics of Two contrasting Neighborhoods: Haeng-dang and Il-san

<table>
<thead>
<tr>
<th></th>
<th>Haeng-dang</th>
<th>Il-san</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site area (km²)</td>
<td>1.42</td>
<td>6.35</td>
</tr>
<tr>
<td>Year of completion of development</td>
<td>1999</td>
<td>1991</td>
</tr>
<tr>
<td>Development method</td>
<td>Old Area Urban redevelopment</td>
<td>Suburban new town development</td>
</tr>
<tr>
<td>Population density (people/km²)</td>
<td>43,569</td>
<td>16,702</td>
</tr>
<tr>
<td>Average slope (angle of inclination)</td>
<td>More than 8 degree</td>
<td>0</td>
</tr>
<tr>
<td>Housing Type</td>
<td>High-rise apartments and detached houses (mixed)</td>
<td>High-rise apartment and detached houses (separated)</td>
</tr>
<tr>
<td>Neighborhood street pattern</td>
<td>Irregular pattern, loop</td>
<td>Grid</td>
</tr>
<tr>
<td>Type of pedestrian space</td>
<td>Sidewalks (partly installed)</td>
<td>Sidewalks and pedestrian zones</td>
</tr>
<tr>
<td>Main facility which motivates</td>
<td>Shopping centers, parks</td>
<td>Shopping centers, large parks</td>
</tr>
</tbody>
</table>
### Neighborhood environment for walkability evaluation

<table>
<thead>
<tr>
<th>Environmental elements</th>
<th>Haeng-dang</th>
<th>Il-san</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive factors</td>
<td>Neighborhood parks</td>
<td>Large lake-side promenades, neighborhood parks</td>
</tr>
<tr>
<td>Negative factors</td>
<td>Large apartment complex cutting off street network</td>
<td>-</td>
</tr>
<tr>
<td>Level of walkability</td>
<td>Average</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Street environment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive factors</td>
<td>-</td>
<td>Wide even sidewalks, pedestrian zone, abundant street trees</td>
</tr>
<tr>
<td>Negative factors</td>
<td>Slope of street, monotonous appearance of retaining wall of apartment complex</td>
<td>-</td>
</tr>
<tr>
<td>Level of walkability</td>
<td>poor</td>
<td>good</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Less walkable</strong></td>
<td><strong>More walkable</strong></td>
</tr>
</tbody>
</table>
1. Health education was found effective. After health education, housewives walked farther beyond 800 meters, a conventional neighborhood-unit boundary. The rate of farther walking, after health education, increased more in the less walkable neighborhood, although the total walking amount was still higher in the more walkable neighborhood.

2. Accessibility and connectivity of good-quality streets and parks are significant for longer and farther neighborhood walking.

3. Balance between privacy and permeability within the apartment housing complexes is important to encourage walking activities.

4. Connecting attractive main commercial facilities and public places to pleasant neighborhood street environments is necessary to increase residents’ total walking amounts.
Notes For the Department of Health and Welfare

▪ **Key point:**
Physical quality of residential environment and health education influence one another, and both have impacts on residents’ physical activities. Health issues require neighborhood approaches.

▪ **Policy reference:**
Health education programs at the neighborhood unit level must consider

   i) the life cycles of each target group in the neighborhood;
   ii) hindering and encouraging factors of neighborhood walking;
   iii) cooperation with urban planners from the development stage;
   iv) the physical characteristics of pedestrian environments;
   v) comprehensive evaluation of local parks and open spaces.
Notes For the Department of Public Parks and Greeneries

▪ **Key point:**
Location, accessibility, and attractiveness of parks, among others, have direct impact on the promotion of residents’ physical activities. Housewives walk longer and farther to go to good quality parks.

▪ **Policy reference:**
Current evaluation methods for parks, mostly based on measuring only the number of parks, ratio of park areas, or frequency of utilizing park facilities, need to be modified.

In executing Health Impact Assessment or Health Equity Assessment, measuring the influence of parks in a more integrated and balanced ways needs to be provided.

Location and accessibility to the parks need to be re-assessed, considering current qualities and conditions of neighborhood parks in Seoul.
Notes For the Department of Roads and Transportation

**Key point:**
Street connectivity, accessibility, and conveniences are critical elements that have impact on outdoor physical activity. These elements are significant indicators of measuring health equities in local environments.

**Policy reference:**
Neighborhood streets need to be reviewed in terms of how they provide quality environment. Regional priorities need to be established, reflecting street hierarchies for walking and other physical activities in the neighborhoods.

Street audit system needs to be established to review the quality of pedestrian environment, which reflects specific characteristics, goals, and preferences of pedestrians.

Street improvement projects need to be based on a new audit system that reflects health promotion issues.