Planning and quality of life: the case of Canberra, Australia

Hitomi Nakanishi
University of Canberra, Australia
Centennial Canberra - Past, Present and Future Workshop, 20 August 2013
Background

- Enhancing quality of life is the most important challenge and role of urban governance (OECD, 2000)
- Higher level of sustainable development = higher level of well-being, happiness, and thus of quality of life
- Changing urban form and the built environment are associated with lifestyle and behavioural change that affect quality of life

How planning affect resident’s quality of life and sustainability?
Aims

• Relationship between planning and QoL in Canberra?
• Apply integrated method of measuring QoL
• Is there a difference in QoL due to planning concepts?
• Factors that affect residents’ priorities in QoL in Canberra?
Assessing Quality of Life: Framework

Planning → Urban Form/the built environ’t → Output → Outcome → Overall QoL

QoLIs Satisifcation By Dimension
Density by neighbourhood type

<table>
<thead>
<tr>
<th></th>
<th>Garden City (North Canberra, South Canberra)</th>
<th>Y Plan (Belconnen, Weston Creek, Tuggeranong, Woden)</th>
<th>New Urbanism (Gungahlin)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross population density (person/ha)</td>
<td>7.85</td>
<td>13.54</td>
<td>15.61</td>
</tr>
<tr>
<td>Net residential density (person/ha residential land)</td>
<td>30.18</td>
<td>46.93</td>
<td>47.31</td>
</tr>
<tr>
<td>Open space density (person/ha open space)</td>
<td>156.92</td>
<td>170.12</td>
<td>173.46</td>
</tr>
</tbody>
</table>

(Lintern, 2012)
Five dimensions of Quality of Life

Community Safety and Security

Prosperity & Diversity

Culture and Education

Community Well-being

Quality Environment & sustainability

Doi, Kii and Nakanishi (2008)
Mechanism of Individual’s Satisfaction, Value and QoL

Sugiyama, Kuroda, Doi and Nakanishi et al. (2005)
Integrated model of quality of life

Quality of life Categories

- Community safety and security
- Prosperity and diversity
- Culture and education
- Community well-being
- Quality environment and sustainability

Indicators example

- Annual domestic violence crime reported
- Access to health and social care facilities
- Houses with EER 5 or above
- Per capita greenhouse gas emissions

Satisfaction formula

\[ S_{ki} = S_k \left( X_k, SE_i \right) \]

\[ S_{ki} \] Individual i's satisfaction for k

\[ SE_i \] Attributes of individual i

QoL formula

\[ QoL_i = \sum_{k=1}^{n} W_{ki} \left( S_{ki} - \rho \right)^{-\frac{1}{\rho}} \]

\[ W_{ki} \] weight of category k

\[ \rho \] substitution parameter
Concept of QoL

\[ QOL = Q(S_1, S_2, \cdots, S_m) = \left( \sum_{k=1}^{m} w_k S_k^{-\rho} \right)^{-\frac{1}{\rho}} \]
Satisfaction – depends on capability

\[
QoL = \sum_{k=1}^{\infty} \left\{ w_k S_k \right\} \gamma
\]

Affected by individual’s capability

Capability : Capabilities are defined derivatively on functioning, and include *inter alia* all the information on the functioning combinations that a person can choose.

by Amartya Sen

\[
S_i = X^{\gamma_i}
\]

\[
S'_i = X^{(\gamma_i - \Delta \gamma_i)}
\]

\( \gamma \) : elasticity of satisfaction
Value (Weight) – relative importance to ‘community safety and security’

\[ \Delta S_m = \sum_{k \neq m} \frac{w_k}{w_m} \frac{S_{0k}}{S_{0m}^{(1+\rho)}} \Delta S_k \]

\( \Delta S_m \); improved satisfaction level of domain \( m \)

\( \Delta S_k \); sacrificed satisfaction level of domain \( k \)

\( S_{0k} \) \( S_{0m} \); current satisfaction level of domains \( k \) and \( m \)

\( w_k \) \( w_m \); value of domains \( k \) and \( m \)

\( \rho \); substitution parameter between domains
## QoL indicators for Canberra

<table>
<thead>
<tr>
<th>Dimension</th>
<th>QoL Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community safety and security</td>
<td>num. of domestic crimes per 1,000 households in Canberra, % of residents who feel ‘fairly safe’ or ‘very safe’ after dark, num. of new affordable housing in Canberra</td>
</tr>
<tr>
<td>Prosperity and diversity</td>
<td>access to service facilities accessible by disabled people in Canberra, job availability in Canberra, % of people agree that people from different backgrounds get on well, access to broadband network, cost of living, walking distance to the closest bus stop, quality of public transport system</td>
</tr>
<tr>
<td>Culture and education</td>
<td>English language skills of immigrants in Canberra, % of young people (16-24 yrs old) in full-time education or employment in Canberra, access to cultural facilities, student/staff ratio in higher education in Canberra</td>
</tr>
<tr>
<td>Community well-being</td>
<td>access to health and social care facilities and service quality, residents who feel they have ability to influence decisions in Canberra, amount of green space within walking distance, % of people who are overweight or obesity in Canberra, illegal drug use in Canberra</td>
</tr>
<tr>
<td>Quality environment and sustainability</td>
<td>EER (energy efficiency rating) of house, num. of wild birds in neighbourhood, amount of household waste recycle in Canberra, residents concerned about the impact of climate change, air quality (air pollution) in Canberra</td>
</tr>
</tbody>
</table>
Quality of life in your city and living environment questionnaire survey in Canberra

2012 May – Aug
Online questionnaire + mail (sent to approx. 3,000 households)
648 responses collected (on-line: 278; mail: 370)
Male 230: 37.4%; Female 385: 62.6%
4 % more Garden City residents and 4 % less New Urbanism residents compared to Census 2011
Stress Map
Level of satisfaction by neighbourhood type by domain

- Quality environment and sustainability
- Community well-being
- Culture and education
- Prosperity and diversity
- Community safety and security

Y Plan
New Urbanism
Garden City
Value (Weight)
Value (Weight)

By gender

By age group
Value (Weight) by neighbourhood type
Relationship between satisfaction level and weight

- Garden City
- Y Plan
- New Urbanism

- Safety and security
- Prosperity and diversity
- Culture and education
- Community well-being
- Quality environment and sustainability
Time, Stress, and QoL

\[ w_k = \frac{T_k DS_k}{\sum T'_{k'} DS_{k'}} \]
**QoL by neighbourhood type**

<table>
<thead>
<tr>
<th>Neighbourhood Type</th>
<th>Quality of Life Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garden City</td>
<td>50.1</td>
</tr>
<tr>
<td>Y Plan</td>
<td>49.5</td>
</tr>
<tr>
<td>New Urbanism</td>
<td>49.9</td>
</tr>
</tbody>
</table>
Discussion and policy implication

QoL by neighbourhod – influenced by value

Latent factors that affect the priorities in QoL
gender, age, occupation, with/without dependent children, period of living in current neighbourhod

**Garden City neighbourhod**
– achieved high QoL, majority of residents have high value on environment, but not affordable for everyone

**Y Plan neighbourhod**
– community well-being is the area for improvement

**New Urbanism neighbourhod**
- accessibility is the key issue, need strategic approach to integrated land use and transport planning
Indicator and policy input mapping

**Key indicator in Y Plan Neighbourhood**

- Satisfaction with access to health and social care facilities and quality
- Land use → location of facilities
- Architecture → design and quality of facility building
- Social services → quality of health and social care services
- Transport → public transport

Nakanishi, Sinclair & Lintern (2013)
Canberra can be top QoL city…

Thank you!

Questions and comments
hitomi.nakanishi@canberra.edu.au
References