ARC CENTRE OF EXCELLENCE IN POPULATION AGEING RESEARCH

MEASURING UP? INTERNATIONAL INDICES OF AGEING

1. INTRODUCTION

International rankings are popular and influential. A common trend is to combine multiple performance measures into a single, composite index, which can reveal how one country is doing relative to others. The field of population ageing research has been no exception to this trend, where a number of composite indices have been created to distil the experience of ageing. This fact sheet examines some of the most notable ageing indices, their stated purposes, methodologies and results.

Ageing indices are published by international organisations, research organisations, and private companies for different reasons. For example, HelpAge International, an NGO that publishes the *Global AgeWatch Index*, expressly uses the index as an advocacy tool, highlighting key data gaps on ageing and older people at the global level. Others, such as Aegon, a life insurance company, see it as part of their work in the field of retirement research. Ultimately, despite their flaws, such indices can shed light on where a country is performing well and where it lags its peers, and in doing so motivate a variety of interventions.

There are different ways of grouping such indices. One distinction is between those that compare the wellbeing of current older generations and those that consider likely outcomes in the future. The first group, includes the *Global AgeWatch Index, the Hartford Index of Societal Ageing, and SCL/PRB Index of Well-being in Older Populations;* while the latter include the *Melbourne Mercer Global Pension Index,* the *Global Ageing Preparedness Indices,* and the *Aegon Retirement Readiness Index.*

Most indices are weighted averages of different measures with methodologies that can change over time, so need careful interpretation. They are also all fairly new. For example, the most established is the *Melbourne Mercer Global Pension Index*, which started in 2009 and continues to evolve. So the indices are useful for comparing countries at a specific point in time rather than changes within countries over time.

NOTABLE AGEING INDICES

Base on current outcomes	Global AgeWatch Index	HelpAge
	Active Ageing Index	UN Economic Commission for Europe
	Hartford Index of Societal Ageing	John A Hartford Foundation, Columbia University, and University of Southern California
	Natixis Global Retirement Index	Natixis Global Asset Management
	SCL/PRB Index of Well-being in Older Populations	Stanford Centre on Longevity and Population Reference Bureau
Based on future outcomes	Global Ageing Preparedness Index – Fiscal Sustainability	Centre for Strategic and International Studies and Prudential
	Global Ageing Preparedness Index – Income Adequacy	
	Melbourne Mercer Global Pension Index	Mercer and Australian Centre for Financial Studies
	Aegon Retirement Readiness Index	Aegon

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2. PEERING UNDER THE BONNET

Most ageing indices are weighted averages of other indicators. For example, the *Active Ageing Index* is an average of 22 indicators. These indicators range from employment rates, to political participation and life expectancy. The indices analysed here are comprised of between six and 38 individual measures.

Most of the indices are constructed by taking geometric means of individual indicators. Geometric means standardise the ranges of indicators, so that those with wider ranges (such as employment rates) do not dominate those with narrow ranges (such as life expectancy), as happens with an arithmetic mean.

Weights are often chosen subjectively by experts constructing the index. Figure 1 illustrates the components of each index (some indicators were grouped in aid of clarity). The area of the box for each measure indicates the relative weight in the overall index (equal weighting is assumed where weights were unavailable).

Several patterns are apparent. Indices that focus on current standards of living (top row) comprise social, environmental, health, and economic indicators. Indices that aim to measure the likely future for older people (bottom row) mostly comprise financial indicators and those that relate to retirement income system design, demography, and economic conditions.

3. DEFINING FEATURES

There are striking differences between the indices. The *Global AgeWatch Index* has the broadest coverage, ranking 92 countries globally. It places most weight (40%) on environmental and social indicators, but also considers health, economic, and retirement income indicators.

The *Active Ageing Index* is exclusive to Europe and measures older people's participation in society and factors that enable this. A large share of the index weight (35%) is given to employment rates among older cohorts. Unlike other indices, *AAI* offers a breakdown by gender.

The *Natixis Global Retirement Index* makes use of indicators of wellbeing across the whole population rather than just for older people. For example, it measures retirement finance outcomes by including an indicator of the general investment environment and quality of government institutions, which are absent in most other indices.

The *Hartford Index of Societal Ageing* is still under development, but some details have been released. It uses a broader range of indicators than most of the other ageing indices. For example, it includes indicators such as food security at older ages and rates of intergenerational transfer.

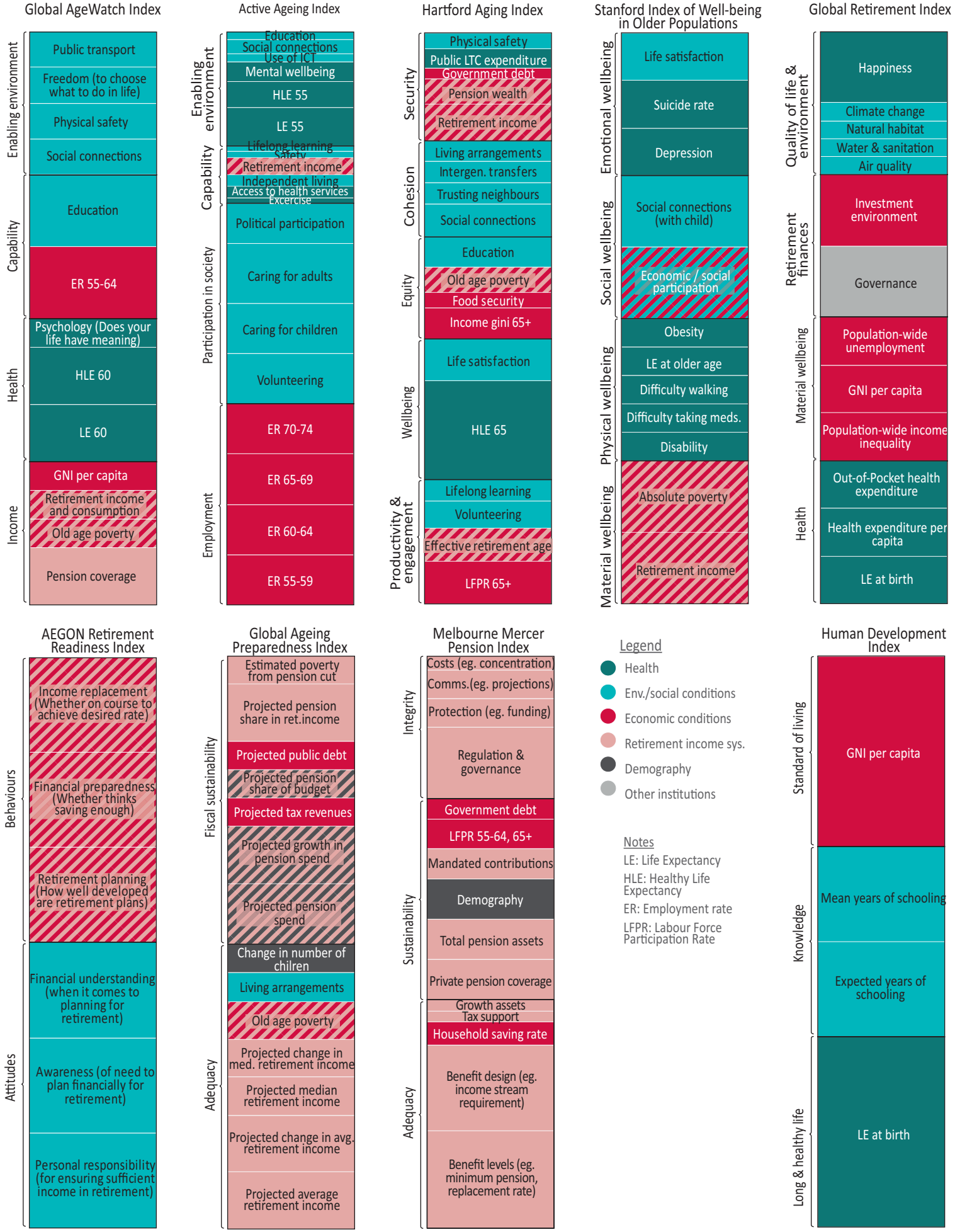
The *SCL/PRB Index of Well-Being in Older Populations* launched in 2011 but has not been updated since. It was constructed separately for the three age groups (50-64, 65-74, and 75+) to take account of differences in population age-structure across countries. Its methodology emphasises using comparable data across countries, and combines indicators using an arithmetic mean.

The *Global Ageing Preparedness Index* is composed of projections of fiscal and demographic measures at 2040. It attempts to assess both fiscal sustainability and the adequacy of future retirement income, while explicitly recognising the conflict between these objectives.

The *Melbourne Mercer Global Pension Index* focuses on national retirement income systems, and incorporates 32 indicators (the most among the indices we examine). This is facilitated and limited by data availability from the OECD and Mercer's own consultants from the countries analysed. Like the *Global Ageing Preparedness Index*, this pension index can be split into several sub-indices, separately measuring adequacy, sustainability and integrity.

The *Aegon Retirement Readiness Index* is based entirely on the (self-reported) behaviour and attitudes of pre-retirees obtained from a proprietary online survey of people in 15 countries. This contrasts with most other indices, which rely on data published by national statistical agencies, government departments or NGOs.

FIGURE 1. COMPONENTS OF SELECTED INDICES BY WEIGHT



4. THE FLAW OF AVERAGES

While indices provide us with what appear as simple comparisons, the underlying methodologies are complex and prone to judgment. A large number of underlying indicators may well be necessary to capture the range of influences on the wellbeing of older people, but the breadth of indicators that make up a single index make the results hard to interpret.

Take for comparison the UN's Human Development Index (shown in Figure 1). It is probably the most commonly used wellbeing index and includes only four indicators. It also uses a simple weighting scheme. Ageing indices, by contrast, generally use complex weighting schemes based on the judgement of their authors or other experts. These may be better than equal weighting, but there are few ways to objectively choose weights, and different experts appear to choose different weighting schemes. The indices are in turn sensitive to these weighting choices and therefore easy to manipulate.

The *Aegon Retirement Readiness Index* uses a different approach to weighting. Each of its six indicators is assigned a weight based on the (univariate) correlation between the indicator and a measure of voluntary savings behaviour. This approach appears objective but also has its flaws. Not only is it opaque because the weights remain unpublished, but the methodology fails to account for the correlation between indicators and makes the normative judgement that one form of habitual savings behaviour is important to financial wellbeing in retirement.

Weighting criticisms are related to the broader point of what should be included in an ageing index. For example, the *Active Ageing Index* considers higher employment among those aged 70-74 to be a good thing regardless of whether 70-year-olds want to work (see Sao Jose et al. [2017] for a more detailed critique of the AAI).

Part of the problem is that experts don't agree on which factors influence the wellbeing of older people. Some, such as Barrington-Leigh and Escande (2016) suggest that we should just ask older people themselves. In this vein, the OECD Better Life project provides data on the weights that different age groups assign to different domains (Balestra, Boarini and Tosetto 2017). Those aged 55+ place most weight on 'health', 'life satisfaction' and 'environment' and least weight on 'civic engagement', 'community' and 'income' domains. By contrast, younger cohorts attribute less weight to 'environment' and more to 'income'.

Using indicators that aggregate outcomes for the older population within a country also ignores differences between people within this population. Sub-indices by gender (in the *Active Ageing Index*) and more granular age-groups (in the *SCL/PRB Index of Well-Being in Older Populations*) do exist, but one improvement could include an inequality adjustment based on outcomes by socio-economic status or position in the income distribution. The UN's *Inequality-adjusted Human Development Index* takes account of such differences when comparing population-wide outcomes.

Methodologies from other fields could also be deployed. Take, for example, the approach used by ratings agencies when combining a large number of overlapping indicators into credit risk ratings. In addition to averaging, these approaches rely on complex, discontinuous functions of indicators. That is, a higher profit margin will lower a company's riskiness, but less so (or perhaps not at all) for companies that operate in countries where the rule of law and property rights are not well established. For instance, this could be applied to the *Global AgeWatch Index*, which currently gives similar weights to pension coverage and the relative income of older persons. The alternative would be to allow high relative income for older persons to reduce the weight placed on pension coverage. A similar approach could be used in combining access to healthcare and life expectancy indicators.

CEPAR LONGEVITY RISK INDEX

While ageing Indices presented here come in the form of composite indices, some analyses look at a very specific aspect. For example, research undertaken at CEPAR has generated a longevity risk index that compares the cost of retirement income across countries (Xu 2017).

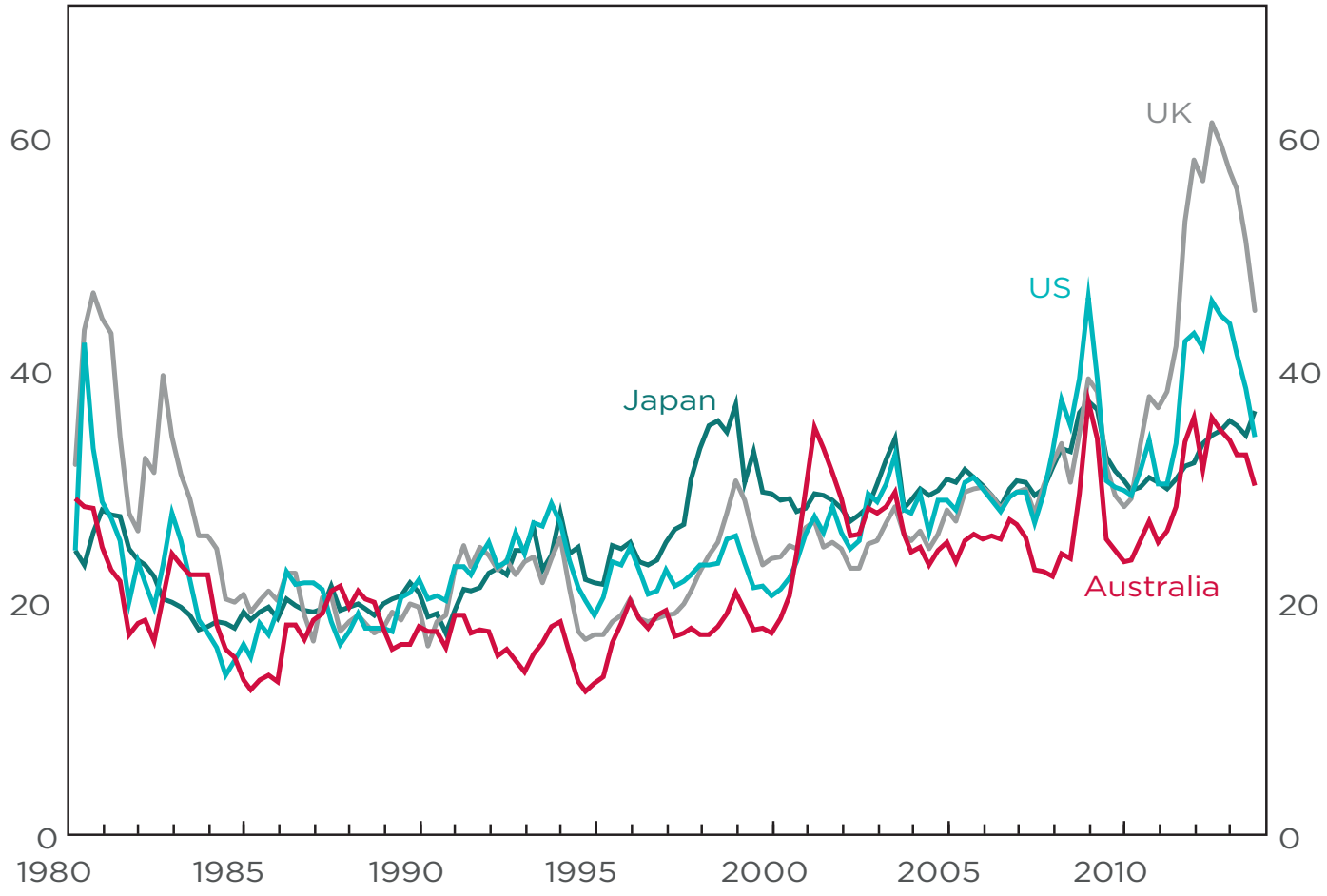
It measures the *present value* of purchasing $1 of current consumption for the rest of an individual's life. Death is treated probabilistically. It is taken to be the year by which 95% of a cohort is expected to have died, based on current mortality estimates. The index incorporates data on nominal interest rates, inflation and current life expectancy, and is age- and sex-specific. In this way, it measures both the affordability of retirement incomes across countries and the longevity risk faced by individuals.

Figure 2 shows this index for four countries between 1980 and 2013, using the example of a 60-year-old female. The index shows that, in 2013, an income stream that would have provided a 60-year-old Australian woman with $1 worth of consumption each year until her death (with 95% certainty) would cost her $32 – far less than in the UK, for example.

Much of the variation in the index is driven by changes in real interest rates, despite the use of smoothed inflation measures. Very low real interest rates are behind the high level of the index in the UK in recent years. Differences in life expectancy across countries – which are generally persistent – also underlie some of the differences between countries.

These indices are conceptually similar to the *CoRI Retirement Indices* published by investment management company BlackRock. The key difference is that the CoRI Indices incorporate information on current annuity prices, so they measure the value of income streams where individuals face no longevity risk.

FIGURE 2. EXAMPLE OF CEPAR LONGEVITY RISK INDEX

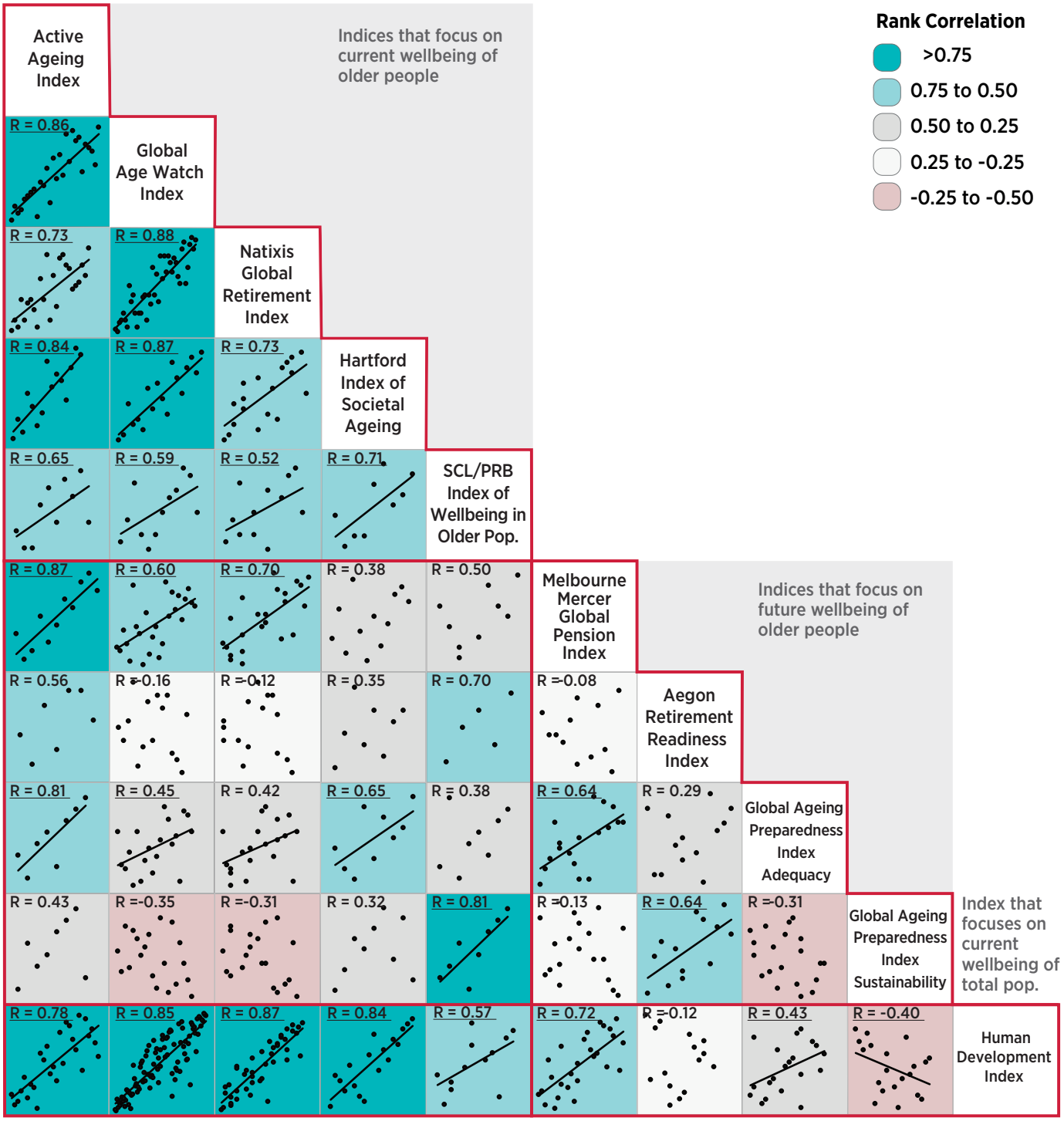


5. HOW SIMILAR ARE THE RANKINGS?

Correlations between country rankings across indices are shown in Figure 3. These *Spearman rank correlations* measure how similar the rankings in each pair of indices are for a common set of countries. Colours indicate similarity of each pair and statistically significant correlations are underlined and feature a line of best fit.

Despite the myriad differences between the indices, ranking results are similar: average correlation is 0.5. The five indices that seek to measure current wellbeing have pairwise correlations above 0.5 (upper left quadrant). This implies that they provide similar country rankings of the wellbeing of older people.

FIGURE 3. RANK CORRELATION MATRIX



The future oriented indices are less closely related: several correlations are negative (lower right quadrant). These indices have dissimilar themes. For example, the *Melbourne Mercer Global Pension Index* focuses on detailed elements of the retirement income system, while the *Aegon Retirement Readiness Index* considers pre-retirement attitudes and behaviours. Pairwise relationships between the two groups are also mostly low (lower left quadrant), which accords with their different purposes.

Comparisons with the *Human Development Index* (HDI) are useful. The *HDI* assesses current wellbeing for the entire population of a country (though some measures, like expected years of schooling, are forward looking). So its high correlation with measures of current wellbeing for older people and low correlation with indices of their future wellbeing make sense. But correlations between *HDI* and the current wellbeing measures are imperfect (ranging from 0.6 to 0.9), and are partly attributable to differences in outcomes between older and younger populations within countries.

Unsurprisingly, the *Natixis Global Retirement Index*, which includes few ageing-specific measures, is most correlated with the *HDI*. Few indices explicitly measure inequality between age groups, which is perhaps a fruitful area for future research. Recent analysis indicates significant international differences in inequality between age-groups (OECD 2017).

6. THE FAIREST OF THEM ALL

European countries – particularly Nordic ones – are consistently highly ranked across ageing indices (Figure 4). This reflects their high health outcomes, high incomes, generous social welfare, and comparatively well-designed retirement income systems.

Lower and middle-income countries receive lower rankings from the current wellbeing indices in which they feature. India and China occupy high rankings among indices that measure future financial wellbeing (e.g. the *Global Ageing Preparedness – Sustainability Index* and the *Aegon Retirement Readiness Index*). Counterintuitively, these placings are driven by low levels of public provision for retirement. Such indices appear to emphasise fiscal sustainability over financial wellbeing of older people.

Australia is ranked in the top-third of countries in all indices except the *Aegon Retirement Readiness Index*. It ranks particularly highly in the *Melbourne Mercer Global Pension Index*, largely due to the design of its superannuation system. Australia's ranking on the *Global AgeWatch Index* —17 out of 96 — is affected by high rates of old age poverty (a flawed measure of poverty that omits the contribution of high home ownership to the wellbeing of older Australians).

It may be fitting to take an index of these indices to summarise. Such a meta-index, for countries featured in at least five of the nine indices, indeed shows Nordic countries taking the top three places, followed by the US and Australia. Of course, this meta-index inherits the flaws of its contituent indices. That is, as is clear in this fact sheet, a composite index can be an amalgam of subjectively chosen sub-indicators, arbitrary weights, and occasionally problematic methodology. It may also not reflect how older people perceive their lot. But since few can resist the allure of a single ranking, its important to appreciate both its apparent simplicity and underlying complextiy.

References

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***Note:** The authors made use of information avilable on the official websites for each index*

FIGURE 4. COUNTRY RANKINGS