World Health Organization

MEASURING THE AGE-FRIENDLINESS OF CITIES

A GUIDE TO USING CORE INDICATORS

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TABLE OF CONTENTS

I. Introduction 1
A. Age-friendly City initiatives: a response to the converging trends of ageing and urbanization 2
B. The role of a common framework and indicators in promoting age-friendliness of cities 5

II. Objectives 7

III. Development process 9

IV. A framework for defining a local Age-friendly City indicator set and measurement strategy 11
A. Using the framework 14
1. Equity indicators 16
2. Input indicators 17
3. Output indicators 17
4. Outcome indicators 19
5. Impact indicators 20
B. Additional considerations for selecting and measuring indicators 22

V. Core indicators 25
A. Core indicators: operational definitions 28
1. Equity 30
2. Accessibility of the physical environment 35
3. Inclusiveness of the social environment 42

VI. Supplementary indicators 53

VII. Limitations of the framework and indicators 65

VIII. References 67

IX. Annex 1: Indicator guide development process 69

X. Annex 2: Case examples of local adaptation of the core indicators 77
Example 1: Korogocho and Viwandani slums, Nairobi, Kenya – Physical environment indicators 79
Example 2: Bilbao, Spain – Physical environment indicators 84
Example 3: Banyule, Australia – Social environment indicators 90
Example 4: Jing'an District, Shanghai, China – Social environment and Quality of Life indicators 97
Example 5: Washington, DC, USA – Equity indicators 102

XI. Annex 3: Annotated bibliography of selected research publications on the methodological aspects of measuring age-friendliness 115

LIST OF FIGURES

Figure 1. A framework for selecting an Age-friendly City indicator set 13
Figure 2. Core indicators of Age-friendly Cities 27
Figure 3. Development process of Age-friendly City indicator framework and core indicators 72
Figure 4. Map of areas that are within one or more public transit networks in Bilbao, Spain, reported in 2015. 89

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1 INTRODUCTION

A AGE-FRIENDLY CITY INITIATIVES: A RESPONSE TO THE CONVERGING TRENDS OF AGEING AND URBANIZATION

The world's population is currently undergoing two historically significant demographic shifts – rapid ageing and urbanization. As a result, the number of older people living in urban environments is growing dramatically.

In most countries, the fastest growing age group is 60 and older. The number of people in this age group is expected to increase from 841 million in 2013 to more than 2 billion in 2050, representing an almost doubling of the proportion of this population worldwide from 11.7 percent in 2013 to 21.1 percent in 2050 *(1)*. Older populations are also growing faster in less developed countries and regions of the world than in more developed regions. Remarkably, by 2047, the number of people aged 60 and over is expected to exceed the number of children under the age of 15, globally, for the first time in history *(1)*.

Urban populations are also steadily increasing around the globe, and in much greater number in less developed parts of the world. In 2007, more than half of the world's population lived in urban areas *(2)*. This is expected to increase to 70 percent by 2050 *(3)*. Every year, the number of urban dwellers is increasing by almost 60 million *(4)*. And, by 2050, the urban population will have nearly doubled in size since 2009, from 3.4 billion to 6.3 billion *(2)*. The majority of this urban population growth over the next 30 years will occur in the developing world.

As these two major demographic shifts continue to affect many parts of the world, ageing and health in urban settings are increasingly becoming a priority issue in both developed and developing countries. The challenges and opportunities that come with urbanization *(4)* and with population ageing *(5)*, respectively, have been well recognized; the impacts of their convergence, however, are only beginning to be understood.

A AGE-FRIENDLY CITY INITIATIVES: A RESPONSE TO THE CONVERGING TRENDS OF AGEING AND URBANIZATION

In response to population ageing and the rise of noncommunicable diseases, health services are increasingly being reoriented to enhance health promotion, prevention of disease, disability and frailty, management of co-morbidities and provision of long-term care, while reducing unnecessary institutionalization. Going beyond the health sector, aspects of the natural and built environment, social services and programmes, cultural attitudes, social capital, equity and inclusion, all influence the degree to which older people can function and participate in society.

Older residents require a number of supportive living conditions to respond to the physical, mental and social changes they experience as a result of biological ageing. These may be especially lacking in urban environments which, in general, are not designed to be residential centres for a population of primarily older people. While this guide is chiefly oriented towards urban environments, it is also important to highlight the importance of age-friendly rural environments *(6)*. In either setting, addressing both the social and physical aspects of the community environment is essential in order to respond well to the needs and preferences of older adults to promote their health and wellbeing.

An "age-friendly city" is an inclusive and accessible community environment that optimizes opportunities for health, participation and security for all people, in order that quality of life and dignity are ensured as people age. More specifically, in an age-friendly city, policies, services, settings and structures support and enable people to age well by:

- recognizing the wide range of capacities and resources among older people;
- anticipating and responding flexibly to ageing-related needs and preferences;
- respecting older people's decisions and lifestyle choices;
- protecting those who are most vulnerable; and
- promoting older people's inclusion in, and contribution to, all areas of community life *(7)*.

Readers are strongly encouraged to read the Global Age-friendly City Guide *(7)* developed by the World Health Organization (WHO) in order to fully understand the age-friendly concept. A checklist of essential features of age-friendly cities *(8)* is also available to support the development of health and social policies, services and interventions to create age-friendly environments. The guide was based on the perspectives and inputs of older people, care givers and service providers collected in 33 cities across all six WHO regions: Africa, Americas, Eastern Mediterranean, Europe, South East Asia and Western Pacific. The guide focuses on eight key domains of urban life that encompass determinants of health and wellbeing: outdoor spaces and buildings, transportation, housing, respect and social

"ADDRESSING BOTH THE SOCIAL AND PHYSICAL ASPECTS OF THE COMMUNITY ENVIRONMENT IS ESSENTIAL IN ORDER TO RESPOND WELL TO THE NEEDS AND PREFERENCES OF OLDER ADULTS TO PROMOTE THEIR HEALTH AND WELLBEING."

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inclusion, civic participation and employment, social participation, community and health services, and communication and information.

In order to assist cities to become more age-friendly and to facilitate mutual learning and support, the WHO established the Global Network of Age-friendly Cities and Communities (GNAFCC) in 2010. The GNAFCC connects cities and communities which share a commitment to become more age-friendly. The network's objective is to facilitate the exchange of information and best practices, provide technical support and training, and help cities ensure that interventions are appropriate, sustainable and cost effective. The cities and communities participating in the network are committed to continuously assess and improve their age-friendliness, and to adapt their structures, policies, settings and services to be accessible to, and inclusive of, older people with different needs and capacities.

B THE ROLE OF A COMMON FRAMEWORK AND INDICATORS IN PROMOTING AGE-FRIENDLINESS OF CITIES

Frameworks and indicators can be instrumental in establishing a common understanding among stakeholders about the key dimensions of age-friendliness that are valued in their city, and set goals and objectives in relation to them. The indicators can be used to measure the baseline level of age-friendliness of the city and monitor how it changes over time as relevant interventions are implemented. Monitoring and evaluation are hallmarks of sound public health practice. As such, indicators should be an integral part of an outcomes-oriented accountability system for age-friendly city initiatives. The indicators can also be leveraged to foster political and social commitment, which, in turn, can lead to further actions to promote and sustain age-friendly cities *(9)*.

II OBJECTIVES

This guide sets forth a **framework** and a set of **core and supplementary indicators** to inform the selection of a local indicator set to monitor and evaluate progress in improving the age-friendliness of urban environments. The guide also includes references and additional resources, such as examples of local initiatives to develop indicators for measuring the age-friendliness of communities. This guide and the indicators presented within are not meant to be a prescriptive set of guidelines to be strictly followed but rather something to be adapted, as necessary and appropriate, to build an indicator set that is most meaningful and relevant in the local context.

The objectives of this Guide are:

- **To provide structured guidance on selecting indicators of the age-friendliness of a city.**
- **To present a set of indicators which are suggested for use in measuring the age-friendliness of a city.**
- **To support local efforts to develop relevant and appropriate indicators of the age-friendliness of a city.**

Using the same structured approach to selecting indicators, including the adoption of a core set of indicators, will facilitate comparisons across time and place. At the same time, the flexibility of this guide allows the selection of indicators to be adapted to the local context (e.g. sociocultural context, level of resources, needs and priorities, specific goals and interventions adopted by the city) in order to enhance the utility of this guide and to encourage local innovation. Inter-city comparisons are something to be aspired but not an immediate priority. Communities that pilot tested an earlier draft of this guide also found that the guide has many benefits beyond simply facilitating the measurement of indicators. They found, for example, that it was useful for promoting community engagement and empowerment, advocacy, and intersectoral collaboration.

This guide does not supersede other similar guidance and indicators that have been developed locally or nationally by government or non-government bodies. This is a form of technical guidance offered by WHO as a service to local and municipal governments and community groups who are seeking direction on this issue and who may be interested in improving the global comparability of their indicators. It does not establish a reporting requirement for members of the Global Network of Age-friendly Cities and Communities. Rather, it is a tool for defining a locally appropriate indicator set. It is intended for use by any interested city or community, including members of the WHO Global Network of Age-friendly Cities and Communities; participants of Healthy Cities initiatives; and others engaged in developing programmes for healthy ageing or otherwise using age-friendliness indicators for planning, monitoring and evaluation.

III DEVELOPMENT PROCESS

The indicator framework and indicators presented in this guide are the product of a structured approach carried out between 2012 and 2015. This involved literature reviews, two expert consultation meetings, several rounds of peer review, a preliminary pilot study which generated inputs from over 40 communities across 15 countries, and a final pilot study involving 15 communities across 12 countries. The detailed description of the development process is in Annex 1.

IV

A FRAMEWORK FOR DEFINING A LOCAL AGE-FRIENDLY CITY INDICATOR SET AND MEASUREMENT STRATEGY

Figure 1 presents a general framework which shows how certain resources and structures (the *inputs*) enable interventions in the form of policies, services and programmes (the *outputs*) that help improve the age-friendliness of the physical and social environment (the *outcomes*), which, in turn, contribute to improving the health and wellbeing of older residents and of the population as a whole (the *impact*). It also places equity at the core, as a cross-cutting principle, to highlight the importance of ensuring equity in the distribution of inputs, outputs, outcomes and impact.

It is important to remind readers that the short- to medium-term focus of age-friendly city interventions and, thus, of measurement is on changing features of the social and physical environment as important determinants of health. In the longer term, impact on health and wellbeing is intended and expected through multiple, indirect pathways. There are, of course, many additional opportunities for influencing specific health outcomes in a more direct and immediate way through individual interventions for health promotion, disease prevention, early detection and treatment, rehabilitation, palliative care, etc. However, an age-friendly city is a community-wide, rather than individually-based, effort which takes a broader perspective of older persons' wellbeing.

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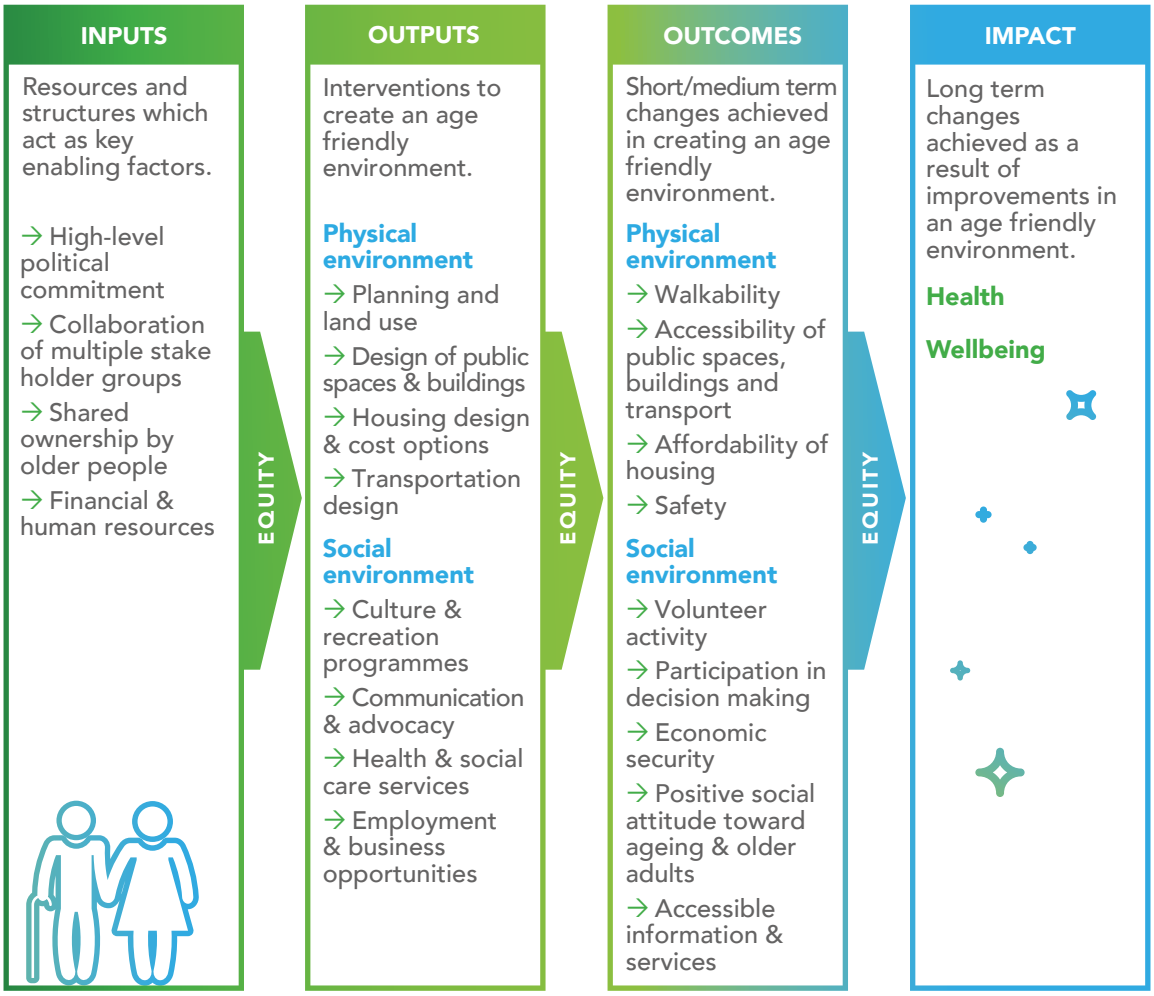
The framework is grounded in the scientific literature and also reflects inputs received through expert consultations. While it does not posit specific causal associations, the model considers the logical interrelations among the key domains of urban life, the human ageing process, and the physical and social environment as determinants of health and wellbeing. It also recognizes that these are systemic, not isolated, issues which require a multisectoral response, or the cooperation of government, private and civil society organizations from all fields, as well as individual community members, to solve problems that affect the whole community. This model provides the general framework for identifying the different types of indicators that should be considered when developing a strategy for the overall assessment and monitoring of the age-friendliness of a city.

FIGURE 1. A FRAMEWORK FOR SELECTING AN AGE-FRIENDLY CITY INDICATOR SET



A USING THE FRAMEWORK

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The framework gives an overview of the different phases and dimensions of a coordinated effort to improve the age-friendliness of a city, and eventually to improve the health and wellbeing of an ageing urban population. Many strategic approaches are possible for selecting an indicator set. If the aim is to understand the intricate dynamics of this complex phenomenon in detail, all of the aspects depicted in the framework could potentially be measured using a large compendium of indicators. If, on the other hand, the aim is to focus on certain dimensions of the framework (e.g. the use of a specific resource, the implementation and outcome of a specific intervention, etc.), multiple indicators focusing on that particular aspect may be selected to the exclusion of those relevant to other dimensions. Yet another approach would be to select a few indicators that cut across the whole

framework vertically, horizontally, or both, to obtain a comprehensive yet succinct set of measures. Other variations of these approaches are possible, as well.

Indicators are, by definition, succinct measures which describe a complex phenomenon, typically produced by processing and simplifying a large amount of raw data. A few good indicators should be able to provide a fairly comprehensive picture without unnecessary detail. In general, a well-crafted, parsimonious indicator set is often preferred in practice because it has the advantage of efficiency and of focusing attention. This is especially the case when the purpose of the indicators is to obtain an overview of a situation and to set strategic directions by key decision-makers or by multistakeholder, multisectoral groups.

This guide is thus geared toward developing such a **core indicator** set,

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a relatively small indicator set which responds well to the main objectives of a local age-friendly city initiative. This limited indicator set can provide a snapshot of the age-friendliness of a city and inform broad strategic directions for the city. The framework can help guide the selection of indicators to be included in the core set. While the focus of this guide is on developing a core set of indicators for a summative assessment of the age-friendliness of a city, it can also inform the construction of additional supplementary indicator sets to monitor activities at lower levels of decision-making or implementation.

The following sections describe each dimension of the framework, examples of relevant indicators, and important considerations for including those indicators in a local indicator set. While the categories of indicators are presented in the order of moving from left to right in the framework, as depicted in Figure 1, following the logical flow of the diagram, it is often helpful to select indicators in reverse order – to start by identifying indicators that correspond to the key expected impacts and outcomes of the initiative, then working backward to identify output and input indicators that are most relevant.

1. EQUITY INDICATORS

Cross-cutting the framework is the notion of equity as a guiding principle, whereby a strong emphasis is placed on ensuring **"the absence of systematic disparities in health (or in the major social determinants of health) between social groups who have different levels of underlying social advantage or disadvantage"** *(10*, p.254*)*. Thus, it is critical to include measures of equity in age-friendliness assessments, monitoring and evaluation.

Equity indicators require disaggregation of data by social stratifiers such as gender, age, wealth and neighbourhood. Then, one of several available measures of inequality can be applied to compute an equity indicator, including simple measures that make pairwise comparisons of two population subgroups (e.g. the best- and the worst-off groups) and complex measures that use data from all subgroups (e.g. across wealth quintiles or all sub-divisions of a city) to assess inequality *(11)*. It is recommendable for a measure of equity to be calculated for all indicators in an indicator set in order to examine equity in terms of inputs, outputs, outcomes and impact. Alternatively, it can be applied to one of the priority indicators as the summary equity indicator.

An approach to assessing and responding to health equity in urban environments, focusing on the social determinants of health, is described in the Urban Health Equity Assessment and Response Tool (Urban HEART) published by the WHO Kobe Centre in 2010 *(12)*. Some of the methods explained in detail in Urban HEART for creating an indicator set that builds upon core indicators, displaying the equity assessment results in a visually effective way, and selecting a strategic response are applicable to addressing the equity dimension of age-friendliness.

2. INPUT INDICATORS

Inputs are the **resources and structures which are essential to the successful initiation, development and sustainability of age-friendly city initiatives**. Indicators of inputs could be useful, for example, in tracking the availability, allocation and use of resources over time. Input indicators can generate data that could be used for cost-effectiveness analysis. They could also be used to advocate for greater engagement and contributions from stakeholders.

Input indicators may be measured in terms of availability (a binary, yes-no indicator) or the *level of* availability (on an appropriate scale). For example, the presence of a letter of commitment signed by the city's mayor can be used as a binary, qualitative indicator of high-level political commitment; in another case, the amount of financial commitment (in absolute or relative terms) by the mayor's office can be used as a quantitative indicator of both the level of political commitment and the level of financial resources. When considering the inclusion of input indicators in a limited set of age-friendly city indicators, preference should be given to those that are related to inputs which would have a broad influence on a range of outputs (such as political commitment) over those that represent inputs which, by design, are meant to have only limited influence (such as financial resources for one intervention out of many).

3. OUTPUT INDICATORS

Outputs primarily refer to the interventions that are implemented in order to achieve the desired outcomes and impacts. In the present context, **the focus of interventions is on creating age-friendly environments**, and these interventions can take the form of policies, services or programmes designed to change the physical and social environment. These are not restricted to newly implemented interventions but can also involve modifications to existing interventions. While the lead agency or coordinating body of an age-friendly city initiative may be the local government, it is important to recognize that non-government sectors, including civil society and the private sector, play a key role, often to fill in gaps in government interventions or to bolster those interventions.

Output indicators should capture the range of activities across the various sectors with particular attention to their scope and magnitude. An example of this would be the number (or proportion) of public transportation facilities (e.g. bus stops/stations, rail stations) in new construction or alterations that comply with relevant accessibility (e.g. inclusive design) standards. The agency or sector that is directly responsible for the implementation of the intervention might measure a wide range of indicators to closely monitor and evaluate both the process and outcome of their intervention. However, for the

"A FEW GOOD INDICATORS SHOULD BE ABLE TO PROVIDE A FAIRLY COMPREHENSIVE PICTURE WITHOUT UNNECESSARY DETAIL."

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purposes of developing a concise indicator set for the overall assessment of a multi-faceted, city-wide age-friendly initiative, it is advisable to restrict the output indicators to those related to key interventions of high priority, or of collective interest, to the city and its stakeholders.

4. OUTCOME INDICATORS

The core objectives of age-friendly city initiatives are typically related to this level of outcomes, which are the **short- to medium-term changes realized in the social and physical domains of the community environment** that are attributable (by logical or statistical association) to preceding interventions. In the context of age-friendliness of cities, the outcome indicators will mainly be related to issues of accessibility and inclusiveness of the key facets of urban life, such as physical accessibility of public facilities (e.g. health and social services, transportation, recreation facilities), affordability of decent housing, opportunities for social engagement, and accessibility of information. To use a previous example, increasing the number of public transportation facilities that comply with accessibility standards (the intervention, or output) is expected to improve

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"accessibility of public transportation" (an outcome).

Outcomes for the community as a whole, and not just for the older adults, are also important to consider, especially to highlight the positive contributions of older persons and the benefits of an age-friendly city to the wider community. Examples include donations, volunteering, and mentoring by older persons, as well as general connectivity of transport systems, and perceived accessibility of public facilities among people with disabilities, pregnant women, and families with small children.

The outcome indicators to be included in an indicator set should take into consideration the basic tenet that an age-friendly city encompasses a wide range of physical and social environmental factors that cut across the sectors of government and society. Thus, an indicator set should include a range of outcome indicators which embrace aspects of both the social and physical environment, as well as the effects of government and non-government sector interventions.

The selection of outcome indicators should be directly linked to the objectives and desired outcomes of the age-friendly initiative, and closely related to actual interventions and their expected impact. Importantly, **consideration should be given to the fact that interventions often generate both intended and unintended outcomes beyond their primary expected outcome**. For example, an intervention by the transportation sector to improve accessibility of public transportation may also indirectly improve the level of social engagement of older adults.

Alternatively, an intervention may direct resources away from interventions to enhance recreational programmes for older adults and, as a result, reduce their level of social engagement. Thus, it is important to consider direct and indirect, as well as intended and unintended outcomes when selecting outcome indicators. This means that the number and type of output indicators will not necessarily have a one-to-one correspondence with the number and type of outcome indicators. Ideally, an efficient programme will produce several outcomes through the implementation of fewer outputs.

5. IMPACT INDICATORS

Impacts are the **long-term changes in people's health, their physical, cognitive and emotional function, and wellbeing**, which are expected to be brought about (at least in part) by improvements in the age-friendliness of the physical and social environment. Thus, impact indicators should correspond well to the outcome indicators.

In some cases, the emphasis of an age-friendly city initiative may be to improve the age-friendliness of the environment as a matter of human rights and for the intrinsic value of creating an age-friendly environment without explicit aspirations to improve population health or wellbeing. However, it is reasonable to expect population health gains, as well as other

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benefits to the wider community (e.g. economic value, sustainability), if the environment is better adapted to the needs of the growing proportion of older adults, enabling them to remain highly functional, socially engaged and emotionally content over the long run. If such gains can be demonstrated, and at least partly attributed to the realized changes in the social and physical environment, it would significantly add value to the age-friendly city initiative.

While impact indicators are influenced by a wide range of factors, and would be difficult to make clear attributions to age-friendly city efforts, their inclusion in an age-friendly city indicator set is important in order to capture long-term impacts of modifying the environment. It can also provide common goals and targets for the different sectors to strive for through their coordinated efforts.

B ADDITIONAL CONSIDERATIONS FOR SELECTING AND MEASURING INDICATORS

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There are some general guidelines and documents available from other sources that are useful references for selecting indicators *(9,13,14)*. They all point to the fact that indicators must be selected through a thoughtful, systematic approach that considers not only the relevance of the indicators to the main objectives of the system or effort being measured (in this case, age-friendly city initiatives), but also whether they are measurable, technically sound and meaningful to the target audience. Careful consideration must be given to the selection of indicators as they have great potential to influence, for better or for worse, how a problem is framed as well as what actions are triggered as a result.

An important practical consideration is to **utilize routine data mechanisms and existing data bases** for selecting, collecting and analysing the indicators. This will help reduce burden and increase sustainability of data management. The scope of indicators required for measuring age-friendliness is broad, but it is likely that many of the indicators are routinely collected by different city departments, research institutions, community organizations and other stakeholders, or they could be derived or adapted from existing indicators. Caution is necessary, however, to avoid over-reliance on routinely used indicators, as this could hamper the development of creative, aspirational indicators. Moreover, administratively reported data are often found to differ from the perceptions reported by local residents in surveys and focus groups, or from the actual conditions observed through field surveys. As such,

"CAREFUL CONSIDERATION MUST BE GIVEN TO THE SELECTION OF INDICATORS AS THEY HAVE GREAT POTENTIAL TO INFLUENCE, FOR BETTER OR FOR WORSE, HOW A PROBLEM IS FRAMED AS WELL AS WHAT ACTIONS ARE TRIGGERED AS A RESULT."

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using more than one data source can help improve both the quality and quantity of data, and contribute to a more holistic and accurate assessment of the indicators.

During the development process of the core indicators presented in this guide, experts were consulted about key criteria for selecting the indicators for age-friendly cities, and the following criteria were established:

- **Measurable**: Is the indicator actually measurable or observable?
- **Valid**: Is the indicator measuring what it is supposed to measure? For example, does the indicator "proportion of roads suitable for walking" provide a suitable measure for determining "walkability"?
- **Replicable**: Can the indicator be collected in a standard way across time (for local benchmarking) or across different contexts (for inter-city comparison)?
- **Sensitive to change**: Will variations in the indicator be observable over time on account of specific actions?
- **Disaggregation possible**: Can the indicator be disaggregated by gender, age group, or across neighbourhoods? There are other stratifiers, too, that could be important in the local context, including ethnicity, socioeconomic status, etc.
- **Aligns with local goals and targets**: Does the indicator link to a broader local agenda?
- **Can be linked to action**: Does the indicator provide an understanding of the various actions that might need to be undertaken?
- **Within local influence**: Does the local government or community have the mandate or authority to act on this indicator? For example, a federal insurance scheme is mostly beyond the influence of the municipal government.
- **Easy to collect**: Are the data required to produce the indicator easy to collect in a timely manner?
- **Socially acceptable**: Is the collection of this information acceptable to the communities and individuals concerned?

V CORE INDICATORS

This section presents a set of core indicators for age-friendly cities which were developed based on the best available evidence obtained through the process described in Annex 1 of this guide. The core indicators consist of the most critical and minimal set of indicators that could be used in monitoring and evaluating age-friendly urban environments. The core indicator set would best be used to point to results that need further exploration, rather than as definitive assessments of success or failure. In addition to the core indicators, a set of supplementary indicators is also presented. These supplementary indicators can allow for a broader assessment of age-friendliness. Together, these indicators provide a starting point for developing a locally relevant but also externally comparable age-friendly city indicator set.

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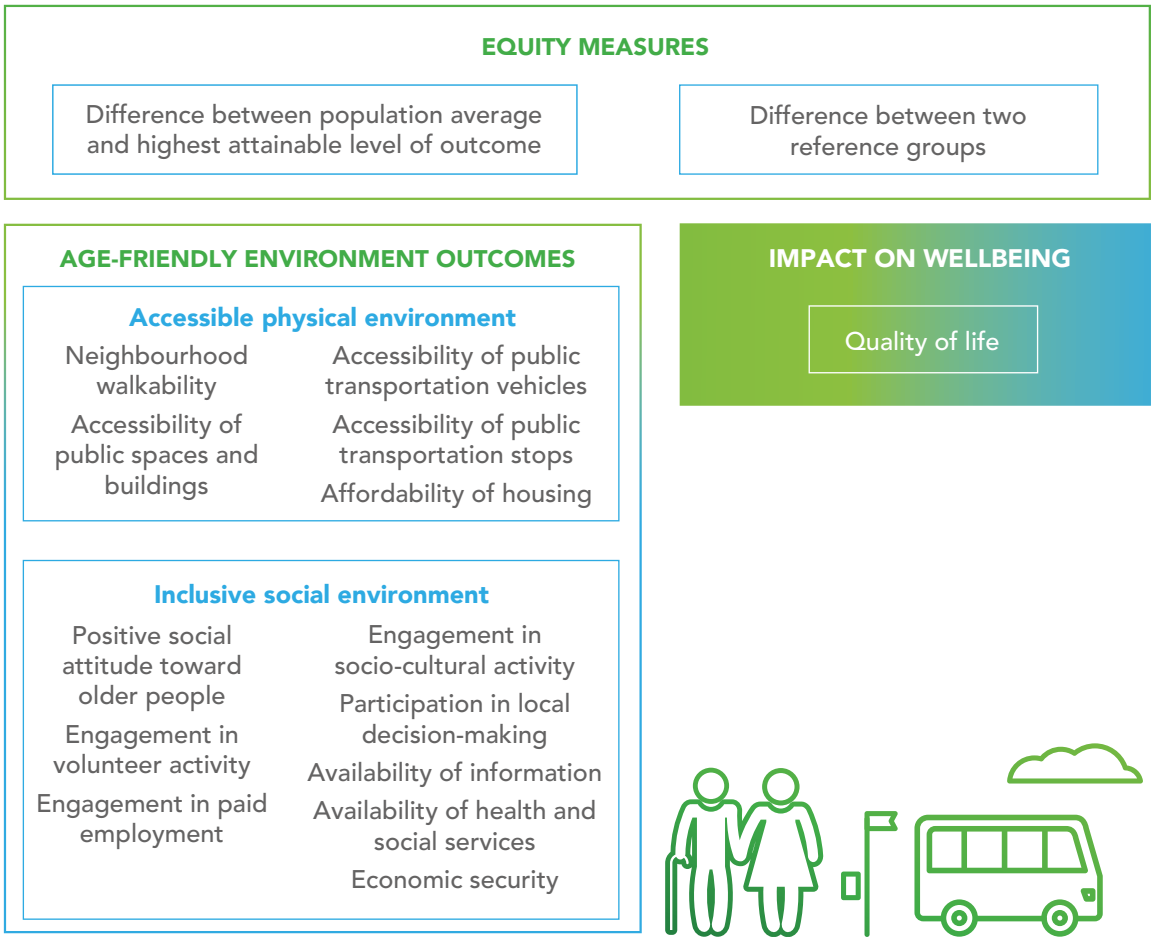
FIGURE 2. CORE INDICATORS OF AGE-FRIENDLY CITIES



The core indicators mainly focus on outcome and impact indicators rather than on input and output indicators (Figure 2). This is because age-friendly city initiatives, regardless of context, share similar goals and objectives for improving the age-friendliness of the domains of the urban environment (i.e. outcomes) in order to ensure quality of life as people age (i.e. impact), whereas the resources they use (i.e. inputs) and the interventions they implement (i.e. outputs) can vary substantially depending on the local context. The literature review findings and expert opinions that emerged during the core indicator development process also converged on the outcome and impact indicators. The key principles which are reflected in the core indicators are **equity**, **accessibility** and **inclusiveness**. Detailed descriptions of each indicator are provided in the next section.

A CORE INDICATORS: OPERATIONAL DEFINITIONS

"THE KEY PRINCIPLES WHICH ARE REFLECTED IN THE CORE INDICATORS ARE EQUITY, ACCESSIBILITY AND INCLUSIVENESS."

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The core indicators are presented in the tables below. For each indicator, two types of operational definitions are provided: one is a definition that is suitable when using data collected by local government agencies, service providers, and community organizations about their community; the other is a definition that places emphasis on the perspective of the older person and is more appropriate when using self-report surveys as the data source. The two definitions can also be used in a pair to complement and validate the information that they provide.

Each indicator also has information on suggested data sources, comments, references, and some examples of how to measure the indicators in practice. Case examples of how the indicators were measured in a couple of the pilot sites that used an earlier version of this guide are presented in Annex 2. In some cases, the finer details of the operational definition will have to be determined locally, due to the lack of a globally accepted or

standardized definition at this time, or due to the highly contextual nature of the indicator. Furthermore, the suggested operational definitions for the core indicators err on the side of being realistic than aspirational, and simple than complex, in order to facilitate uptake of the indicators.

With regard to how the "older population" is defined (for example, in survey data), in general, WHO approaches ageing from a life-course perspective rather than artificially categorizing life into stages such as "middle age" or "old age". Nevertheless, for statistical purposes, WHO generally applies 60 years and over as a cutoff, while for various reasons, in some analyses it will use other cutoffs, such as 50, 65 or 80. For the purpose of comparability, 60 is suggested for the statistical cutoff. However, the most appropriate cutoff for statistical purposes should be determined locally, considering the demographic profile of the local population and accepted

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statistical practices. Whenever possible, data collection and analysis should be based on narrow age bands in order to better understand the finer nuances of chronological ageing.

As a general rule, when developing survey questions to measure an indicator, it may be more desirable to use a scaled response option (e.g. 5-point scale ranging from '1 = strongly disagree' to '5 = strongly agree' to measure the level of agreement with a statement, or from '1 = never' to '5 = always' to measure the level of frequency), rather than a binary one (e.g. '1 = yes' or '0 = no'), to enable measurement of incremental changes. Disaggregation of the indicator data by population subgroup (e.g. gender, age groups, income level) or administrative area is strongly encouraged in order to obtain a more detailed assessment that would be sensitive to inequalities (see earlier section on Equity Indicators).

1. EQUITY

Equity indicators are essential to assess in respect to as many of the core physical and social environment indicators as possible. **These are not indicators for which additional data need to be collected**; rather, they require disaggregation (breaking down) of any, or all, of the other indicators by social stratifiers such as gender, age, wealth or geographic units, like neighbourhoods, to assess any unfair inequalities between them in regards to a specific indicator of interest (e.g. participation in local decision-making).

Both equity indicators included in the core indicator set are simple measures based on a comparison between one subgroup in the population (e.g. the best-off group) and the total population, or between two subgroups in the population (e.g. the best- and the worst-off groups). There are also more complex measures of inequality that use data from all subgroups (e.g. across wealth quintiles or all sub-divisions of a city) which are described in another WHO handbook *(11)*.

The two measures presented here should be calculated for all indicators in an indicator set in order to examine equity and monitor their change over time. Alternatively, it can be applied to a selected priority indicator, as the summary or tracer equity indicator. While they are termed equity indicators, they do not necessarily reveal inequities in and of themselves. Whether or not an *inequality*, a difference, is an *inequity,* a systematic, unfair difference, demands a qualitative evaluation of the pattern of inequality, taking into consideration universal values such as human rights and justice, as well as local values and perspectives.

DIFFERENCE BETWEEN POPULATION AVERAGE AND HIGHEST ATTAINABLE LEVEL OF OUTCOME	
Definition	The difference between the population average and the level of outcome achieved by a subgroup which has the best outcome or the highest socioeconomic position in the population of interest.
Calculation	*Population attributable risk (PAR)*: Using subtraction, calculate the absolute difference in the outcome rate between the subgroup with the best outcome and the total population for a measure of absolute inequality and improvement possible. *Population attributable risk percentage (PAR%)*: Divide the population attributable risk by the overall rate in the total population for a measure of relative inequality and proportional improvement possible.
Suggested data source	Data on the age-friendly city core indicators disaggregated by geographic or socioeconomic subgroups (e.g. gender, age, income, neighbourhood).
Comments	This indicator shows the level of improvement possible, or needed, in order for everyone in the community to enjoy the highest level of outcome already achieved by a subgroup in the same community. Other reference groups could be selected based on any geographic or socioeconomic subgroups of interest from an equity perspective. This measurement can be used for ordered or non-ordered groups, and can take into account subgroups of different sizes. Other more complex measures are also available for producing a single number that is an expression of the amount of inequality existing across all subgroups of a population. See reference below for more guidance on measuring and reporting health inequalities.

DIFFERENCE BETWEEN POPULATION AVERAGE AND HIGHEST ATTAINABLE LEVEL OF OUTCOME

Example

In La Plata, Argentina, self-reported health was measured as one of the impact indicators. The proportion of older adults, aged 60 and older, who reported good health (including 'good', 'very good' and 'excellent' health) was compared between the total population of older adults and the subpopulation of highly educated (i.e. completed secondary education or more) older adults. A large proportion (70.4%) of highly educated older adults reported good health, setting a benchmark for the highest attainable level of self-reported health status in the local population of older adults.

The PAR was calculated as 10.9, which is the difference in percentage points between the population average (59.5%), or baseline, and the benchmark set by the highly educated group of older adults (70.4%). The PAR% was calculated as 18.3 (10.9/59.5), which is the PAR expressed as a proportion of the baseline.

This analysis, which takes into account the entire population, indicates that the population average of older adults' self-reported health can potentially improve, or needs to improve, by 10.9 percentage points, or by 18.3% from its current baseline, in order to reach the level of self-reported health exhibited by the subgroup of highly educated older adults living in La Plata.

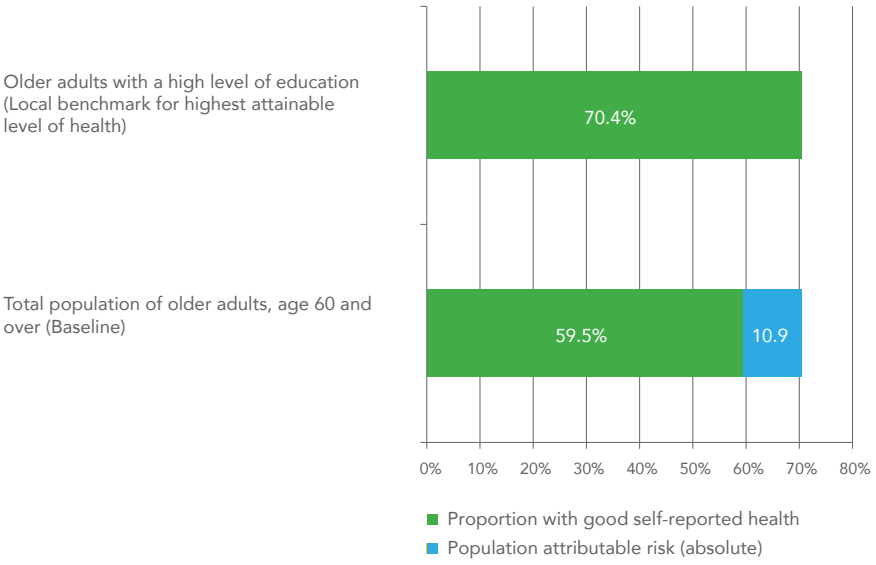

Figure. The level of improvement possible in self-reported health status among older adults using highly educated older adults as the benchmark, in La Plata, Argentina, reported as of March 2015.

References

- Handbook on health inequality monitoring: With a special focus on low- and middle-income countries. Geneva: WHO; 2013 (http://apps.who.int/iris/bitstream/10665/85345/1/9789241548632_eng.pdf, accessed 9 April 2014).
- Urban Health Equity Assessment and Response Tool. Kobe: WHO; 2010 (http://www.who.int/kobe_centre/publications/urban_heart/en/, accessed 3 June 2014).

DIFFERENCE BETWEEN TWO REFERENCE GROUPS	
Definition	The magnitude of difference in a specific outcome between two reference subgroups in the population.
Calculation	*Difference*: Subtract the mean value of the outcome of interest in one reference subgroup from the mean value of that indicator in the other reference subgroup for a measure of absolute inequality. *Ratio*: Divide the mean value of the outcome of interest in one reference subgroup by the mean value of that indicator in the other reference subgroup for a measure of relative inequality.
Suggested data source	Data on the age-friendly city core indicators disaggregated by geographic or socioeconomic subgroups (e.g. gender, age, income level).
Comments	When the two reference groups are the subgroup with the best outcome or the highest socioeconomic position (i.e. the best-off) and the subgroup with the worst outcome or the lowest socioeconomic position (i.e. the worst-off) in the population of interest, this indicator shows the difference between the lowest and the highest attainable levels of outcome in the population of interest. It can also be used to assess gender equity by comparing women and men, or for comparisons of other subgroups of interest. Simple measures that make pairwise comparisons of two population subgroups are straightforward in nature and easy to both produce and understand. For a description of inequality that exists across the entire population, other more complex measures should be used, although complex measures do not necessarily present a substantially better assessment of inequality than the simpler measures. See References below for more guidance on measuring and reporting health inequalities.

DIFFERENCE BETWEEN TWO REFERENCE GROUPS

Example

In New Haven, Connecticut, USA, the proportion of older adults, aged 60 and over, who reported volunteering at least once in the past year was compared between those with an annual income of less than US$30 000 and those with US$30 000 or more.

Older adults with higher income reported more volunteer participation. The absolute difference in volunteer participation was 14 percentage points, and the relative ratio of participation was 1.4 (49.0:35.0). This pairwise comparison revealed the magnitude of inequality in volunteer participation between the financially better-off and worse-off older adults living in the area.

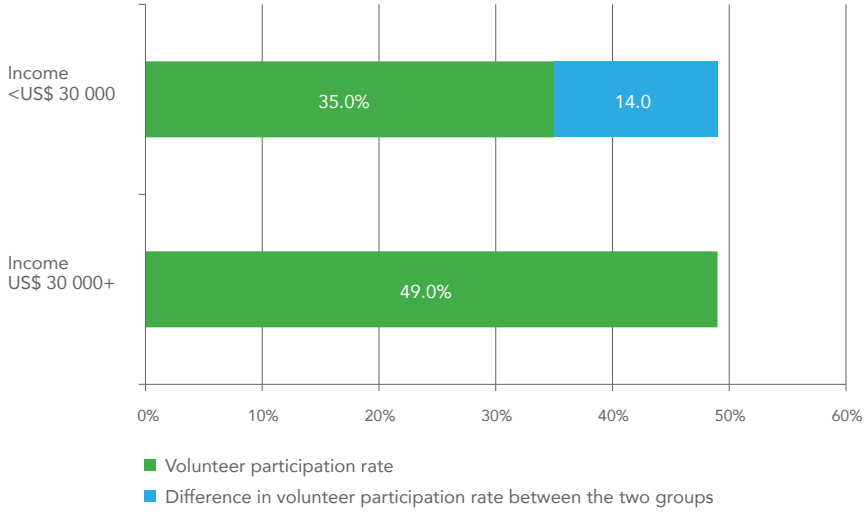

Figure. A comparison of self-reported volunteer participation rates among older adults, aged 60 and older, by income level, in the Greater New Haven area of Connecticut, USA, reported as of March 2015.

References

- Handbook on health inequality monitoring: With a special focus on low- and middle-income countries. Geneva: WHO; 2013 (http://apps.who.int/iris/bitstream/10665/85345/1/9789241548632_eng.pdf, accessed 9 April 2014).
- Urban Health Equity Assessment and Response Tool. Kobe: WHO; 2010 (http://www.who.int/kobe_centre/publications/urban_heart/en/, accessed 3 June 2014).

2. ACCESSIBILITY OF THE PHYSICAL ENVIRONMENT

NEIGHBOURHOOD WALKABILITY	
Suggested definition	Proportion of streets in the neighbourhood that have pedestrian paths which meet locally accepted standards. Suggested data sources: - Field survey of city streets - Administrative data on city planning, roads and infrastructure
Suggested definition using self-report data	Proportion of older people who report that their neighbourhood is suitable for walking, including for those who use wheelchairs and other mobility aids. Suggested data sources: - Survey of older residents
Comments	Neighbourhood walkability refers to the extent that a neighbourhood design supports walking. Walkability is characterized by a range of features including mixed land use, accessibility of destinations, safety, and the availability, quality and connectivity of pedestrian facilities. Several methods are currently available for assessing neighbourhood walkability using both quantitative and qualitative data (see References below). The suggested definition focuses on one key aspect of walkability – i.e. availability of accessible pedestrian paths. Locally accepted standards (path wide enough, no step to road, obstacle free, etc.) should be applied. This indicator can be supplemented with additional indicators for a more comprehensive assessment of neighbourhood walkability.

NEIGHBOURHOOD WALKABILITY

References

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- Community indicators for an aging population. Ottawa: Canada Mortgage and Housing Corporation; 2008 (http://www.cmhc-schl.gc.ca/odpub/pdf/66099.pdf, accessed 31 July 2015).
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- Leather J, Fabian H, Gota S, Mejia A. Walkability and pedestrian facilities in Asian cities: state and issues. ADB Sustainable Development Working Paper. Manila: Asian Development Bank; 2011 (http://esci-ksp.org/wp/wp-content/uploads/2012/04/Walkability-and-Pedestrian-Facilities-in-Asian-Cities.pdf, accessed 31 July 2015).
- Livable community indicators for sustainable aging in place. New York: MetLife Mature Market Institute & Stanford Center on Longevity; 2013 (https://www.metlife.com/assets/cao/mmi/publications/studies/2013/mmi-livable-communities-study.pdf, accessed 5 Aug 2015).
- Standardized survey of walking & bicycling database [database]. U.S. National Cancer Institute (http://appliedresearch.cancer.gov/paq/, accessed 17 April 2014).

ACCESSIBILITY OF PUBLIC SPACES AND BUILDINGS

Suggested definition

Proportion of new and existing public spaces and buildings that are fully accessible by wheelchair.

Suggested data sources:
- Field survey of new and existing public spaces and buildings
- Administrative data on city planning, building safety/permits, and parks

Suggested definition using self-report data

Proportion of older people who report that public spaces and buildings in their community are accessible for all people, including those who have limitations in mobility, vision or hearing.

Suggested data sources:
- Survey of older residents

ACCESSIBILITY OF PUBLIC SPACES AND BUILDINGS

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Comments

The suggested indicator (i.e. accessibility by wheelchair) can be supplemented with additional indicators for a more comprehensive assessment of compliance with universal design (or inclusive design) standards. Universally designed buildings and spaces enable access for everyone, including children, older people and people with functional limitations. The buildings and spaces are easily understood regardless of experience or knowledge, minimize hazards and accidental or unintended actions, and can be used efficiently and comfortably with a minimum of physical effort. Several guidelines on universal design are currently available (see References below); locally accepted standards should be applied.

References

- Accessibility design guide: Universal design principles for Australia's aid program. A companion volume to "Development for All: Towards a disability-inclusive Australian aid program 2009-2014". Canberra: Australian Government/AusAID (www.g3ict.org/download/p/fileId_961/productId_271, accessed 17 April 2014).
- Accessibility for the disabled. A design manual for a barrier free environment. New York: UN Department of Economic and Social Affairs; 2003-04 (http://www.un.org/esa/socdev/enable/designm/index.html, accessed 31 July 2015).
- International best practices in universal design: A global review. Ottawa: Canadian Human Rights Commission; 2006 (http://www.gaates.org/documents/BP_en.pdf, accessed 31 July 2015).
- United States Access Board: Advancing full access and inclusion for all [website] (http://www.access-board.gov/, accessed 31 July 2015).
- Universal design New York. New York: City of New York; 2001 (http://idea.ap.buffalo.edu//Publications/pdfs/udny1.pdf, accessed 31 July 2015).
- Universal design: Transportation Systems that accommodate all users, including people with disabilities and other special needs [website]. Victoria Transportation Policy Institute (http://www.vtpi.org/tdm/tdm69.htm, accessed 31 July 2015).

ACCESSIBILITY OF PUBLIC TRANSPORTATION VEHICLES	
Suggested definition	Proportion of public transport vehicles with designated places for older people or people who have disabilities. Suggested data sources: - Administrative data from local transit authority
Suggested definition using self-report data	Proportion of older people who report that public transport vehicles (e.g. train cars, buses) are physically accessible for all people, including those who have limitations in mobility, vision or hearing. Suggested data sources: - Survey of older residents
Comments	Physical accessibility of public transport vehicles refers to the ability of people with disabilities and older people to safely ride in a public transport vehicle in order to reach their destination. Several guidelines on accessible public transport are currently available (see References below); locally accepted standards should be applied. The suggested indicator on availability of designated seating areas can be supplemented with additional indicators for a more comprehensive assessment of public transport vehicle accessibility.
References	→ A Review of international best practices in accessible public transportation for persons with disabilities. Kuala Lumpur: United Nations Development Program; 2010 (www.g3ict.org/download/p/fileId_880/productId_195,_accessed 31 July 2015). → Eltis: The urban mobility observatory [website] (http://www.eltis.org/index.php?ID1=4&id=31, accessed 31 July 2015). → Improving access to public transport. Paris: European Conference of Ministers of Transport; 2004 (http://www.internationaltransportforum.org/IntOrg/ecmt/pubpdf/04Access.pdf, accessed 31 July 2015). → Methodology for describing the accessibility of transport in Europe (Mediate) [website] (http://www.mediate-project.eu/,_accessed 17 April 2014). → Paratransit for mobility-impaired persons in developing countries: Starting up and scaling up. San Francisco: Access Exchange International; 2012 (http://www.gaates.org/documents/Paratransit_Guide.pdf, accessed 31 July 2015). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015). → Roberts P, Babinard J. Transport strategy to improve accessibility in developing countries. Washington D.C.: World Bank (http://siteresources.worldbank.org/INTTSR/Resources/accessibility-strategy.pdf, accessed 31 July 2015). → Universal design: Transportation systems that accommodate all users, including people with disabilities and other special needs [website]. Victoria Transportation Policy Institute (http://www.vtpi.org/tdm/tdm69.htm, accessed 31 July 2015).

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ACCESSIBILITY OF PUBLIC TRANSPORTATION STOPS

Suggested definition	Proportion of housing within walking distance (500 m) to a public transportation stop. Suggested data sources: - Administrative data from local transit authority or city planning department
Suggested definition using self-report data	Proportion of older people who report that public transportation stops are accessible. Suggested data sources: - Survey of older residents
Comments	Accessibility of transportation stops in this context refers to the distance from the homes of older people to public transportation stops. If door-to-door services of public transportation are available, the proportion of housing within the coverage area of door-to-door services could be an alternative indicator. Additional indicators would be needed to take into consideration the safety and quality of the route to the transportation stop, the accessibility of transportation stops from important destinations (e.g. community centres, healthcare service, grocery stores, banks, etc.), the extent to which people's activities are actually limited due to lack of access to public transport, and other aspects.

ACCESSIBILITY OF PUBLIC TRANSPORTATION STOPS

References

- A review of international best practices in accessible public transportation for persons with disabilities. Kuala Lumpur: United Nations Development Program; 2010 (www.g3ict.org/download/p/fileId_880/productId_195,_accessed 31 July 2015).
- Community indicators for an aging population. Ottawa: Canada Mortgage and Housing Corporation; 2008 (http://www.cmhc-schl.gc.ca/odpub/pdf/66099.pdf, accessed 31 July 2015).
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- Universal design: Transportation systems that accommodate all users, including people with disabilities and other special needs [website]. Victoria Transportation Policy Institute (http://www.vtpi.org/tdm/tdm69.htm, accessed 31 July 2015).

A AFFORDABILITY OF HOUSING

Suggested definition	Proportion of older people who live in a household that spends less than 30 per cent of their equalized disposable income on housing. Suggested data sources: - Household census - Administrative data from department of economic affairs or housing - Public expenditure report
Suggested definition using self-report data	Proportion of older people who report that housing in their neighbourhood is affordable. Suggested data sources: - Survey of older residents
Comments	Housing costs include renting costs, mortgage payment, and repair and maintenance costs. The threshold of 30 per cent of disposable household income is based on existing practice (see References below). Locally accepted thresholds for defining affordability can be applied.
References	→ Community indicators for an aging population. Ottawa: Canada mortgage and Housing Corporation; 2008 (http://www.cmhc-schl.gc.ca/odpub/pdf/66099.pdf, accessed 31 July 2015). → Household incomes - equivalised [webpage]. Australian Bureau of Statistics (http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/A390E2529EC00DFECA25720A0076F6C6?opendocument, accessed 5 May 2014). → Livable community indicators for sustainable aging in place. New York: MetLife Mature Market Institute & Stanford Center on Longevity; 2013 (https://www.metlife.com/assets/cao/mmi/publications/studies/2013/mmi-livable-communities-study.pdf, accessed 5 Aug 2015). → Positive aging indicators. Wellington: Minister of Social Development; 2007 (https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/monitoring/postive-age-indicators/positive-ageing-indicators-2007.pdf, accessed 31 July 2015). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015).

3. INCLUSIVENESS OF THE SOCIAL ENVIRONMENT

POSITIVE SOCIAL ATTITUDE TOWARD OLDER PEOPLE	
Suggested definition	Number of reported cases of maltreatment of older persons (as a proportion of the total number of older people). (**A lower number can be indicative of a society in which the dignity and respect of older persons are protected.*) Suggested data sources: - Data collected by local law enforcement authorities, health/social service providers, or community groups addressing (elder) abuse prevention
Suggested definition using self-report data	Proportion of older people who report feeling respected and socially included in their community. Suggested data sources: - Survey of older residents
Comments	Maltreatment of older persons is a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person. This type of violence constitutes a violation of human rights and includes physical, sexual, psychological, emotional, financial and material abuse; abandonment; neglect; and serious loss of dignity and respect. Maltreatment of older people is an important public health problem. However, older people are often afraid to report cases of maltreatment to family, friends, or to the authorities. It may also be considered taboo to report such cases. Therefore, caution is required in interpreting low numbers of reported cases of maltreatment of older people, as it may in fact reflect undesirable conditions. Ageism is discrimination or unfair treatment based on a person's age, specifically discrimination against older people; absence of ageism is another indicator of a society's inclusiveness and respect for older people. Media portrayal of older adults, or the attitudes of employers and service providers toward older people, can also be important measures of social attitude, though their measurement remains a challenge. Measures of social capital, such as social cohesion, may also be an indicator of the inclusiveness of a community, which can be assessed through self-report surveys.

POSITIVE SOCIAL ATTITUDE TOWARD OLDER PEOPLE

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References

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ENGAGEMENT IN VOLUNTEER ACTIVITY	
Suggested definition	Proportion of older people in local volunteer registries. Suggested data sources: - Administrative data from local government - Reports from local organizations with volunteer registries
Suggested definition using self-report data	Proportion of older people who report engaging in volunteer activity in the last month on at least one occasion. Suggested data sources: - Survey of older residents
Comments	While volunteer activity is generally considered to be a positive indication of older people's social participation and contribution, it is not a desirable situation if they would rather be engaging in *paid* work but that option is not available to them because of their age. Therefore, an additional indicator worth considering is the level of satisfaction with, or desirability of, the volunteer activity from the older person's perspective. The types of volunteer activity, setting (e.g. schools, neighbourhood) and frequency of participation to be measured can be determined locally, as appropriate.
References	→ Livable community indicators for sustainable aging in place. New York: MetLife Mature Market Institute & Stanford Center on Longevity; 2013 (https://www.metlife.com/assets/cao/mmi/publications/studies/2013/mmi-livable-communities-study.pdf, accessed 5 Aug 2015). → Measuring national well-being: older people's leisure time and volunteering [website]. UK Office for National Statistics (http://www.ons.gov.uk/ons/rel/wellbeing/measuring-national-well-being/older-people-and-leisure-time---2013/art-measuring-national-well-being-amount-of-leisure-time-and-volunteering.html, accessed 5 May 2014). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015).

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PAID EMPLOYMENT

Suggested definition	Proportion of older people who are currently unemployed. *(*A lower unemployment rate is indicative of greater availability of paid employment opportunities for older people.)* Suggested data sources: - Labour statistics
Suggested definition using self-report data	Proportion of older people who report to have opportunities for paid employment. Suggested data sources: - Survey of older residents
Comments	Measures of *unemployment* take into account whether the individual considers him/herself to be in the labour market (i.e. looking for paid work but not currently employed). This is a sensitive indicator of employment opportunities as it captures lack of positions instead of successful employment. While engagement in paid labour is generally considered to be a positive indication of older people's access to employment, social participation, inclusion and contribution, it is not a desirable situation if they would rather be retired but that option is not available to them because of their lack of economic security. Therefore, an additional indicator worth considering is the level of satisfaction with, or desirability of, the opportunities for paid work from the older person's perspective. The frequency of engagement in paid employment can be determined locally, as necessary.
References	→ Positive aging indicators. Wellington: Minister of Social Development; 2007 (https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/monitoring/postive-age-indicators/positive-ageing-indicators-2007.pdf, accessed 31 July 2015). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015).

ENGAGEMENT IN SOCIO-CULTURAL ACTIVITY	
Suggested definition	Proportion of older adults among all reported visitors to local cultural facilities and events. Suggested data sources: - Administrative data from city department of cultural affairs - Demographic data of visitors reported by cultural facilities and events
Suggested definition using self-report data	Proportion of older people who report participating in socio-cultural activities at their own discretion at least once in the last week. Suggested data sources: - Survey of older residents
Comments	Participation in socio-cultural activities is a positive indication of older people's social participation and inclusion, and generally includes leisurely participation in formal or informal religious, cultural or other social activities with friends, relatives or neighbours. The focus is on face-to-face encounters, although online encounters and activities may become increasingly important with successive generations of older adults. The specific types of activities to be included in this indicator and the frequency of participation can be determined locally, as necessary.
References	→ Community indicators for an aging population. Ottawa: Canada mortgage and Housing Corporation; 2008 (http://www.cmhc-schl.gc.ca/odpub/pdf/66099.pdf, accessed 31 July 2015). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015). → Sustainability indicators report. Hamilton: Vision 2020; 2008 (http://sustainablecities.net/our-resources/document-library/doc_download/216-icsp-s-monitoring-and-evaluating-success, accessed 2 May 2014).

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PARTICIPATION IN LOCAL DECISION-MAKING

Suggested definition	Proportion of eligible older voters who actually voted in the most recent local election or legislative initiative. Suggested data sources: -Administrative data from local government
Suggested definition using self-report data	Proportion of older people who report being involved in decision-making about important political, economic and social issues in the community. Suggested data sources: - Survey of older residents
Comments	Other indicators of older people's participation in local decision-making can include, for example, the representation of older people (either direct or indirect) in the local government council and other local decision-making bodies and fora (e.g. town hall meetings).
References	→ Community indicators for an aging population. Ottawa: Canada Mortgage and Housing Corporation; 2008 (http://www.cmhc-schl.gc.ca/odpub/pdf/66099.pdf, accessed 31 July 2015).

AVAILABILITY OF INFORMATION	
Suggested definition	Availability of local sources providing information about health concerns and service referrals, including by phone. Suggested data sources: - Administrative data from city health department
Suggested definition using self-report data	Proportion of older people who report that they know whom to call if they need information about their health concerns and relevant services in their community. Suggested data sources: - Survey of older residents
Comments	Information is essential for older persons and their caregivers to be able to take informed decisions and actions about their health and social life, as well as seek needed services. The information should be provided in a way that is inclusive of people of different age groups and functional abilities, who may vary in their preferred mode of communication.
References	→ Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015). → Vladeck F, Segel R, Oberlink M, Gursen MD, Rudin D. Health indicators: a proactive and systematic approach to healthy aging. A Journal of Policy Development and Research. 2010;12(2):67-81.

A AVAILABILITY OF SOCIAL AND HEALTH SERVICES

Suggested definition	Proportion of older persons who have personal care or assistance needs that are receiving formal (public or private) home- or community-based services. Suggested data sources: - Administrative data from city government on health and social services - Official reports from local home- and community-based health and social service providers
Suggested definition using self-report data	The proportion of older people who report having their personal care or assistance needs met in their home or community through the use of formal (public or private) services. Suggested data sources: - Survey of older residents
Comments	Home- and community-based social and health services cover a wide range of services. They are essential for older people with health conditions or functional limitations which inhibit their ability to live autonomously and maintain quality of life. The core indicator focuses on the availability of *formal* services; in contexts where informal (family) care plays a major role, the indicator should be adapted to account for this. The need for services can be determined based on self-report, diagnosed health conditions and/or functional limitations. More detailed indicators would be necessary to determine the unmet need for specific types of services in the community (e.g. home health, personal care).
References	→ Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015). → Livable community indicators for sustainable aging in place. New York: MetLife Mature Market Institute & Stanford Center on Longevity; 2013 (https://www.metlife.com/assets/cao/mmi/publications/studies/2013/mmi-livable-communities-study.pdf, accessed 5 Aug 2015).

ECONOMIC SECURITY	
Suggested definition	Proportion of older people living in a household with a disposable income above the risk-of-poverty threshold. Suggested data sources: - Labour statistics - Administrative data from economic affairs department
Suggested definition using self-report data	Proportion of older people who report having had enough income to meet their basic needs over the previous 12 months without public or private assistance. Suggested data sources: - Survey of older residents
Comments	Economic security is an individual's economic situation that allows the individual to maintain their standard of living and meet their basic needs now and in the near future without public or private assistance. The European Union sets the risk-of-poverty threshold at 60% of the national median equivalised disposable income (after social transfers). The equivalised income is calculated by dividing the total household income by its size determined after applying the following weights: 1.0 to the first adult, 0.5 to each other household members aged 14 or over, and 0.3 to each household member aged less than 14 years old (see References below). The time reference (e.g. 12 months) for the measure of perceived economic security, as well as the risk-of-poverty threshold, can be adapted locally, as appropriate.
References	→ Economic security index [website]. International Labour Organization (http://www.ilo.org/dyn/sesame/SESHELP.NoteESI, accessed 5 May 2014). → Household incomes - equivalised [website]. Australian Bureau of Statistics (http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/A390E2529EC00DFECA25720A0076F6C6?opendocument, accessed 5 May 2014). → 'Laeken' indicators – Detailed calculation methodology. European Commission, Eurostat; 2003 (http://www.cso.ie/en/media/csoie/eusilc/documents/Laeken,Indicators,-,calculation,algorithm.pdf, accessed 31 July 2015). → People at risk of poverty or social exclusion [website]. European Commission – Eurostat; 2014 (http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/People_at_risk_of_poverty_or_social_exclusion, accessed 5 August 2014). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015).

A QUALITY OF LIFE

Suggested definition	Healthy life expectancy at birth Suggested data sources: - Administrative data and reports from city health department
Suggested definition using self-report data	Proportion of older people who self-rate their overall Quality of Life as 'very good (5)' or 'good (4)' on a scale ranging from 'very poor (1)' to 'very good (5)'. Suggested data sources: - Survey of older residents
Comments	The indicator of healthy life expectancy at birth focuses on the average number of years that a person can expect to live in "full health" by taking into account years lived in less than full health due to disease and/or injury. Healthy life expectancy at an older age (e.g. 60) can be a more sensitive measure of years lived in full health in the later years of life. Quality of Life, however, is not simply the absence of disease or injury. An enabling and supportive environment can allow someone with disease or injury to still enjoy a good quality of life. A subjective measure of Quality of Life can be very important, which would indicate "an individual's perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectation, standards and concerns" (WHO, 1997 p.1). Other possible measures of Quality of Life include Subjective Well-being (See References below.)
References	→ Forsyth A, Schmitz K, Oakes M. Twin cities walking survey. Minneapolis: University of Minnesota; 2003 (http://activelivingresearch.org/node/10619, accessed 2 May 2014). → Healthy life expectancy (HALE) [website]. WHO (http://www.who.int/healthinfo/statistics/indhale/en/, accessed 5 May 2014). → OECD Guidelines on measuring subjective well-being. Paris: OECD Publishing; 2003 (http://dx.doi.org/10.1787/9789264191655-en, accessed 31 July 2015). → WHO methods for life expectancy and healthy life expectancy. Global Health Estimates Technical Paper WHO/HIS/HSI/GHE/2014.5. Geneva: WHO; 2014 (http://www.who.int/healthinfo/statistics/LT_method.pdf, accessed 5 May 2014). → WHO Quality of Life-BREF (WHOQOL-BREF) [website]. WHO (http://www.who.int/mental_health/media/68.pdf, accessed 17 April 2014).

VI SUPPLEMENTARY INDICATORS

The indicators listed below were strong candidates for inclusion in the core indicator set but ultimately were not included for various reasons (see indicator selection criteria described in section IV.B. of this guide). These indicators should be considered for inclusion in a local indicator set, along with the core indicators, as appropriate.

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ACCESSIBILITY OF PRIORITY VEHICLE PARKING

Suggested definition	Proportion of priority parking spaces at new and existing public facilities that are designated for older people or people with disabilities. Suggested data sources: - Administrative data on city planning, building safety/permits and parks
Suggested definition using self-report data	Proportion of older people with a special parking permit for older or disabled drivers who report that designated priority parking spaces are adequately designed and available. Suggested data sources: - Survey of older residents
Comments	In societies where private car use is the main means of transportation, accessibility of priority parking can be important for older people's mobility. Priority parking refers to accessible parking spaces designed for people meeting certain criteria, such as having a disability. Several guidelines on priority parking are currently available (see References below); locally accepted priority parking standards (e.g. width of parking space, signs etc.) should be applied. The suggested definition captures only the availability of priority car parking spaces; additional indicators would be required for a more comprehensive assessment of the accessibility of priority parking.
References	→ Accessibility for the disabled. A design manual for a barrier free environment [Online]. UN Department of Economic and Social Affairs; 2003-04 (http://www.un.org/esa/socdev/enable/designm/index.html, accessed 31 July 2015). → Design standards for accessible parking spaces. Committee on Architectural Barrier-Free Design, New Hampshire Governor's Commission on Disability (http://www.nh.gov/disability/information/architectural/documents/design_standards_parking.pdf, accessed 31 July 2015). → Restriping parking lots. U.S. Department of Justice, Civil Rights Division, Disability Rights Section (http://www.ada.gov/restripe.pdf, accessed 31 July 2015).

ACCESSIBILITY OF HOUSING	
Suggested definition	Proportion of new and existing houses that have wheelchair-accessible entrances (i.e. sufficient width, ramp). Suggested data sources: - Administrative data from department of housing
Suggested definition using self-report data	Proportion of older people who report that their house is adapted, or can be adapted, to their needs to facilitate ageing at home. Suggested data sources: - Survey of older residents
Comments	The suggested indicator can be supplemented with additional indicators for a more comprehensive assessment of compliance with universal design standards. Universally designed housing enables access for everyone, including children, older people and people with functional limitations. The features of universally designed housing are adapted, and adaptable, in order to respond to the individual needs and circumstances of people as they age. Several guidelines on universal housing design are currently available (see References); locally relevant, appropriate and acceptable standards should be applied.

ACCESSIBILITY OF HOUSING

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References

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PARTICIPATION IN LEISURE-TIME PHYSICAL ACTIVITY IN A GROUP	
Suggested definition	Proportion of older people who are a member of a self-organized or institutionalized leisure-time physical activity group. Suggested data sources: - Demographic data of members reported by local clubs, associations or facilities for group sports and other physical activities
Suggested definition using self-report data	Proportion of older people who report participating in group physical activities in their leisure time. Suggested data sources: - Survey of older residents
Comments	The focus of this indicator is on leisure-time group physical activity, including play, sports and planned exercise. The aim is to capture the positive aspects of both physical activity and social participation. Other forms of physical activity, such as commute/transport, occupational activity and household chores, are more likely to be done out of need rather than desire, and not as likely to involve social participation. The specific types of activities and groups or facilities to be included in this indicator can be determined locally, as appropriate. More specific measures of physical activity are possible, with specifications of the type, duration, frequency and intensity of exercise. However, assessing optimal levels of physical activity for older persons on a population basis can be complicated, as many older adults may not be able to do the recommended amounts of physical activity due to health conditions or functional limitations. Indicators for such kinds of assessments would need to capture the extent to which older adults are as physically active as their abilities and conditions allow.
References	→ Ferreira M, Kowal P. Minimum data set on ageing in sub-Saharan Africa: Report on a WHO Workshop, 12-14 February, 2003. Pretoria: World Health Organization; 2003 (http://whqlibdoc.who.int/publications/2003/9241591110.pdf, accessed 6 May 2014). → Global recommendations on physical activity for health. Geneva: World Health Organization; 2010 (http://whqlibdoc.who.int/publications/2010/9789241599979_eng.pdf, accessed 6 May 2014). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015).

A ENGAGEMENT IN LIFE-LONG LEARNING

Suggested definition	Proportion of older people who were enrolled in education or training, either formal or non-formal, in the past year. Suggested data sources: - Administrative data from city department of education - Enrolment data of private and public education and training institutes
Suggested definition using self-report data	Proportion of older people who report being enrolled in education or training, either formal or non-formal, in the past year. Suggested data sources: - Survey of older residents
Comments	Formal, non-formal and informal education are three different types of education. Formal education refers to education and training courses, including workplace training, offered by universities, colleges, schools and other organizations with accreditation. Non-formal education refers to organized and structured education within or outside of education institutes. The difference with formal education activities is that non-formal education does not lead to a qualification. Examples are courses audited, not for credit, at a college or university, library courses or religious learning activities. Informal education activities refer to learning situations at home, at work or during leisure activities, and are neither organized nor structured. The specific types of education activities and time period to be included in this indicator can be determined locally, as appropriate. If local residents have good access to life-long learning opportunities in neighbouring communities, surveys of older residents may provide a fuller picture of their learning activities than information obtained only from local institutions.
References	→ Integrating lifelong learning perspectives. Hamburg: UNESCO Institute for Education; 2002. → Merriam SB, Kee Y. Promoting community wellbeing: The case for lifelong learning for older adults. Adult Education Quarterly. 2014;64(2):128-144. → Recognition of non-formal and informal learning – home [website]. OECD (http://www.oecd.org/education/skills-beyond-school/recognitionofnon-formalandinformallearning-home.htm, accessed 7 May 2014). → Terms, concepts and models for analysing the value of recognition programmes. RNFIL- Third Meeting of National Representatives and International Organisations, 2 - 3 October 2007, Vienna, Austria. OECD (http://www.oecd.org/education/skills-beyond-school/41834711.pdf, accessed 7 May 2014).

INTERNET ACCESS	
Suggested definition	Proportion of older people living in a household with internet access at home. Suggested data sources: - Demographic data of internet users reported by public and/or private internet providers
Suggested definition using self-report data	Proportion of older people who report having access to internet at home. Suggested data sources: - Survey of older residents
Comments	The use of the Internet as a means of obtaining information and communicating with other users whether for social interaction, to receive services and care (e.g. e-/m-Health), or to perform work and other daily tasks (e.g. shopping) from home, has grown dramatically over the years. While there still may be substantial variability in the degree of reliance on the Internet as an essential information and communication technology among older adults, thus creating a digital divide between generations/age cohorts or geographic areas, it is already an important tool for older adults in many developed countries, and is expected to increasingly become important for successive generations of older adults in other contexts.
References	→ Older adults and technology use: adoption is increasing, but many seniors remain isolated from digital life. Washington DC: Pew Research Center; 2014 (http://www.pewinternet.org/2014/04/03/older-adults-and-technology-use/, accessed 5 Aug 2015). → Positive aging indicators. Wellington: Minister of Social Development; 2007 (https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/monitoring/postive-age-indicators/positive-ageing-indicators-2007.pdf, accessed 31 July 2015).

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PUBLIC SAFETY

Suggested definition	Reported rate of crimes (per year) committed against older people. Suggested data sources: - Crime statistics - Local police reports
Suggested definition using self-report data	Proportion of older people who report feeling safe in their neighbourhood. Suggested data sources: - Survey of older residents
Comments	Public safety in the community is important both for directly and indirectly promoting the health and wellbeing of residents. Safety from crime, violence and other hazardous events in the community can protect the physical health and mental wellbeing of residents. Feelings of safety and trust can also enhance social cohesion. Perceived safety can further promote people's wellbeing and inclusion in society by reducing their anxiety about leaving home to engage in physical exercise and social activities. Many kinds of physical and social environment interventions are possible to enhance community safety, particularly for older adults, such as installing way-finding systems and safety features at crosswalks, and raising awareness about common crimes against older persons.
References	→ Community indicators for an aging population. Ottawa: Canada Mortgage and Housing Corporation; 2008 (http://www.cmhc-schl.gc.ca/odpub/pdf/66099.pdf, accessed 31 July 2015). → Harpham T, Grant E, Thomas E. Measuring social capital with health surveys: key issues. Health Policy and Planning. 2002;17(1):106-111. → Livable community indicators for sustainable aging in place. New York: MetLife Mature Market Institute & Stanford Center on Longevity; 2013 (https://www.metlife.com/assets/cao/mmi/publications/studies/2013/mmi-livable-communities-study.pdf, accessed 5 Aug 2015). → Project identifies 33 indicators that a community is "elder-friendly": implementing benchmarks for elder-friendly supportive communities. New Jersey: Robert Wood Johnson Foundation; 2004 (http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2009/rwjf15611, accessed 5 Aug 2015). → Positive aging indicators. Wellington: Minister of Social Development; 2007 (https://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/monitoring/postive-age-indicators/positive-ageing-indicators-2007.pdf, accessed 31 July 2015).

EMERGENCY PREPAREDNESS	
Suggested definition	Proportion of employees of local government agencies, community organizations, and service providers who participated in an emergency response training or drill in the past year which addressed the needs of older residents. Suggested data sources: - Reports by local authorities who conduct regular emergency response trainings or drills (e.g. local emergency management office, local fire department) - Survey of relevant local government agencies, community organizations and service providers.
Suggested definition using self-report data	Proportion of older people who report participating in an emergency response training or drill in the past year which addressed the needs of older residents. Suggested data sources: - Survey of older residents
Comments	Older adults have special needs in an emergency. It is common for them to have chronic health conditions and functional limitations which increase their vulnerability and need for support in an emergency. It is critical that individuals, service providers, and communities actively engage in emergency planning and training, taking into account the special needs of older adults and people with disabilities. Each person has a responsibility to prepare for a potential emergency, including older adults and their family caregivers. Service providers must be trained in emergency response procedures to ensure continuity of service, the safety of their own staff, and that of the older adults under their care. Local government agencies and community organizations must coordinate and be prepared to support the health and safety needs of older adults, engage them in the planning and training/exercising, and prepare plans, information systems, supplies and facilities to meet the needs of older adults in their community, not only in the immediate response phase but also in the mid- to long-term recovery phase, as necessary. This should be an integral part of the broader community emergency preparedness and response protocol.

EMERGENCY PREPAREDNESS

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VII LIMITATIONS OF THE FRAMEWORK AND INDICATORS

Age-friendliness of an urban environment is a complex, dynamic and multi-dimensional concept which is also highly context dependent. Furthermore, the knowledge and science about it is still in a developing stage – age-friendliness is a moving target. Thus, it does not easily lend itself to standardization of measurement. Given this reality, there are some inevitable limitations to the indicators presented in this document.

First, while the core indicators have been selected to cover key outputs and outcomes of age-friendly city initiatives, reliance on the core set of indicators presented in this document alone will provide a simplistic and potentially inappropriate overview of the complex reality of the determinants of ageing and health in a given city. Careful consideration should be given to adopting and adapting the core indicators, and also supplementing them with additional indicators, in order to obtain an assessment that is most appropriate for the locality of interest.

Secondly, in line with the WHO's original concept of Age-friendly Cities, the core indicators were developed with a focus on the urban context at the local government level, and this may have limited their utility for investigating related issues in suburban and rural contexts, at

higher levels of government, or at broader geographic scales (e.g. regional, national).

Thirdly, while efforts were made in the process of developing the core indicators to gather inputs from low- and middle-income regions, much of the currently available information, experiences and expertise (e.g. literature, existing guidelines, good practices, experts) were from high-income countries. This may have resulted in the core indicators being less relevant and appropriate for less resourced settings.

Fourth, the core indicators presented in this guide do not perfectly match or correspond to the eight domains of an Age-Friendly City previously described by WHO (WHO, 2007). However, the original key concepts and principles are still embraced by the core indicators. This was a result of the extensive consultations that were carried out in developing the core indicators, and the priority that was given to developing the indicators in line with current thinking, evidence and practices, while respecting the original concept, rather than strictly adhering to previously established guidance.

Fifth, the operational definitions of several of the core indicators are not strictly standardized and this can lead to variations in measurement and reduced accuracy and comparability. This is largely due to the highly complex and context-dependent nature of the phenomenon being measured, the immature state of the science, and the practical need to allow adaptability of the indicators.

Several of the limitations noted above stem from the fact that this is an evolving field of science and practice. Some of the limitations point to specific topics in need of further research. As such, the contents of this guide, including the indicator framework, the indicators and their definitions, require periodic review and revisions through an iterative process in order to keep the guidance up-to-date and in line with the state of the art, as well as to continuously improve its utility.

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IX

ANNEX 1: INDICATOR GUIDE DEVELOPMENT PROCESS

The indicator framework and core indicators presented in this guide are the product of a systematic approach carried out between 2012 and 2014. This involved literature reviews, two expert consultations, several rounds of peer review, and a pilot study (Figure 3).

An extensive literature review was conducted on existing frameworks and research findings about the determinants and processes of health and active ageing within the urban environment. This, as well as an understanding of the WHO Age-friendly Cities and Communities concept, provided the basis for developing the indicator framework presented in this document. The framework also reflects the inputs received from a wide range of experts through individual and group consultations.

The development of the indicators was based on several inputs. First, a comprehensive literature review was conducted on international and national initiatives related to ageing, health and the urban environment to pool relevant indicators. A total of 195 indicators from sixteen initiatives were selected across the original eight domains of the WHO Global Age-friendly City Guide. This master list of indicators provided a starting point for experts to deliberate on what could be proposed as the core indicators for assessing the age-friendliness of cities.

During the first expert consultation in 2012, the expert group short-listed 61 indicators as candidates for the core indicators, suggested modifications to the indicator domains, and also established the criteria for further reducing the list of indicators. The preliminary indicator set was evaluated in a pilot study conducted in 2013 with local government and community representatives from over 40 cities across 15 countries (Table 1). The pilot study generated a ranking of indicators as well as substantial qualitative feedback on the indicators and their definitions. Preliminary results from the pilot study were reviewed during the second expert consultation in 2013, which generated recommendations on refining the indicator framework and core indicator set.

In 2014-2015, an earlier draft of this guide was pilot tested in 15 communities across 12 countries which covered all of the WHO Regions (Table 2). A diverse group of pilot sites were selected with regard to their population size, urban or rural setting, membership in the Global Network of Age-friendly Cities and Communities, and sociocultural context. Unlike the initial pilot study, the pilot sites were required to review the guide and make their best attempt at collecting and analysing data for the core and supplementary indicators included in the guide. After the conclusion of the study, representatives of the pilot sites were gathered in WHO Geneva Headquarters for two days of in-depth discussion to synthesize the key findings from the pilot study and to identify issues that should be addressed before finalizing the guide.

This published version of the guide takes into consideration the cumulative results of the literature reviews, expert consultations, preliminary pilot survey, final pilot study, and extensive peer review conducted between 2012 and 2015. The development of indicators is an iterative process, and the core indicators may be refined in the future, as necessary and appropriate, in light of new scientific evidence or practice guidelines, as well as feedback from the users.

FIGURE 3. DEVELOPMENT PROCESS OF AGE-FRIENDLY CITY INDICATOR FRAMEWORK AND CORE INDICATORS

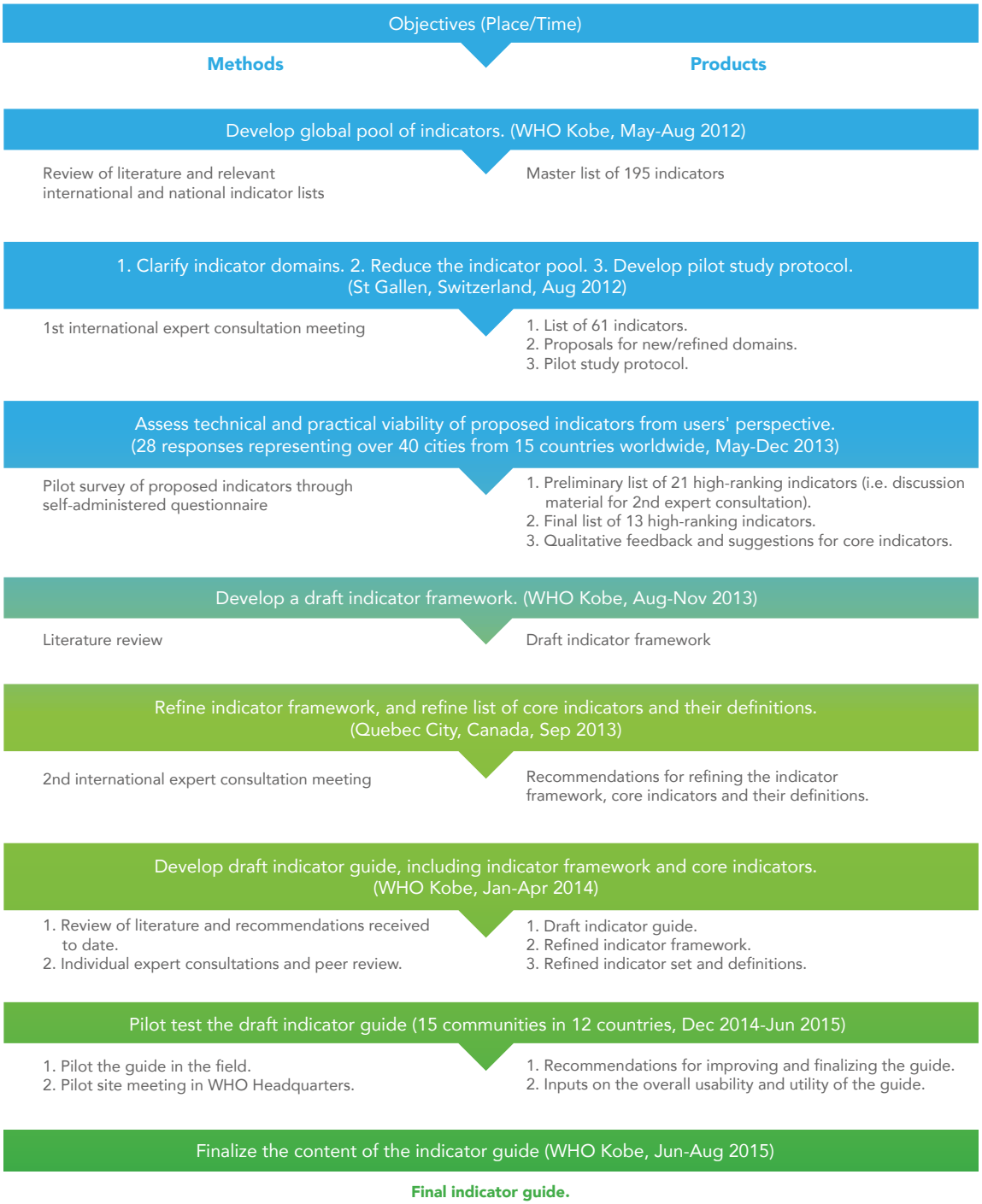


TABLE 1. AGE-FRIENDLY CITY INDICATORS PRELIMINARY PILOT SURVEY PARTICIPANTS, MAY-DEC 2013

COUNTRY	CITY	INSTITUTION	KEY PARTNERING INSTITUTIONS*
Argentina	La Plata	Isalud	→ Mayor of La Plata City → Ombudsman of the Province of Buenos Aires
Australia	Melbourne	City of Melbourne	
Canada	Ottawa	City of Ottawa	→ The Council on Aging of Ottawa
		The Council on Aging of Ottawa	→ City of Ottawa → Public Health Agency of Canada
		The International Longevity Centre (Rio de Janeiro, Brazil)	→ City of Ottawa → The Council on Aging of Ottawa → The International Longevity Centre
	N/A	Public Health Agency of Canada	→ Canadian Mortgage and Housing Corporation
China	Shanghai	Jing'an District Health Bureau Shanghai	
Costa Rica	San Jose	Hospital Nacional de Geriatría y Gerontología	→ Consejo Nacional de la Persona Adulta Mayor
France	Besancon	Ville et CCAS de Besancon	

COUNTRY	CITY	INSTITUTION	KEY PARTNERING INSTITUTIONS*
Ireland	Dublin	Dublin Age Friendly City Programme City Council	→ Dublin City Council
		Ageing Well Network (representing Eastern Dublin)	
		Individual researcher** (representing North Eastern Dublin)	→ Dundalk Institute of Technology → NUI Maynooth → DCU
		Fingal Local Authority (representing Northern Dublin)	
	Kilkenny	Ageing Well Network	→ Local Government → Health Service Executive → Law Enforcement
Japan	Akita	City of Akita, Welfare and Health Department, Elderly Welfare Unit	
	N/A	Japan Gerontological Evaluation Study (JAGES)***	→ Centre for Wellbeing and Society, Nihon Fukushi University (JAGES Secretariat)
Kenya	Nairobi (Korogocho Slum)	African Population and Health Research Center	
Korea	Jeju	Jeju Development Institute	
	Seoul	Seoul Welfare Foundation	
Russia	Tuymazy	Organization of Retired Persons	
Spain	N/A	National Age-friendly City Programme	
Sri Lanka	Wellawaya	Uva Provincial Council	→ Ministry of Social Services → Ministry of Health
	N/A	World Health Organization, Sri Lanka Country Office	→ Uva Provincial Council → Ministry of Health → Ministry of Social Services

COUNTRY	CITY	INSTITUTION	KEY PARTNERING INSTITUTIONS*
United Kingdom	Sheffield	Sheffield City Council	
	Manchester	Age-Friendly Manchester, Public Health Manchester, Manchester City Council	→ University of Manchester → UK Urban Ageing Consortium
United States of America	Bowling Green, Kentucky	City of Bowling Green	→ Western Kentucky University → City of Bowling Green Neighborhood → AARP Kentucky
	Portland, Oregon	Portland State University - Institute on Aging	→ City of Portland Bureau of Planning and Sustainability → Multnomah County Aging and Disability Services and Health Divisions → Metro (Portland's regional government)
	N/A	AARP	

*Key partnering institutions as mentioned by the survey respondent.

**Individual respondents' names are not revealed in order to protect their privacy.

***JAGES provided the collective response of a total of 38 local health officials representing 23 local city/prefectural governments from across Japan.

TABLE 2. PILOT SITES OF THE DRAFT VERSION OF THE AGE-FRIENDLY CORE INDICATOR GUIDE, DEC 2014-JUN 2015

COUNTRY	CITY OR TOWN	AREA WITHIN THE CITY/TOWN WHERE THE PILOTING WAS CONDUCTED (ONLY IF IT WAS NOT APPLIED TO THE ENTIRE MUNICIPALITY)
Argentina	La Plata	
Australia	Banyule	
China	Hong Kong	
China	Shanghai	Jing'an District
France	Dijon	
India	New Delhi	New Delhi Municipal Council area
Iran	Tehran	Neighbourhoods of Eyvanak and Shahrak-e-Ghods in Region 7 District 2
Italy	Udine	
Kenya	Nairobi	Korogocho and Viwandani Slums
Russia	Tuymazy	
Spain	Bilbao	
UK	Fishguard and Goodwick	
USA	Bowdoinham	
USA	New Haven	
USA	Washington DC	

ANNEX 2:
CASE EXAMPLES OF LOCAL ADAPTATION OF THE CORE INDICATORS

Five case examples are provided here, all taken from the pilot study that was conducted in 2014-15 (see Annex 1): Korogocho and Viwandani slums of Nairobi, Kenya; Bilbao, Spain; Banyule, Australia; Jing'an District of Shanghai, China; and Washington, DC, USA. In each case, the indicator selection, definitions, and data collection methods were adapted to their unique local context, to varying extents. Note that a draft version of this guide was used in the pilot study, and thus, some of the indicator definitions they had used from the guide have since been modified.

EXAMPLE 1: KOROGOCHO AND VIWANDANI SLUMS, NAIROBI, KENYA – PHYSICAL ENVIRONMENT INDICATORS

The Program on Aging and Development of the African Population and Health Research Center carried out the pilot test in Nairobi, Kenya, focusing on two slum communities – Korogocho and Viwandani. Founded in the late 60s by rural migrants, Korogocho began on undeveloped government-owned land. Following decades of expansion almost half of it is now on privately owned land. Flanked in the east and southeast by the largest refuse dump in the city, the 1 square kilometer settlement houses about 41 000 stable residents in over 250 dwelling units per hectare. Viwandani, on the other hand, is bordered to the south by the heavily polluted Ngong River and to the north by an industrial area that thrives mainly on the cheap manual labor of unskilled, highly mobile residents from the slum. In both localities, remarkably, the overall rate of growth in the older population – 53% in Korogocho and 138% in Viwandani – drastically outstripped the overall population growth rate, which was 6.1% for Korogocho and 23.7% for Viwandani, between 2003 and 2014. Thus far, no dedicated age-friendly city initiative exists in Korogocho or Viwandani, or in Nairobi, broadly. A set of two slum-upgrading programmes instigated by the national government to improve the livelihoods of slum dwellers likely encompass elements of core interest to a potential age-friendly endeavour. Korogocho is one of the focal areas of these programmes, while Viwandani is not.

Data for the indicators were mainly derived from direct field observation and from secondary data – the 2013 dataset of the Nairobi Urban Health and Demographic Surveillance System that operates in the two study sites, and 2009 survey data on the situation and wellbeing of older residents, age 60 and older, in the two sites, which were collected as part of a larger study on Urbanization, Poverty and Health Dynamics. In addition, focus groups were held with the older residents of the two slums to discuss the relevance of the core indicators and possible additional indicators that would be needed for their context.

Table 3 shows an excerpt of their report which shows the results of their assessment of the core physical environment indicators:

TABLE 3. MEASUREMENT RESULTS OF PHYSICAL ENVIRONMENT INDICATORS IN KOROGOCHO AND VIWANDANI SLUMS OF NAIROBI, KENYA, 2015

INDICATOR	SUGGESTED DEFINITION IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE
Neighborhood walkability	Proportion of streets in the neighborhood that have pedestrian paths which meet locally accepted standards	Same definition	0% (=0/40) Of the 17 roads in Viwandani none is tarmacked; of the 23 in Korogocho, the few that are tarmacked have either partial or no walkways. All are considered age unfriendly.	Physical mapping of study sites
Accessibility of public spaces and buildings	Proportion of new and existing public spaces and buildings that are fully accessible by wheelchair	Same definition	0% (=0/20) Public buildings in Viwandani are 3 local administration offices, 3 main churches, and 2 public primary schools. In Korogocho these comprise 2 local administration offices, a pubic hall, 7 village elders' offices, 1 public primary school, and 1 church.	
Accessibility of public transportation vehicles	Proportion of public transport vehicles with designated places for older people or people who have disabilities	Same definition	0%	
Accessibility of public transportation stops	Proportion of housing within walking distance (500 meters) to a public transportation stop	Same definition	10% (Viwandani) and <10% (Korogocho) By estimation, only about 1 house out of 10 is within walking distance of about 500 meters to any of the 4 bus stops closest neighboring Viwandani. Less than 10% of households in Korogocho live within walking distance to the single bus stop in the community.	

INDICATOR	SUGGESTED DEFINITION IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE
Affordability of housing	Proportion of older people who live in a household that spends less than 30% of their equalized disposable income on housing	Proportion of households that report spending less than 30% of their income on rent	51.3% (=683/1332)	Nairobi Urban Health and Demographic Surveillance System

Based on the focus group discussions with the older slum residents, they identified additional (new) dimensions, or alternative dimensions, of the core indicators of both the physical and social environment, that would be meaningful to assess in their context (Table 4).

TABLE 4. ADDITIONAL OR ALTERNATIVE DIMENSIONS OF THE CORE INDICATORS THAT WERE THOUGHT TO BE RELEVANT IN KOROGOCHO AND VIWANDANI SLUMS OF NAIROBI, KENYA, REPORTED IN 2015

INDICATOR	CURRENT DEFINITIONS	ADDITIONAL DIMENSION	ALTERNATIVE DIMENSION
PHYSICAL ENVIRONMENT			
Neighbourhood walkability	→ Proportion of streets with pedestrian paths that meet locally accepted standards → Proportion of older people who report that their neighbourhood is suitable for walking, including for those who use wheelchairs	→ Proportion of roads/paths accessible to vehicles (to enable timely transportation in cases of emergency)	
Accessibility of public transportation vehicles	→ Proportion of public transport vehicles with designated places for older people or people who have disabilities	→ Degree of respectful/ non-abusive behavior of public transport drivers and conductors toward older persons → Affordability of public transport (fares)	

INDICATOR	CURRENT DEFINITIONS	ADDITIONAL DIMENSION	ALTERNATIVE DIMENSION
SOCIAL ENVIRONMENT			
Positive social attitude toward people	→ Number of reported cases of maltreatment of older persons → Proportion of older people who report feeling respected and socially included in their community	→ Degree of respect shown by young people to older persons at family and community levels	
Engagement in socio-cultural activity	→ Proportion of older adults among all reported visitors to local cultural facilities and event → Proportion of older people who report participating in socio-cultural activities at their own discretion at least once a week		→ Degree of engagement in religious activities and self-help groups[1] (there appears to be little, if any, desire for other kinds of socio-cultural engagement)

[1] Self-help groups that exist in the study communities include the 'No Means No' initiative, in which a local NGO (Ujamaa Africa) trains older women in self-defense skills against attackers, and the Korogocho Elders Development Group mobilize resources and support for vulnerable older persons.

INDICATOR	CURRENT DEFINITIONS	ADDITIONAL DIMENSION	ALTERNATIVE DIMENSION
Availability of health and social services	→ Number of older persons with personal care or assistance needs receiving formal (public /private) home based services → Proportion of older people who report having their personal care or assistance needs met in their home setting through the use of formal (public or private) services	→ Degree of access to basic, quality primary health care for older persons' key health needs – in particular management of chronic conditions	

EXAMPLE 2: BILBAO, SPAIN – PHYSICAL ENVIRONMENT INDICATORS

The pilot study in Bilbao, Spain, was led by an interdepartmental initiative of the City Council. Bilbao is a city located in the north of Spain and is the capital city of the province of Biscay in the autonomous community of the Basque Country. With a population of 347 778 inhabitants, Bilbao is the most densely populated city in the Basque Country, and is the center of the metropolitan area of Bilbao, an urban conurbation of about 1 000 000 inhabitants. The city of Bilbao is surrounded by two mountain ranges, which form the natural boundaries of the city. In 2013, the proportion of the population aged 60 and over was 26.3%. Bilbao has been a member of the Global Network of Age-friendly Cities and Communities since 2010. It developed an action plan in 2012, the results of which are currently being assessed.

The main data sources used in their pilot study were a special purpose survey of a random sample of 250 people, aged 60 or over, residing in the city, and the city's centralized, interdepartmental data bank. In addition, focus group discussions were held with experts, and with people aged 60 or over and assistance service providers, respectively, to discuss the relevance and priority of the indicators in their local context.

Table 5 shows an excerpt from their report on the physical environment indicators:

TABLE 5. MEASUREMENT RESULTS OF PHYSICAL ENVIRONMENT INDICATORS IN BILBAO, SPAIN, REPORTED IN 2015

INDICATOR	DEFINITION IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	DATA YEAR	STUDY POPULATION	ADDITIONAL COMMENTS
1. Neighborhood walkability	Proportion of streets in the neighborhood that have pedestrian paths which meet locally accepted standards.	Proportion of lowered sidewalks for wheel-chair users or people using mobility equipment or assistive devices.	68% (5,392/7,890)	Secondary data from Bilbao City Council Works and Service Dept	2015	Overall pedestrian crosswalks (7,890)	Calculated as: Number of lowered paths/ Number of total pedestrian crosswalks
1. Neighborhood walkability	Proportion of seniors who report that their neighborhood is walkable, wheelchair users and people using other mobility aids included.	Proportion of seniors who feel that the streets in their neighborhood are adapted to wheel-chair users and people using mobility aids.	46% (116/250)	Primary data collected by a survey conducted by Bilbao City Council Social Services Dept	2015	Representative sample of the population of 60 years or over residing in Bilbao	-

INDICATOR	DEFINITION IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	DATA YEAR	STUDY POPULATION	ADDITIONAL COMMENTS
2. Accessibility of public spaces and buildings	Proportion of new and existing public spaces and buildings that are fully accessible by wheelchairs.	Proportion of public spaces and buildings which are totally accessible by wheelchairs since 2010.	100%	Eustat (Basque Institute of Statistics)	2010	52 new public buildings since 2010	There are 52 new public buildings built since 2010, which all comply with the Autonomous Community Rules & Regulations on Physical Accessibility implemented in 2000. A related decree outlined the technical standards on accessibility conditions within urban environments, public spaces, buildings and information & communication.
2. Accessibility of public spaces and buildings	Proportion of seniors who report that public spaces and buildings in their community are accessible by everybody, including those who have limitations in mobility, visual or hearing.	Same definition.	54% (=134/250)	Primary data collected by a survey conducted by Bilbao City Council Social Services Dept	2015	Representative sample of the population of 60 years or over residing in Bilbao	-

INDICATOR	DEFINITION IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	DATA YEAR	STUDY POPULATION	ADDITIONAL COMMENTS
3. Accessibility of public transportation vehicles	Proportion of public transportation vehicles with reserved seats for seniors or people who have disabilities.	Same definition.	100%	Secondary data from Bilbao City Council Traffic & Transportation Dept./ Basque Country Transportation and Civil Works Dept. / Biscay County Council Civil Works and Transportation Dept	2014	Overall public transportation (buses, metro, trams and trains)	A total of 477 buses were assessed, 147 of which are run by Bilbao City Council (Bilbobus) and 330 provincial buses run by the County Council (Bizkaibus). There are 8 seats reserved in each, 6 of which are reserved for seniors and 2 for wheel-chairs.
3. Accessibility of public transportation vehicles	Proportion of seniors who report that public transport vehicles (e.g. train, cars, buses) are physically accessible by everybody, inclusive of those who have limitations in mobility, vision or hearing.	Same definition.	59% (148/250)	Primary data collected by a survey conducted by Bilbao City Council Social Services Dept	2015	Representative sample of the population of 60 years or over residing in Bilbao	-

INDICATOR	DEFINITION IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	DATA YEAR	STUDY POPULATION	ADDITIONAL COMMENTS
4. Accessibility of public transportation stops	Proportion of housing within walking distance (500 m) to a public transportation stop.	Same definition.	100%	Secondary data from a study of Urban Sustainability Indicators. Bilbao City Council Traffic & Transportation Dept		Total number of homes in Bilbao	**See Figure 4.** 84.3% of the population have access to two or more public transportation networks. The objective of the City Council is that 100% of the population has access to two or more alternatives to using a private car. The City is also committed to ensuring there is a public transport within 300 meters for 95% of the population, with the goal to reach 100%. While the metro subway is considered accessible if it is within 500 meters (7 minutes' walk), the bus stop must be within 300 meters (5 minutes' walk).
4. Accessibility of public transportation stops	Proportion of seniors who report that public transportation stops are too far from homes.	Proportion of seniors who report that the public transportation stops/stations are within walkable distance (500 meters) from their homes.	82% (204/250)	Primary data collected by a survey conducted by Bilbao City Council Social Services Dept	2015	Representative sample of the population of 60 years or over residing in Bilbao	

INDICATOR	DEFINITION IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	DATA YEAR	STUDY POPULATION	ADDITIONAL COMMENTS
5. Affordability of housing	Proportion of seniors who live in a household spending less than 30% of their equalized disposable income on their residence.	Average proportion of monthly pension used for housing-related expenses among pensioners over 65 years.	9% (98,4€/ 1.150,31€)	Primary data collected by a questionnaire sent to the Bilbao City Council Social Services Dept & National Social Security Institute (The Secretary-General)	2012	-	The weighted average pension has been obtained by adding all the income received and by dividing it into the overall number of pensioners.
5. Affordability of housing	Proportion of seniors who report that housing in their neighborhood is affordable.	Same definition.	17% (43/250)	Primary data collected by a survey conducted by Bilbao City Council Social Services Dept	2015	Representative sample of the population aged 60 years or over residing in Bilbao	-

FIGURE 4. MAP OF AREAS THAT ARE WITHIN ONE OR MORE PUBLIC TRANSIT NETWORKS IN BILBAO, SPAIN, REPORTED IN 2015.

Note: **Green** areas are within walking distance (500 meters) of all 3 public transit networks: urban bus and tram stops, subway stations and bicycle lanes. **Yellow** areas are within walking distance of 2 of the 3 transit networks. **Orange** areas are within walking distance of 1 of the 3 transit networks.

EXAMPLE 3: BANYULE, AUSTRALIA – SOCIAL ENVIRONMENT INDICATORS

The City of Banyule is located within the Melbourne metropolitan area in the State of Victoria. It is predominantly an established residential area (76%), with significant open spaces and parklands (17%), on a total land area of about 63 square kilometres. In Australia three levels of elected government – local, state and federal – operate. Banyule City Council is one of 79 local government bodies in the State of Victoria. Councils are elected to manage local issues and to identify and plan for the community's needs. The pilot project was a collaborative effort of the Banyule City Council, La Trobe University and the Banyule Age-friendly City Advisory Committee. Banyule became a member of the Global Network of Age-friendly Cities and Communities in 2014. The establishment of indicators is an important step towards developing their Age-friendly City Plan 2015–2018.

Banyule's estimated resident population for 2013 was 124 475. Older residents aged 60 years and over make up 21.7% of the total population. Banyule is home to people from 148 countries, with nearly one-third (32.9%) of residents aged 60 years and over born overseas. Residents tend to have relatively higher levels of income and higher levels of education than for the

State of Victoria and Australia as a whole. However, there are pockets of disadvantage within the Banyule municipality.

No surveys were conducted specifically to collect data on age-friendly indicators because of time constraints, but surveys included in the data analysis included Banyule's Household Survey (2014), VicHealth's Health Indicators Survey (2011), and the Victorian Population Health Survey (2008). Other major sources of data included the Australian Census and administrative databases held by the Victoria Police and the Victorian Department of Health, all of which have collected data regularly and systematically over a long period. After the indicators were assessed, a World Café workshop was held with residents who participated in the Banyule Age-friendly City Champion to examine the indicator data and discuss what the information said about Banyule.

Table 6 shows an excerpt from their report of the social environment indicators.

TABLE 6. AN EXCERPT OF MEASUREMENT RESULTS OF SOCIAL ENVIRONMENT INDICATORS IN BANYULE, AUSTRALIA, REPORTED IN 2015

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Positive social attitude toward older people	1) Number of reported cases of maltreatment of older persons (as a proportion of the total number of older people).	Number of reported crimes against older people aged 65 years and over (as a proportion of the total number of older people).	1.9% (= a value from 378 to 382/20,232)	Victoria Police	2013–2014	Reported cases of crime. Persons who are victimised on more than one occasion are counted for each occasion. Total number of older people aged 65 years and over is based on 2013 forecast data for Banyule, produced by id consultants using the ABS Census of Population and Housing data – http://forecast.id.com.au/banyule/population-age-structure	The numerator in the *Indicator value* column is between 378 and 382. The actual number is not known because the data provider (Victoria Police) omitted four counts of 1 or 2 from the data source for de-identification purposes. Note: The offence or crime against a victim does not necessarily occur in Banyule. Maltreatment is an area requiring further exploration over time.
	2) Proportion of older people who report feeling respected and socially included in their community.	Proportion of older people living in a household that agrees to feeling part of the local community.	65.6% (=296/451) Proportion is based on scales 7 to 10. Mean rating (ranging from 0 to 10) – 7.3	Household Survey	2014	Sample of residents aged 60 years and over in the Banyule municipality. The denominator in the Indicator Value column excludes missing values.	From survey question: Q46. On a scale of 0 (strongly disagree) to 10 (strongly agree), rate your households agreement with the statement – we feel part of the local community. Another possible data source is the 2011 VicHealth Survey. People Aged 55 Years and Over: Satisfaction with Feeling Part of the Community – 75.4% In future surveys Banyule will include a question on whether older people feel respected.

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Engagement in volunteer activity	1) Proportion of older people in local volunteer registries.	Banyule will use just the one indicator as defined below.					Due to the high number of volunteer organisations, it is not currently possible to collect the proportion of older people in local volunteer registries. As well, many individuals volunteer for multiple organisations.
	2) Proportion of older people who report engaging in volunteer activity in the last month on at least one occasion.	Proportion of older people who reported undertaking voluntary work through an organisation or group in the last 12 months.	17.9% (=4,608/25,693)	Census of Population and Housing	2011	Resident population (aged 60 years and over) in the Banyule municipality.	Another possible data source is the 2014 Household Survey – Q41. In the last 12 months, did any member of this household do any unpaid voluntary work for any of the following types of organisations? In future, the definition in the WHO Guide will also be used; this information is not currently collected.

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Paid employment	1) Proportion of older people who are currently unemployed.	Proportion of older people (aged 55 years and over) who are unemployed.	2.9% (=265/9,280)	Census of Population and Housing	2011	Resident population (aged 55 years and over) in the Banyule municipality. The denominator in the Indicator Value column only includes persons who were either employed or unemployed and looking for work.	Unemployed people in this category are defined as those people aged 55 years and over who, in the week prior to Census night, did not have a job but were actively looking for either full or part-time work. Another possible data source is the 2014 Household Survey – Q31. What is the person's current employment status? (options include unemployed) For older people aged 60 years and over, the proportion is: 0.6% (=3/506) In future, the definition in the WHO Guide will also be used; this information is not currently collected.
	2) Proportion of older people who report having opportunities for paid employment.						This will be considered for inclusion in a future survey for older residents.

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Engagement in socio-cultural activity	1) Proportion of older adults among all reported visitors to local cultural facilities and events.	Proportion of older adults (aged 55 years and over) among all adults (aged 18 years and over) who reported participating in arts and related activities in the last 3 months.	30.3% (=19,075/62,986)	VicHealth Indicators Survey	2011		From survey question: In the last 3 months, have you been involved in making or creating art including crafts either at home or in a public space; for example performing, creative writing, digital or media art? Data for this indicator are not readily available. Therefore the figures were calculated from the following available data; i.e. participation rate of adults aged 18 years and over (67.7%), population aged 18 years and over (93,037), participation rate of older adults aged 55 years and over (57.8%), population of older adults aged 55 years and over (33,002). Another possible data source is the 2014 Household Survey. Q14. What are the recreation, leisure, arts or cultural activities the person usually participates in? Q18. Does the person participate in any community groups - church/religious / arts & cultural / nationality groups?
	2) Proportion of older people who report participating in socio-cultural activities at their own discretion at least once in the last week.	Proportion of people aged 55 years and over who participated in arts and related activities in the last 3 months.	57.8%	VicHealth Indicators Survey	2011	Sample of residents in Banyule aged 55 years and over.	Another possible data source is the 2014 Household Survey. Q18. Does the person participate in any community groups – church/religious / arts & cultural / nationality groups? 26.4% (=135/511) persons aged 60 years and over.

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Participation in local decision-making	1) Proportion of eligible older voters who voted in the most recent local election or legislative initiative.	Proportion of eligible voters aged 70 years or more who voted in the most recent local government election.	48.0% (=4,901/10,203)	Victorian Electoral Commission (VEC)	2012	Banyule is a subdivided municipality comprised of seven wards/areas. One ward did not have to vote as it was uncontested, thus reducing the number of voters.	In the state of Victoria, voting is mandatory for citizens aged 18 to 69 years. Voting is not compulsory for people aged 70 years and over (Local Government Electoral regulations 2005), which is why this age group is specified in the definition.
	2) Proportion of older people who report being involved in decision-making about important political, economic and social issues in the community.	Proportion of adult population who are members of a decision-making board or committee.	19.1%	Victorian Population Health Survey	2008	Sample of 450 residents in Banyule aged 18 years and over.	2011 data are not yet available. Another possible data source is the VicHealth Indicators Survey. Proportion of people aged 55 years and over who participated in citizen engagement activities in the last 12 months. QC6. In the last 12 months have you done any of the following? (42.9%) a. Attended a town meeting, public hearing or public affairs discussion group b. Met with, called or sent a letter to any local politician c. Joined a protest or demonstration d. Signed a petition The measure is based on responses of 'Yes' to any of the options 'a' to 'd'. In future, the definition in the WHO Guide will also be used; this information is not currently collected.

EXAMPLE 4: JING'AN DISTRICT, SHANGHAI, CHINA – SOCIAL ENVIRONMENT AND QUALITY OF LIFE INDICATORS

The pilot project in Jing'an District of Shanghai, China, was carried out by the Jing'an Preventive Medicine Association in collaboration with the Fudan University School of Public Health, the Shanghai Research Center on Aging, and relevant Jing'an District agencies. Jing'an District, covering an area of 7.62 square kilometres, is one of the most densely populated districts of Shanghai. The district is divided into administrative areas of five communities and sixty-nine neighbourhood committees. In 2013, it had a population of 296 100 according to the household register. People aged 60 years and over accounted for 30.6% of the total population, making Jing'an the district with the highest population ageing rate in Shanghai. While Jing'an is not a member of the Global Network of Age-friendly Cities and Communities, it has been implementing Age-friendly City programmes since 2008, as a vital part of its broader Healthy City programme initiated in 2002. Through the Healthy City programme, a cross-sectoral network of the district government, relevant government sections and sub-district offices was already functional, which became a great asset for this pilot study.

The main methods of data collection used in Jing'an were: paper inquiry or interviews with department officials to collect relevant transcripts and related documents; direct site observation of outdoor environment and physical facilities in public places; and a specific survey of a representative sample of older residents aged 60 years and over.

Table 7 shows an excerpt from their report of the social environment indicators and Quality of Life indicators.

TABLE 7. AN EXCERPT OF MEASUREMENT RESULTS OF SOCIAL ENVIRONMENT AND QOL INDICATORS IN JING'AN DISTRICT, SHANGHAI, REPORTED IN 2015

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Availability of information	(1) Availability of local sources providing information about health concerns and service referrals, including by phone.	Same definition	100%	District Health and Family Planning Commission (health education requirement by the Commission)	2014	69 neighborhood committees in Jing'an District	Currently, all communities in the district have at least one fixed publicity location for posting healthy posters, which are updated monthly. Neighborhood committees organize health-related seminars and other activities at least once a month.
	(2) Proportion of older people who report that local sources of information about their health concerns and service needs are available.	Same definition	100%	The Age-friendly Jing'an District self-reported survey	2014	Representative sample of residents 60 years old and older in Jing'an District	

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Availability of social and health services	(1) Number of older persons with personal care or assistance needs receiving formal (public or private) home-based services.	Same definition	16.0% (14,805/ 92,740)	District Bureau of Civil Affairs; District Health and Family Planning Commission (annual report data)	2014	Population of 60 years old and over in Jiang'an District	The data included the number of older persons receiving home-care services from the District Bureau of Civil Affairs and the number of older persons receiving family sickbeds services from the District Health and Family Planning Commission.
	(2) The proportion of older people who report having their personal care or assistance needs met in their home setting through the use of formal (public or private) services.	Same definition	71.2% (1,068/1,499)	The Age-friendly Jing'an District self-reported survey	2014	Representative sample of residents 60 years old and older in Jing'an District	

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Economic security	(1) Proportion of older people living in a household with a disposable income above the risk-of-poverty threshold.	Proportion of older people receiving subsistence relief	0.3% (251/92,740)	District Bureau of Civil Affairs (statistical data in the system)	2014	Population of 60 years old and over in Jiang'an District	Shanghai urban residents' minimum living standard is 710 CNY per month in 2014.
	(2) Proportion of older people who report having had enough income to meet their basic needs over the previous 12 months without public or private assistance.	Proportion of older people who report household monthly income per capita is more than 2300 CNY	88.7% (1,330/1,499)	The Age-friendly Jing'an District self-reported survey	2014	Representative sample of residents 60 years old and older in Jing'an District	Average monthly consumption per capita was 2300 CNY in Shanghai in 2013, reported by the Shanghai Statistics Bureau.
		Same definition	91.1% (1,365/1,499)	The Age-friendly Jing'an District self-reported survey	2014	Representative sample of residents 60 years old and older in Jing'an District	Scale response ranging from '0=strongly disagree' to '10=strongly agree'. Responses of 5 and over were classified as an indicator of economic security.

INDICATOR	DEFINITIONS IN THE GUIDE	ACTUAL DEFINITION USED	INDICATOR VALUE	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	ADDITIONAL COMMENTS
Quality of Life	(1) Healthy Life Expectancy at birth	Healthy Life Expectancy for people 60 years old	18.94 years	The Age-friendly Jing'an District self-reported survey	2011	Representative sample of residents 60 years old and older in Jing'an District (3,000 persons in total)	Currently Healthy Life Expectancy has not entered the regular statistics in China. Since 2002, Jing'an District has been calculating Healthy Life Expectancy for older people every 5 years, and it has increased by 5.66 years between 2002 and 2011.
	(2) Proportion of older people who rate their overall Quality of Life as 'very good (5)' or 'good (4)' on a scale ranging from 'very poor (1)' to 'very good (5)'.	Proportion of older people who rate their overall Quality of Life as '5 and over 'on a scale ranging from '0=very poor' to '10=very good'.	93.4% (1,400/1,499)	The Age-friendly Jing'an District self-reported survey	2014	Representative sample of residents 60 years old and older in Jing'an District	Scale response ranging from '0=very poor' to '10=very good'. Responses of 5 and over were classified as an indicator of good quality of life.

EXAMPLE 5: WASHINGTON, DC, USA – EQUITY INDICATORS

In a little over 68 square miles, Washington, DC, capital of the United States of America, had in 2014 an estimated population of 658 893. Commuters from the surrounding suburbs in the states of Maryland and Virginia raise the city's population to more than one million during the workweek. DC is divided into four ordinal quadrants. Across these quadrants are eight wards, each with multiple neighbourhoods within. As the equity indicators will highlight, significant economic and demographic disparities exist between these boundaries. Wards 2 and 3 are whiter, wealthier, and more expensive to live in than the other wards, while wards 7 and 8 are predominantly African American, with lower average family incomes and lower median home prices.

Since 2012, Age-Friendly DC has been a member of the Global Network of Age-friendly Cities and Communities with Mayoral and DC Council support and encouragement. The Age-Friendly DC Task Force has participation by the DC government and community organization leaders. Over two years, thousands of DC residents shared their time and thoughts, which led to the completion of the Age-Friendly DC Strategic Plan in December 2014. The pilot study in Washington, DC, was led by Age-Friendly DC staff members in the Office of the Deputy Mayor for Health and Human Services and carried out with the cooperation of the Age-Friendly DC's Mayor-appointed Task Force, and numerous government agencies.

In the spirit of using data that are readily available and accessible, the team engaged in data mining of the Census data, primarily gathered through the American Community Survey 2009-2013. An open data platform operated by the DC government through its Office of the City Administrator and the Office of the Chief Technology Officer was also utilized. All of this information is shared as layers on DC's internal Geographic Information System (GIS) server. The primary agency databases that were used were those of the District Department of Transportation, DC Office on Aging, Office of the Chief Technology Officer, Office of Disability Rights, Department of Health and the Department of Health Care Finance. Survey data were primarily taken from the AARP[2]: the 2013 Neighborhood Survey of Volunteers (N=181) and the 2013 District of Columbia Neighbourhood Survey (N=976). The team also reached out individually to a number of community partners, including the The Urban Institute, AARP national office and DC leaders.

Table 8 shows an exerpt of their report on the equity indicators.

[2] AARP, formerly known as the American Association of Retired Persons, is a United States-based membership and interest group.

TABLE 8. RESULTS OF EQUITY ANALYSIS OF CORE INDICATORS BY WASHINGTON, DC, USA, REPORTED IN 2015

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Neighbourhood walkability	Proportion of AARP survey respondents who were extremely or very satisfied with the safety of neighbourhood streets for pedestrians.	Male to female	1.04 (43.8/42.0)	1.8	AARP Neighbourhood Survey	2013	Sample (N=976)	The largest inequity found was between white and black respondents in their perception of neighbourhood safety for pedestrians. White respondents indicated that they perceived their neighbourhood as safe for pedestrians more frequently than black respondents. This could call for additional research into the number of injuries and fatalities occurring in different neighbourhoods to better understand this difference. Paradoxically, lower income residents were more likely to report a safe pedestrian atmosphere in their neighbourhood. Potential reasons for this may include level of pedestrian activity in different neighbourhoods as well as infrastructure available (e.g. many streets in the wealthier northwest part of DC do not have sidewalks).
		White to black	1.21 (46.8/38.8)	8	AARP Neighbourhood Survey	2013	Sample (N=976)	
		Household income <US$50,000 to household income US$50,000=<	1.11 (47.0/42.3)	4.7	AARP Neighbourhood Survey	2013	Sample (N=976)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Accessibility of public spaces and buildings	Proportion of AARP survey respondents who answered "yes" to the question, "Does the neighbourhood where you live have accessible public buildings and facilities?"	Male to female	0.89 (44.9/50.3)	-5.4	AARP Volunteer Survey	2013	Sample (N=195)	Note that in AARP's Volunteer Survey, the team did not have access to data disaggregated by race, so an age comparison was used instead. The largest difference in responses was between respondents aged 60-74 compared to respondents aged 75 and over. The younger cohort was more likely to report accessible public buildings and facilities which may speak to the need to pay particular attention to the ambulatory abilities of adults aged 75 and over when designing these spaces.
		Ages 60-74 to ages 75=<	1.22 (48.9/40.0)	8.9	AARP Volunteer Survey	2013	Sample (N=195)	
		Household income <US$50,000 to household income US$50,000=<	0.88 (45.3/51.6)	-6.3	AARP Volunteer Survey	2013	Sample (N=195)	
Accessibility of public transportation vehicles	Proportion of AARP survey respondents who answered "yes" to the question, "Does the neighbourhood where you live have accessible public transportation?"	Male to female	1.03 (95.8/93.1)	2.7	AARP Neighbourhood Survey	2013	Sample (N=976)	There are no significant differences among responses to this question based on the comparisons examined. This speaks to a fairly uniform view that public transportation in DC is accessible.
		White to black	1.00 (94.2/93.8)	0.4	AARP Neighbourhood Survey	2013	Sample (N=976)	
		Household income <US$50,000 to household income US$50,000=<	0.99 (93.2/93.8)	-0.6	AARP Neighbourhood Survey	2013	Sample (N=976)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Accessibility of public transportation stops	Proportion of AARP survey respondents who answered "always", "frequently", or "sometimes" to the question, "How often do you miss doing the things you want because you do not have transportation?"	Male to female	0.88 (18.4/21)	-2.6	AARP Volunteer Survey	2013	Sample (N=195)	Significant differences exist in responses to this question, in particular with low-income individuals much more likely to miss activities due to lack of transportation. There is also a difference between respondents aged 60-74 and those aged 75 or more. The greater reporting of missing activities by those aged 60-74 due to lack of transportation could be a result of respondents aged 75 and older not engaging as often in activities requiring transportation due to differences in ambulatory or cognitive abilities.
		Ages 60-74 to ages 75=<	1.36 (23.3/17.1)	6.2	AARP Volunteer Survey	2013	Sample (N=195)	
		Household income <US$50,000 to household income US$50,000=<	3.57 (30.7/8.6)	22.1	AARP Volunteer Survey	2013	Sample (N=195)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Affordability of housing	Proportion of DC households that spend less than 30% of household income on monthly owner costs or rent.	Households headed by an adult aged 60=< to total households	1.02 (61.7/60.2)	1.5	Census, American Community Survey 5yr - Population 60 Years and older in the US	2013	Population	These data were derived by combining both owned and rented units and the cost burden associated with each. In both categories, renters are much more cost burdened than owners. Although residents aged 60 and over have a higher percentage of cost burden in each category, the percentage of owners versus renters is much higher in this age group. Therefore, when both are aggregated, the lower cost burden of owners creates a lower overall cost burden for residents aged 60 and over.
	Proportion of AARP survey respondents who answered "yes" to the question, "Does the neighbourhood where you live have an adequate supply of affordable housing?"	Male to female	1.34 (30.5/22.7)	7.8	AARP Neighbourhood Survey	2013	Sample (N=976)	Across the board, there is a perception that neighbourhoods do not have an adequate supply of affordable housing. The biggest difference in responses is between males and females. Surprisingly, there is not much difference between income groups.
		White to black	0.83 (23.0/27.8)	-4.8	AARP Neighbourhood Survey	2013	Sample (N=976)	
		Household income <US$50,000 to household income US$50,000=<	1.18 (27.2/23.1)	4.1	AARP Neighbourhood Survey	2013	Sample (N=976)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Positive social attitude toward older people	Number of referred cases of self-neglect, exploitation, abuse, and neglect of residents aged 60 and over as a proportion of the total number of residents in the same age group	Ward 4 (highest rate/worst off) to that in Ward 3 (lowest rate/ best off)	2.7 (18.6/6.9)	11.7	Department of Human Services, Adult Protective Services 2013 Annual Report/ American Community Survey, 5-year estimate. Population 60 Years and Over	2013	Population	We cannot, at this time, determine the causality for this finding, but the significance of the difference in wards is notable and requires further research. What we know is that both wards have higher percentages of older residents compared to other wards, and Ward 3 is one of the wealthiest wards in the city. This difference is a signal for greater outreach and awareness to prevent elder abuse, neglect, and fraud in Ward 4.
Engagement in volunteer activity	Proportion of AARP survey respondents who answered "yes" to the question, "Does the neighbourhood where you live have opportunities for volunteering?"	Male to female	1.07 (55.1/51.6)	3.5	AARP Neighbourhood Survey	2013	Sample (N=976)	White respondents and wealthier respondents feel that their neighbourhoods provide more opportunities for volunteering. The difference between white and black respondents is notable. This difference could signal a need to increase engagement in volunteering among black residents.
		White to black	1.54 (64.4/41.7)	22.7	AARP Neighbourhood Survey	2013	Sample (N=976)	
		Household income <US$50,000 to household income US$50,000=<	0.82 (46/55.8)	-9.8	AARP Neighbourhood Survey	2013	Sample (N=976)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Paid employment	Proportion of AARP survey respondents who report being unemployed but looking for work.	Male to female	1.35 (8.9/6.6)	2.3	AARP Neighbourhood Survey	2013	Sample (N=976)	AARP membership is available for all aged 50 and up, which may explain the higher rates across all demographic categories than the official unemployment rate of 2.4 for residents aged 60 and over. The greatest difference was found between lower and higher income groups, which is not terribly surprising.
		White to black	0.73 (5.8/7.9)	-2.1	AARP Neighbourhood Survey	2013	Sample (N=976)	
		Household income <US$50,000 to household income US$50,000=<	3.02 (13.3/4.4)	8.9	AARP Neighbourhood Survey	2013	Sample (N=976)	
Engagement in socio-cultural activity	Proportion of AARP survey respondents who answered "yes" to the question, "Does the neighbourhood where you live have social clubs (e.g., book, dinner, gardening)?"	Male to female	1.1 (31.1/28.3)	2.8	AARP Neighbourhood Survey	2013	Sample (N=976)	The difference between white and black respondents is much greater than that between income levels. In the absence of reported education differences, prevalence of social clubs may be more closely tied to race than to income.
		White to black	1.89 (38.6/20.4)	18.2	AARP Neighbourhood Survey	2013	Sample (N=976)	
		Household income <US$50,000 to household income US$50,000=<	0.86 (26.1/30.5)	-4.4	AARP Neighbourhood Survey	2013	Sample (N=976)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Participation in local decision-making	Proportion of locally-elected Advisory Neighbourhood Commission chairpersons over the age of 50.	Ward 1 (lowest proportion/ worst off) to Ward 8 (highest proportion/ best off)	0 (0/80)	-80	Office of Advisory Neighbourhood Commissioners and DC Council members	2014	Sample	These data may speak to the demographics attracted to and active in these respective wards. However, Ward 8 is the youngest ward on average, predominantly due to a large number of youth under 18. Anecdotally, Ward 1 is a very trendy neighbourhood that attracts a number of so-called millennials, some of whom may show interest in civic participation and be active as advisory neighbourhood commissioners.
Availability of information	Proportion of AARP survey respondents who said they would turn to DC Government if they needed more information about accessing services in their neighbourhood.	Male to female	1 (68.8/69.1)	-0.3	AARP Volunteer Survey	2013	Sample (N=976)	These data reveal that black respondents and low-income respondents are much more likely to seek information from DC Government. Age-Friendly DC has a goal of simplifying access to information and also producing a comprehensive report on how residents access information by age. These data inform that effort and can help with messaging and engagement.
		White to black	0.75 (58.7/78.6)	-19.9	AARP Volunteer Survey	2013	Sample (N=976)	
		Household income <US$50,000 to household income US$50,000=<	1.21 (78.2/64.4)	13.8	AARP Volunteer Survey	2013	Sample (N=976)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Availability of social and health services	Medicaid beneficiaries aged 60 and older receiving home and community-based services through the Elderly and Persons with Disabilities waiver, or Development Disabilities waiver at any point in 2014	Male to female	0.42 (29.4/70.6)	-41.2	Department of Health Care Finance	2014	Population	These data show that Medicaid beneficiaries receiving home and community-based services are predominantly female and black.
		White to black	0.04 (3.5/86.6)	-83.1	Department of Health Care Finance	2014	Population	
	Proportion of AARP survey respondents who answered "yes" to the question, "Does the neighbourhood where you live have a wide variety of services to help you maintain your independence as you grow older?"	Male to female	1.17 (44.9/38.5)	6.4	AARP Volunteer Survey	2013	Sample (N=195)	Higher income residents are more likely to believe their neighbourhood will provide the range of support needed to maintain independence. This support would also be more affordable to those in the higher income bracket. This may explain the higher rate of males feeling the same way, due to higher income on average compared to females.
		Ages 60-74 to ages 75=<	0.97 (38.9/40)	-1.1	AARP Volunteer Survey	2013	Sample (N=195)	
		Household income <US$50,000 to household income US$50,000=<	0.76 (33.3/44.1)	-10.8	AARP Volunteer Survey	2013	Sample (N=195)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Economic security	Proportion of AARP survey respondents making US$50,000 or more.	Male to female	1.09 (65.4/59.8)	5.6	AARP Neighbourhood Survey	2013	Sample (N=976)	Wealthier survey respondents were slightly more likely to be male, but significantly more likely to be white. This is telling data, highlighting the correlation between race and income in DC.
		White to black	1.57 (75.9/48.3)	27.6	AARP Neighbourhood Survey	2013	Sample (N=976)	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
Quality of life	Healthy life expectancy at birth.	Male to female	0.94 (74.9/79.8)	-4.9	DC Department of Health Community Health Needs Assessment	2010	Population	These data comport with what we know nationally: women live longer than men. What may be unique about DC is that the longest life expectancy is among Hispanic females, who live over a quarter of a lifetime longer than black males, who have the shortest life expectancy. Ward 2 and 8 also have the greatest difference and are also the wealthiest and poorest wards, respectively. Ward 2 also has a much higher proportion of white residents, while ward 8 is predominantly African-American.
		Hispanic female (longest/best off) to Black male (shortest/ worst off)	1.29 (88.9/68.8)	20.1	DC Department of Health Community Health Needs Assessment	2010	Population	
		Ward 2 (longest/best off) to Ward 8 (shortest/worst off)	1.22 (85.9/70.2)	15.7	DC Department of Health Community Health Needs Assessment	2010	Population	

CORE INDICATOR	ACTUAL DEFINITION USED	COMPARISON GROUPS	RATIO OF INDICATOR VALUES	DIFFERENCE IN INDICATOR VALUES	DATA SOURCE	YEAR OF DATA	POPULATION OR SAMPLE	COMMENTS
		Hispanic female (longest/best off) to DC population average	1.14 (88.9/77.5)	Positive attributable risk (PAR): 11.4 (88.9-77.5) PAR%: 14.7% (11.4/77.5)	DC Department of Health Community Health Needs Assessment	2010	Population	This is the only attempt made at a population attributable risk analysis. The results show that the DC population average for healthy life expectancy at birth needs to be improved by 11.4 percentage points, or by 14.7% of its current value, in order to achieve the level realized by Hispanic women in the area. The intention is to complete additional positive attributable risk analyses using American Community Survey data for adults aged 60 and over once the data can be disaggregated into the necessary subgroups.
	Survey respondents aged 65 and older who are "very satisfied" with their life.	Male to female	0.95 (48.6/51.1)	-2.5	Department of Health, Behavioural Risk Factor Surveillance Survey	2010	Survey	From these data, life satisfaction seems most closely tied to income level, although there are also significant differences between white and black residents, with whites being more satisfied.
		White to black	1.25 (55.7/44.7)	11	Department of Health, Behavioural Risk Factor Surveillance Survey	2010	Survey	
		Household income <US$50,000 to household income US$50,000=<	0.75 (43.3/58.1)	-14.8	Department of Health, Behavioural Risk Factor Surveillance Survey	2010	Survey	

XI

ANNEX 3: ANNOTATED BIBLIOGRAPHY OF SELECTED RESEARCH PUBLICATIONS ON THE METHODOLOGICAL ASPECTS OF MEASURING AGE-FRIENDLINESS

Below is a small selection of research publications within the last five years which provide technical information on some methodological approaches to measuring the various dimensions of ageing, health and age-friendly environments, from sample selection and study design to data collection tools and statistical analysis techniques.

Chaves ML, Camozzato AL , Eizirik CL, Kaye J. Predictors of normal and successful aging among urban-dwelling elderly Brazilians. *Journal of Gerontology: Psychological Sciences***. 2009;64B(5):597-602.**

This study examined the correlations between successful ageing and demographic, socio-economic and medical status of healthy older Brazilians living in cities. It provides information concerning data collection, the tools used for data collection, selection and recruitment of participants, and analysis of data.

Flood MT, Nies M, Seo D. Successful aging: selected indicators in a Southern sample. *Home Health Care Management & Practice***. 2010;22(2):111-115.**

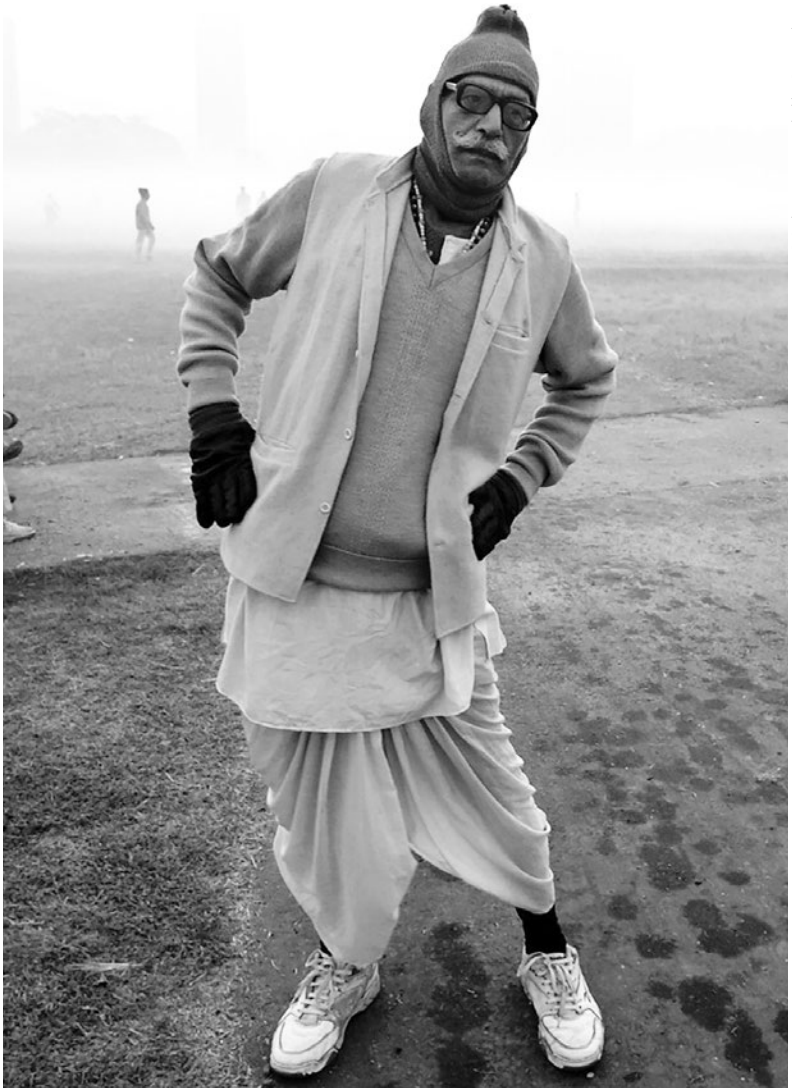
This study analyzed indicators of "successful ageing" in older people in North and South Carolina, USA. In this paper, successful ageing is defined as positively experiencing the physiologic and functional changes when ageing, while having a meaning and purpose in life and being spiritually connected. The paper describes the study design, sample selection, data collection, and instruments to measure successful ageing, creativity and functional performance of older people.

Hilgenkamp TIM, Bastiaanse LP, Hermans H, Pennin, C, Van Wijck R, Evenhuis HM. Study healthy ageing and intellectual disabilities: Recruitment and design. *Research in Developmental Disabilities.* **2011;32(3):1097-1106.**

This paper provides information concerning the recruitment and organization of a study of adults with intellectual disability about their health status. Recruitment of adults with intellectual disabilities is challenging, since most of them are dependent on the care system, involving both informal care givers, such as relatives, and professional care givers. The paper outlines how recruitment can be optimized and provides information on inclusion and exclusion criteria when recruiting a large-scale sample group. A number of tools are presented that can be used in measuring health variables in adults with intellectual disabilities. Aspects of representation and the importance of an adequate informed consent procedure are also discussed. The information may be helpful to local governments and communities in recruiting a sample group for a special purpose survey to capture the needs and perspectives of older adults with intellectual disability living in the community and their care givers.

Paillard-Borg S, Wang H, Winblad B, Fratiglioni L. Pattern of participation in leisure activities among older people in relation to their health conditions and contextual factors: a survey in a Swedish urban area. *Ageing and Society.* **2009;29(5):803-821.**

This paper describes the pattern of participation in leisure activities in relation to



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contextual factors and mental and physical health in Swedish older people aged 75 and over. The study shows that certain contextual and health factors are associated with engagement in leisure activities in older people living in an urban area. The measures of participation in leisure activities, health conditions and relevant contextual factors used in the study are described.

Rantakokko M, Iwarsson S, Kauppinen M, Leinonen R, Heikkinen E, Rantanen T. Quality of life and barriers in the urban outdoor environment in old age. *Journal of the American Geriatrics Society.* **2010;58:2154-2159.**

This study examined correlations between perceived barriers in the urban outdoor environment and quality of life in older people who are capable of moving around without assistance, and the effects of

fear of moving outdoors and unmet physical activity on this correlation. This study adds to the evidence that the urban outdoor environment is associated with quality of life in older people. The key variables of quality of life, perceived environmental barriers, fear of moving outdoors, and unmet physical activity were based on self-reports of the older people.

Schöllgen I, Huxhold O, Tesch-Römer C. Socioeconomic status and health in the second half of life: findings from the German Ageing Survey. *European Journal of Ageing***. 2010;7(1):17-28.**

This study describes the social inequalities in health in the second half of life using data obtained from the German Aging Survey administered by the government of Germany. Social inequalities were measured based on three indicators: education, income and financial assets. Health was measured in terms of physical, functional and subjective health. This study illustrates one approach for examining social inequalities in the different dimensions of older adult health using survey data.

Shankar A, McMunn A, Banks J, Steptoe A. Loneliness, social isolation, and behavioral and biological health indicators in older adults. *Health Psychology***. 2011;30(4):377-385.**

This study provides evidence that social isolation and loneliness are associated with certain health behaviors, potentially affecting health in older people. The study used data from the English Longitudinal Study of Ageing, which measured loneliness with the Revised UCLA (University of California, Los Angeles) Loneliness Scale, and assessed social isolation using an index of social isolation. This study provides information on some existing survey instruments that could be useful in measuring important social health indicators, such as loneliness and social isolation.