

# **Investigating into the critical factors supporting healthy independent longevity: A proposition of a conceptual model with measurements during and beyond COVID-19 pandemic**

**Hiroko Oe (corresponding author)**

Bournemouth University  
89 Holdenhurst Road, BH8 8EB UK  
[hoe@bournemouth.ac.uk](mailto:hoe@bournemouth.ac.uk)

**Yasuyuki Yamaoka**

Open University Japan  
2-11 Wakaba, Mihamaku, Chiba, 261-8586, Japan  
[monthill@jf7.so-net.ne.jp](mailto:monthill@jf7.so-net.ne.jp)

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## **1. Introduction**

Both nationally and internationally, governments as public organisations now engage in performance measurement and management to increase citizens' satisfaction and good health in the society (Morgeson and Petrescu 2011; Wells et al., 2017). Under the tight fiscal condition, it is more important for the public sector to launch better-balanced interventions to support citizens' healthy independent longevity in the communities (Dzau and Jenkins, 2019). To achieve this goal, it is essential for public sectors to understand the citizens' perceptions and the antecedents for their perceived healthy independent longevity (Bhalotra et al., 2017; Vaiserman and Lushchak, 2017).

Accordingly, this study aimed to understand citizens' perceptions towards various policy menu and items as candidate of antecedent for citizens' perceived healthy independent longevity and to develop a conceptual framework with measurements to contribute to further discussion in the field of study.

### *1.1. Problem statement and research aim*

As a measure of data collection, to enable exploring citizen perceptions for potential antecedents for supporting their healthy independent longevity, citizen survey data was used; this data analysis could enable the public sector to evaluate citizens' views and evaluations (Howard 2010; Song and Meier 2018).

However, there still seem to be some barriers preventing public sectors from evaluating and understanding citizens' perspectives, as no practical measurement framework has yet been agreed upon, which outline a model what factors have impact on citizens' perceived healthy independent longevity (Van Ryzin 2006; De Cnudde and Martens 2015; Earl and Lewis, 2019).

This study aimed to propose a conceptual framework with antecedents which realise citizens' perceived healthy independent longevity, as well as to develop a discussion outline based on the empirical study using this proposed framework.

## **2. Literature review**

### *2.1. Social science and public health issues*

Kawachi (1999) discussed that social capital and community effects through supporting individual health, and in line with this discussion, Kawachi et al. (2008) overviews some more details relationships between social capital and health in their communities. Whereas, Chuah et al. (2018) narrowed down to the impact of community participation on general health initiatives which can be a trigger in enhancing public health in general.

In line with this discussion, there have been accumulated academic findings on the theme of the impact of societal factors on public health. In the scope of this research, the concept of social capital has been one of the key topics in the academia (Moore and Kawachi, 2017; Villalonga-Olives and Kawachi, 2017; Campbell, 2020; Shiell et al., 2020). These previous discussions suggested social capital interventions have impact on public health, and also they discussed that it has been critical to evaluate which policy has a positive influence on citizens' health.

## *2.2. Evaluation of public policies*

Public sectors should aim to reconnect with community priorities and redirect the setting of macro-policy away from a preoccupation with economic priorities: Irimia (2011) analysed the political framework and healthy independent longevity from a socio-cultural perspective and found that intangible and unexpected factors came closer to realising citizens' satisfaction and perceived good health.

The next question should be how to prioritise the policy menu across various dimensions. This is the reason why social marketing perspectives are called for (Berry et al. 1984; Poister and Henry 1994; Smith 2000). To achieve the public aims of supporting the citizens' good health and longevity requires understanding the citizens' perspectives and behaviour towards potential antecedents and holistic views of their evaluation (Lourenco and Costa 2007; De Cnudde and Martens 2015).

## *2.3. Why are citizens' views essential to the design of public interventions?*

In ageing era, understanding of elderly citizens' views towards factors affecting their perceived healthy independent longevity is critical (e.g., Katapally et al., 2018; Liotta et al., 2018; Kalache et al., 2019; Kim et al., 2020). A partnership among citizens could be the basis for supporting public health (Guarneros-Meza et al. 2014) and to utilize citizens' voices in designing well-balanced public interventions, it has been suggested that listening to citizens' voices should be the top of the local

community agenda, as these should be considered precious resources for policymaking (Thomsen and Jakobsen 2015; Tummers et al. 2016; John 2017).

#### *2.4. Developing measurements*

Following the above discussion, the next section will explore key themes as potential factors in realising citizens 'perceived healthy independent longevity.

##### *2.4.1. Health and welfare policies*

William (2012) also discussed how to respond to demographic changes, as these have a significant impact, particularly on social policies such as health and welfare. It is essential to discuss the link between health and wellbeing policies and healthy independent longevity as populations age (Barnes 1999; Caldwell et al. 2008; Corbett 2013). Caldwell et al. (2008) suggested that the concept of the ageing population is associated with substantial discussion at the global, national and regional levels. Julian et al. (2013) further suggested that researchers should focus on problem-solving in the health, education, and social services arenas. Cicognani et al. (2020) also discussed the positive impact of collaborative partnerships focusing on health promotional schemes as voluntary collaborations of diverse community organisations aimed at pursuing a shared interest in improving community health. Therefore, the first hypothesis is developed:

**H1: 'Health and welfare policies' have a significant impact on citizens' perceived healthy independent longevity.**

##### *2.4.2. Community bonding*

Campbell (2020) discussed the relationships among social capital, social movements and global public health, suggesting the importance of community bonding which supports general public health. Robison et al. (2020) discussed attachment values, networks, relations among citizens as triggers for good public health.

Bian et al. (2020) clearly stated the positive impact of social bonding and subjective wellbeing, which is supported by the discussion presented by Gostin et al. (2020) who empirically evaluated the impact of social bonding on public health during COVID-19 pandemic. Based on the discussions, Hypothesis 2 emerges as follows:

**H2: ‘Community bonding’ has a significant impact on citizens’ perceived healthy independent longevity.**

#### *2.4.3. The aesthetic quality of the built environment*

Scott (2020) discussed the impact of placemaking with public health concerns, and he suggested the influence of aesthetic quality of town on public health focusing on COVID-19 crisis with a scope of how to return to 'new normal', in line with this discussion, Hes et al. (2020) suggested the public space development and improvement has indirect path to overall health and vitality of the citizens.

Fransico 2010) discussed that the aesthetic quality of the town can be the basis for better public health and citizens’ appreciation. Shigeoka (2000) already suggested that community aesthetic quality increases citizens’ attachment to their local community, which leads to better level of citizens’ health with longevity. Ledwith (2020) concluded that community development including aesthetic landscape and buildings in the communities can be the infrastructure on which citizens interact and nurture better public health in general. Based on the discussions, Hypothesis 3 emerges as follows:

**H3: ‘Aesthetic quality of the built environment’ has a significant impact on citizens’ perceived healthy independent longevity.**

#### *2.4.4. Trust in local government*

Trust can relieve the tension between managerial flexibility and political accountability in the modern administrative state (Cooper et al. 2008). Furthermore, there is an accumulation of research suggesting that trust in government will lead to support for central and local governmental actions, from which citizens feel more satisfied and confident in their perceived healthy level and longevity (Smith et al.

2013; Herian et al. 2014; Blair et al., 2017; He and Ma, 2020). Interest in private citizen involvement in government programmes has long been acknowledged; however, it is important to analyse the impact of trust in governments on citizens' perceived healthy independent longevity with the current citizens' cognitive dataset specially under the COVID-19 pandemic (Sibley et al., 2020).

Geert and Van de Walle (2003) suggested that trust could be a necessary part of a set of indicators that could be useful for measuring citizens' perceptions of local government activities. During and beyond the current difficult situation caused by COVID-19 pandemic, citizens' evaluation and trust for local government should be carefully examined (Bunker, 2020; Legido-Quigley et al. 2020). Based on the above discussion, Hypothesis 4 emerges:

**H4: 'Trust in local government' has a significant impact on citizens' perceived healthy independent longevity.**

#### *2.4.5. Mobility and transportation*

Social infrastructure supporting peoples' mobility is critical for citizens' physical activities, such as public transportation and safe roads and facilities. Hunter et al., (2015) examined the impact of interventions to promote physical mobility in urban area to develop recommendations for relevant public sectors. In line with the discussion, Mazumdar et al. (2018) discussed the built environment and its impact on social capital nurturing, similarly, Myrovali et al. (2018) discussed the importance of mobility with citizens' engagement and its favourable outcome. Especially for the elderly citizens, mobility and transportation has supportive impact on their good health (e.g., Hogan et al., 2016; Cuignet et al., 2020; Dharmowijoyo et al., 2020). During COVID-19 pandemic, still it has been recommended to conduct some exercise with reasonable social distances, therefore, how to sustain mobility and transportation is a priority in communities.

Based on the discussions, Hypothesis 5 emerges:

**H5: Mobility and transportation has a significant impact on citizens' perceived healthy independent longevity.**

#### 2.4.6. *Town vibrancy*

Age-friendly aspects of the urban environment were discussed by Kennedy (2010), who emphasised the importance of re-imagining cities with ‘ageing-in-place communities’ that are vibrant enough to attract young people as well while still encouraging older people to stay in the same community throughout their lifetime (Ghahramanpouri et al. 2015). Contributing factors for urban social sustainability have been identified, leading to the suggestion that town vibrancy could be important in an era of ageing population. Similarly, the impact of city ‘buzz’ and vibrancy has been discussed as one of the factors that encourages people to vitalise communities; this could contribute to the sustainability of an area and public health in the area (Daskon and McGregor 2012; Harun et al. 2014; Nzeadibe and Mbah 2015; Mann et al., 2017).

The importance of city vibrancy has been identified as a basis for sustainability by citizens loyal to the area (Glazer 2008; Baker 2009; Rizzi and Dioli 2010; Macleod and Johnstone 2012; Wetzstein 2013; Anderson 2014; Nzeadibe and Mbah 2015). Moreover, entrepreneurs, whether formally or informally, generate community associations and networks that could also produce favourable social outcomes (Ardichvili et al. 2003; Webber and Fendt-Newlin, 2017).

Based on the discussion above, Hypothesis 6 emerges:

**H6: ‘Town vibrancy’ has a significant impact on citizens’ perceived healthy independent longevity.**

#### 2.5. *Conceptual framework and hypotheses*

From the discussions, a conceptual model with hypotheses has been developed as shown in Figure 1.

**[Figure 1 ‘Conceptual framework of this study’]**

Table 1 presents a summary of the hypotheses built on the relevant academic discussions related to each hypothesis.

[Insert 1 ‘Hypotheses along with the relevant academic sources’]

### **3. Methodology**

This study is based on a quantitative approach used to validate the conceptual framework with hypotheses pertaining to healthy independent longevity. Survey data provided for a city in Japan was analysed based on Structural Equation Modelling (SEM).

#### *3.1. Data collection*

The citizen survey data was collected from citizens of the targeted city aged 60 years and over. A total of 3,000 samples were chosen to maintain age band and gender balance. The survey questionnaire was distributed and collected by post. A total of 1,607 valid responses were confirmed for analysis. This survey data was provided by a local governmental statistics department under the agreement that the researchers would not reveal private information about the respondents, including their addresses and the name of the city. Therefore, the survey data was used for purely academic purposes. Measurements and analysis

The questions were designed The collected data was analysed based on descriptive analysis, confirmatory factor analysis with Cronbach alpha test to check the reliability for each factor, which was followed by correlation tests to verify them for the hypotheses testing using SEM analysis. Reflecting developed hypotheses, key questions were designed with Likert 5-point scale (1= strongly disagree, 5=strongly agree).

SPSS v26 and AMOS v26 were used to conduct data analysis to test hypotheses to develop actionable implications for the relevant researchers and practitioners.



## 4. Analysis and findings

### 4.1. Data profile and descriptive analysis

The collected data is demonstrated in Table 1 with demographic information. Table 3 shows descriptive statistics of the observed variables for the antecedent factors which lead to the citizens' perceived health and longevity.

**[Table 2 'Sample data attributes']**

**[Table 3 'Descriptive analysis of the questions']**

### 4.2. Factor analysis and reliability test

A confirmatory factor analysis was conducted with 18 questions; the obtained results are shown in Table 4. A total of six factors were generated: Trust in the government (alpha=.874); Health and welfare policies (alpha=.776); Aesthetic quality of the built environment (alpha=.767); Mobility and transportation (alpha=.774); Town vibrancy (alpha=.701), and Community bonding (alpha=.713). These generated factors were validated with the results of Cronbach's alpha test. All alpha values were higher than 0.6, which implies that the attained factors are acceptable (Hair et al. 2010).

**[Table 4 here 'Factor analysis']**

### 4.3. Correlation test

To check the Multicollinearity relationships among the generated factors, correlational test was conducted to verify the reliability of the factors for the next step of analysis. As shown in Table 5, the correlations range from 0.264 and 0.390 which indicates no multi-correlation issues (Tabachnick and Fidell, 1996). Therefore, all factors were confirmed to be suitable to be used for SEM to test hypotheses.

**[Table 5 Result of correlational test of six generated factors]**

*4.4.SEM analysis to test the factors' impact on healthy independent longevity*

A 'two-order factor analysis method' was applied (Jarvis et al., 2003; MacKenzie et al., 2005). The sample size was 478 following the data cleaning process, which resulted in a high goodness of fit for the model; the Goodness of Fit Index (GFI) indicator shows a reliable level (Fan et al. 1999). Figure 2 shows that all six latent factors have a significant impact on healthy independent longevity, and also that the model is compatible with the dataset, as its GFI is exceptionally high at .960. These results thus validate this SEM approach.

Other parameters, such as RAMSEA (.0054<.08), AGFI (.912>.90), and CFI (.908>.90), imply that this model was appropriately structured for application to the dataset (Barrett 2007). Out of these six latent factors, 'Town vibrancy' has the highest path coefficient (0.89) which is followed by 'Mobility and transportation' (0.82) compared to the others, indicating that the citizens perceived these factors have significant impact on their perceived healthy longevity.

**[Figure 2: 'Results of the SEM']**

**[Table 6 'SEM results for all respondents and elderly respondents']**

From Table 6, it is observed that the factor of 'Mobility and transportation' has the second biggest impact on perceived healthy independent longevity (path coefficient=.82) after the biggest impact of 'Town vibrancy', that implies that elderly citizens acknowledge the impact of town vibrancy with smooth mobilised infrastructure with good level of public transportation system. Whereas it was found that 'Health and welfare policies', and 'Trust in government' have middle range of impact on their

perception, even though the observed variables included contemporary issues relating to the theme of coping with COVID-19 pandemic.

It was also found that the elderly citizens perceive ‘community bonding’, ‘Aesthetic quality of the built environment’, and ‘Trust in government’ have impact on their perceived health and longevity with relatively lower significance compared to ‘Town vibrancy’ and ‘Mobility and transportation’. As discussed with the SEM result, all hypotheses H1 to H6 were supported.

#### *4.5. Discussion*

This study has revealed the unique perspectives of elderly citizens towards potential antecedent factors affect their perceived healthy independent longevity. The SEM analyses found that all six factors were significantly influential on citizens’ perceived healthy independent longevity, especially it has been found that ‘Town vibrancy’ and ‘Mobility and transportation’ have a relatively bigger significant impact than ‘Health and welfare policies’ or ‘Community bonding’. Interestingly, the impact of ‘Mobility and transportation’ shows the most significant impact, that indicates that physical infrastructure enabling elderly citizens mobilised has a priority as factors affect their health level. Whilst Gayen et al. (2019) emphasised the impact of social connectedness and social networks for older generations, the result of the study indicates a different landscape: in reality, elderly citizens acknowledge the importance of ‘Mobility and transportation’ as ‘hard’ infrastructure to enhance their active interaction and realise town vibrancy with city buzz.

## **5. Conclusion**

### *5.1. Implications*

Panter-Brick and Eggerman (2018) emphasised the importance of social scientific perspectives in public health study. One of the contributions of this study is that it validates a practical analytical framework with practical measurements in the context of the evaluation of local government performance. Citizen surveys have been used to understand the citizens' views on the social policy

menu. Sometimes the survey questionnaire is designed on the 'common sense' of policymakers bound with the previous experiences, which could lead to misinterpretation of the real voices of the participants. Survey data should be analysed and explored avoiding any prejudices and too-much emphasis on the previous knowledge and experiences, to reveal citizens' real voice and evaluations. This paper examined the factors affect elderly citizens' perceived healthy independent longevity using the primary data as a case study of their cognitive data.

Since the early 2000s, discussions on positive impact of social capital on citizens' public health and happiness in the variety of contexts (e.g., Tacon, 2019; Kawachi et al., 2008; Campbell, 2020). Under these circumstances, it was expected that citizens would appreciate social capital impact such as 'community bonding (H2)' more than 'Mobility and transportation (H5)': However, this study has revealed that elderly citizens the positive impact of 'hard' infrastructure as the basis for enhancing the favourable impact of social capital to support citizens' healthy independent longevity. Moreover, they seem to prioritise 'town vibrancy' as the most significant factor for their perceived healthy longevity; this sheds the light on the local government should design a clear policy menu with priorities to support perceived healthy independent longevity in an ageing society.

It can be concluded that Mobility and transportation through 'hard' and 'soft' capital management in order to establish a well-balanced policy agenda prepares the social fabric in a way that enhance citizens' perceived healthy independent longevity. Social capital is expected to help build sustainable communities; however, the impact of 'community bonding' can be meaningful with the ensured infrastructure such as supportive transportation for citizens' mobility, in other words, without conceiving the reliable social infrastructure, elderly citizens cannot be convinced of the positive impact of social capital on which citizen interact and support with each other. The research outcome of this study sheds a light on new policy agenda during and beyond COVID-19 that require social distancing among people and how to sustain active interaction to enhance town vibrancy which has a favourable impact on senior citizens' perceived independent longevity.

### *5.2.Limitations*

One major limitation of this paper is its exploratory nature and analysis based on one specific citizen survey dataset. Further studies that adopt a cross-section comparative approach could help to address apprehensions of limited generalizability. Second, the empirical outcome based on this model should be a snapshot of specific citizens' evaluations of the proposed factors, implying that the analytical model with measurements of scales should be validated with some other dataset to yield more robust implications and suggestions. Thirdly, this study was conducted in the Japanese context and based on a dataset obtained from a Japanese citizen survey; however, no cultural, historical, and contextual factors were included in this analysis.

### *5.3.Further research opportunities*

This study has found that selected antecedent factors have different impacts on citizens' perceived healthy independent longevity. Moreover, the impact of each antecedent factor varies across different demographic profiles. In this sense, as Van Ryzin and Immerwahr (2007) proposed, it is recommended to conduct an importance-performance analysis in order to develop some more actionable implications for the public sector, which will aid in understanding which factors should be prioritised.

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Number	Hypothesis	Academic discussion
H1	'Health and welfare policies' have a significant impact on citizens' perceived healthy independent longevity	Bames (1999), Mitchell and Shortell (2000), Warburton et.al. (2008), Caldwell et.al. (2008), Williams and Pocock (2010), Julian and Ross (2013), Coll-Planas et al. (2017), Villalonga-Olives and Kawachi (2018), Legido-Quigley et al. (2020)
H2	'Community bonding' has a significant impact on citizens' perceived healthy independent longevity	Cordes et.al., (2003), Robison and Flora (2003), Crawford and et.al.(2008), Yoshitake and Deguchi (2008), Julian and Ross (2013), Bian et al. (2020), Campbell (2020), Gostin et al. (2020)
H3	'Aesthetic quality of the built environment' has a significant impact on citizens' perceived healthy independent longevity	Shigeoka (2000), Fransico (2010), Bookman and Woolford (2013), Hes et al. (2020), Ledwith (2020), Scott (2020)
H4	'Trust in the government' has a significant impact on citizen satisfaction	Geert and Van de Walle (2003), Cooper et al. (2008), Garcia and Gaytan (2013), Smith et al. (2013), Herian et al. (2014), Blair et al. (2017), Bunker (2020), He and Ma (2020), Legido-Quigley et al (2020), Sibley et al. (2020)
H5	'Mobility and transportation' has a significant impact on citizens' perceived healthy independent longevity	Hunter et al. (2015), Hogan et al. (2016), Mazumdar et al. (2018), Myrovali et al. (2018), Cuignet et al. (2020), Dharmowijoyo et al. 2020)
H6	'Town vibrancy' has a significant impact on citizens' perceived healthy independent longevity	Glazer (2008), Baker (2009), Kennedy (2010), Rizzi and Dioli (2010), Daskon and McGregor (2012), Macleod and Johnstone (2012), Wetzstein (2013), Anderson (2014), Harun et al. (2014), Ghahramanpouri et al. (2015), Nzeadibe and Mbah (2015), Mann et al. (2017), Webber and Fendt-Newlin (2017)

**Table 1 Hypotheses with the competent academic debates**

Profile	Frequency	Percent	Cumulative Percent
<b>Age</b>			
Prefer not to say	8	.5	.5
60s	1077	67.0	67.5
above 70	522	32.5	100.0
Total	1607	100.0	
<b>Gender</b>			
Prefer not to say	11	.7	.7
Male	681	42.4	43.1
Female	915	56.9	100.0
Total	1607	100.0	

**Table 2 Sample data attribute**

Questions	N	Mean	Std. Dev.
PHL1: Healthy and longevity	1607	3.81	1.033
PHL2: Living in this city makes me healthy and longevity	1607	4.21	1.118
HWP1: Health and welfare policies are important for us	1607	3.01	.828
HWP2: Supportive scheme enhancing our health and welfare is important	1607	3.06	.679
HWP3: Health and welfare policy to support citizens with disabilities and ageing people who are isolated is important	1607	2.99	.634
CB1: Connectedness and belonging to community is important	1607	3.06	.527
CB2: Harmonised interaction with other citizens is important	1607	2.91	.535
CB3: Building community with social inclusion of diversified citizens is important	1607	3.04	.561
AQBE1: Well-looked after city environment is important	1607	2.98	.826
AQBE2: Cleanliness of the town landscape is important	1607	3.17	.895
AQBE3: A well-balanced modernised built environment with historical charms is important	1607	3.00	1.039
TG1: The administrative process of the local government is reliable with transparency and accountability, including delivering relevant information on COVID-19 pandemic	1607	2.65	.832
TG2: Proactive attitudes of local government to support citizens by providing information and policy strategies in coping with COVID-19 pandemic is important	1607	2.78	.844
TG3: The local government attempts well to communicate with citizens by providing the administrative information to enable citizens to understand the policy priority	1607	2.90	.844
MT1: Maintenance of accessibility to public transportations is important	1607	2.44	1.089
MT2: To enhance mobility of ageing citizens is important	1607	2.59	.872
MT3: To ensure resilient transportation network to support the ageing citizens' mobility is important	1607	2.71	.796
TV1: City buzz is important	1607	3.02	.755
TV2: Vigorous interaction among citizens, businesses, and tourists is important	1607	3.06	.738
TV3: Cheerful atmosphere enabling us to be energised is important	1607	2.84	.650

**Table 3 Descriptive analysis for questions**



Observed variables	Component						Alpha
	1	2	3	4	5	6	
TG1	.829	.164	.146	.069	.108	.181	
TG2	.821	.094	.109	.098	.144	.115	0.874
TG3	.821	.135	.125	.074	.091	.094	
HWP1	.116	.790	.170	.091	.024	.105	
HWP2	.121	.780	.102	.146	.105	.108	0.776
HWP3	.133	.734	.093	.142	.177	.097	
AQBE1	.149	.064	.811	.109	.031	.154	
AQBE2	.123	.148	.779	.062	.160	.058	0.767
AQBE3	.086	.164	.685	.110	.202	.095	
MT1	.021	.130	.098	.838	.135	.073	
MT2	.075	.119	.102	.827	.029	.110	0.774
MT3	.153	.136	.086	.637	.274	.051	
TV1	.057	.066	.131	.101	.720	.089	
TV2	.062	.097	.107	.154	.673	.146	0.701
TV3	.183	.106	.107	.090	.651	.089	
CB1	.114	.094	.022	-.001	.103	.800	
CB2	.119	.189	.144	.141	.103	.741	0.713
CB3	.186	.029	.252	.156	.217	.467	
Rotation Sums of Squared Loadings	2.257	1.998	1.982	1.974	1.710	1.588	
% of Variance	12.540	11.103	11.009	10.968	9.497	8.820	
Cumulative %	12.540	23.643	34.652	45.620	55.118	63.937	
Kaiser-Meyer-Olkin Measure	0.916						
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser No							
a. Rotation converged in 6 iterations.							

**Table 4 Factor analysis**

Factors		Health and welfare	Community bonding	Aestic quality of the built environment	Trust government	Mobility and transportation	Town vibrancy
Health and welfare	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	1607					
Community bonding	Pearson Correlation	.360**	1				
	Sig. (2-tailed)	.000					
	N	1607	1607				
Aestic quality of the built environment	Pearson Correlation	.358**	.305**	1			
	Sig. (2-tailed)	.000	.000				
	N	1607	1607	1607			
Trust government	Pearson Correlation	.355**	.264**	.356**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	1607	1607	1607	1607		
Mobility and transportation	Pearson Correlation	.349**	.298**	.366**	.390**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	1607	1607	1607	1607	1607	
Town vibrancy	Pearson Correlation	.315**	.380**	.371**	.337**	.385**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	1607	1607	1607	1607	1607	1607

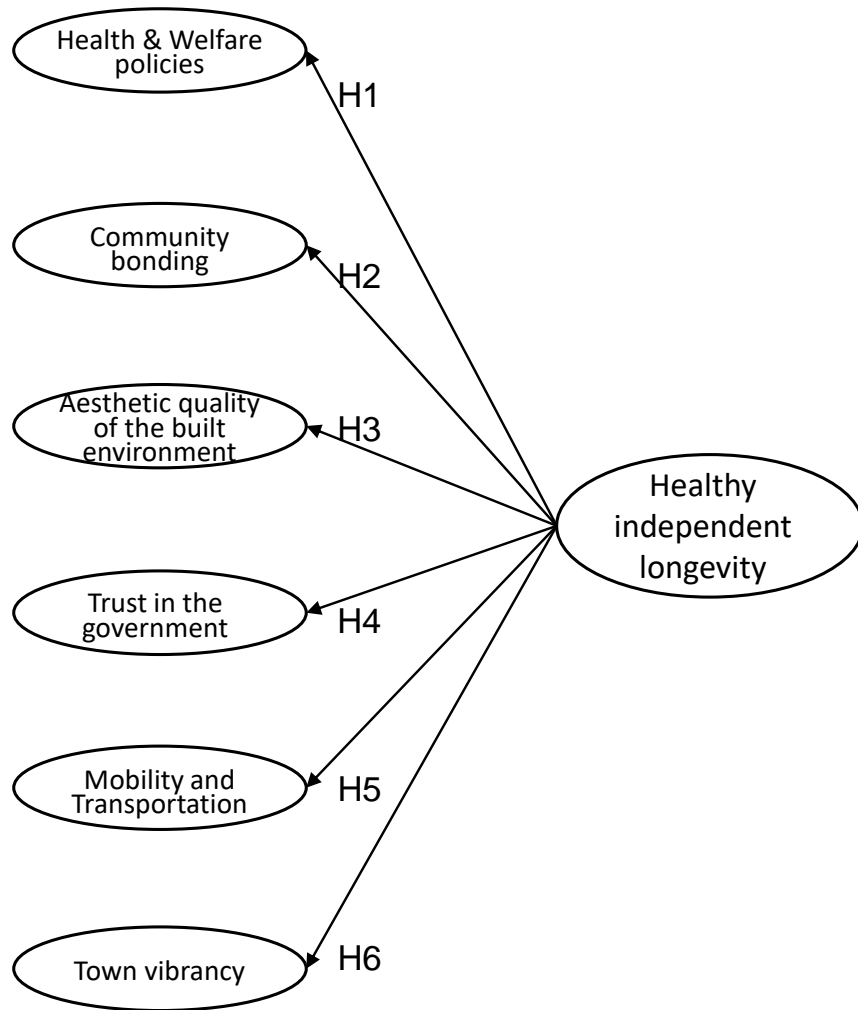
\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Table 5 Result of correlational test of six generated factors**

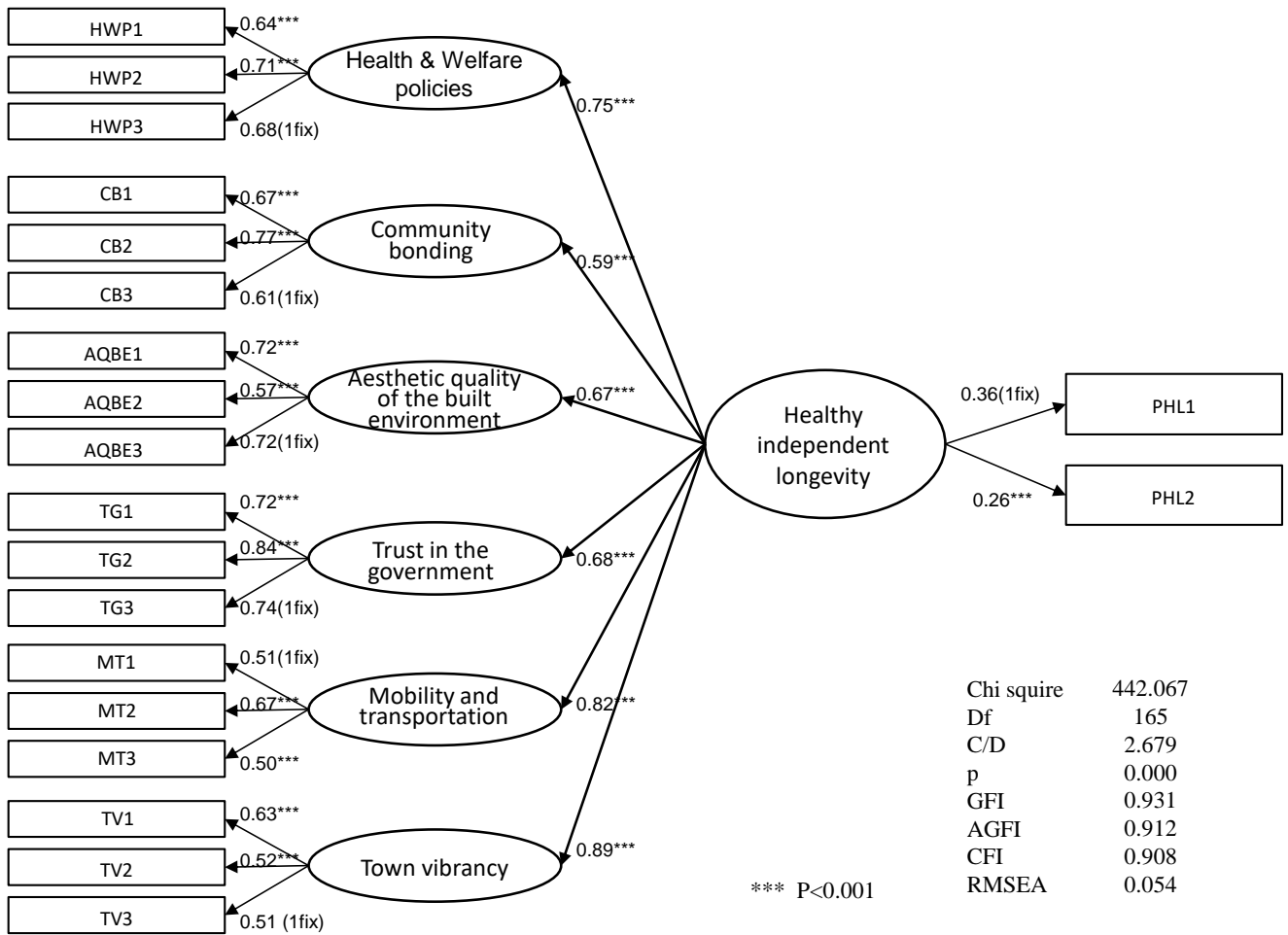
To	From	Elderly n=583	
		Std. path coefficient	p
Health & Welfare policies	<--- Healthy independent longevity	0.746	***
Community bonding	<--- Healthy independent longevity	0.588	***
Aesthetic quality of the built environment	<--- Healthy independent longevity	0.670	***
Trust in the government	<--- Healthy independent longevity	0.680	***
Mobility and transportation	<--- Healthy independent longevity	0.817	***
Town vibrancy	<--- Healthy independent longevity	0.886	***
PHL1	<--- Healthy independent longevity	0.359	1 fixed
PHL2	<--- Healthy independent longevity	0.259	***
HWP1	<--- Health & Welfare policies	0.640	***
HWP2	<--- Health & Welfare policies	0.712	***
HWP3	<--- Health & Welfare policies	0.684	1 fixed
CB1	<--- Community bonding	0.672	***
CB2	<--- Community bonding	0.769	***
CB3	<--- Community bonding	0.607	1 fixed
AQBE1	<--- Aesthetic quality of the built environment	0.717	***
AQBE2	<--- Aesthetic quality of the built environment	0.574	***
AQBE3	<--- Aesthetic quality of the built environment	0.719	1 fixed
TG1	<--- Trust in the government	0.721	***
TG2	<--- Trust in the government	0.844	***
TG3	<--- Trust in the government	0.741	1 fixed
MT1	<--- Mobility and transportation	0.515	1 fixed
MT2	<--- Mobility and transportation	0.672	***
MT3	<--- Mobility and transportation	0.499	***
TV1	<--- Town vibrancy	0.632	***
TV2	<--- Town vibrancy	0.515	***
TV3	<--- Town vibrancy	0.511	1 fixed

Note: \*\*\* indicates significant at the  $p < 0.001$  level

**Table 6 SEM path coefficient for the elderly respondents**



**[Figure 1 ‘Conceptual framework of this study’]**



[Figure 2: 'Results of the SEM']