

Rationale for the Study

Demographic ageing is a phenomenon that is a function of the age structure of an entire population. The conventional approach defines demographic ageing or population ageing as a phenomenon that is consistent with populations becoming older with the passage of time. Thus, a population is deemed to be ageing if, across any specified time period, there is an increase in the magnitude of specific indicators that have traditionally facilitated thrusts towards gauging ageing. Ageing has traditionally been measured using indicators such as the proportion of a nation's population aged at least 60 years in some instances or at least 65 years in other instances, in other words, by gauging the proportion considered to be elderly. While such a standard hinges upon arbitrary ages that signal mandatory retirement in several labour market cultures, it bears no evidence of the magnitude of the ageing phenomenon among younger sub-populations. Moreover, it ignores age distribution dynamics among those aged at least 60 years and altogether, is likely to bias estimates of parameters associated with the ageing process. Such biases impact negatively upon thrusts to use such indicators in informing social policy geared towards meeting the human needs of ageing population which, in the context of the paper, is concomitant with meeting the needs of growing elderly populations but at the same time, introducing other considerations that are more relevant in the context of ageing processes and their implications for social structures within and across nations.

Alternative measures such as median age of a population and the ageing index have been considered to be among a set of other useful measures that permit analysts to gauge ageing processes. To this end, the median age is insensitive to the age distribution of the population on either half of the overall distribution of the national population according to age and thus, could also misrepresent thrusts to gauge population ageing. The ageing index is insensitive to ageing in the context of the sub-population aged 15-64 years and also could represent population ageing. Often times, these indicators render countries as having similar ageing characteristics when in fact, they might be different. This paper strives to reinforce difference in ageing characteristics over and beyond the traditional measures.

Aim of the Study

The study strives to reinforce different conceptions of ageing and ventures beyond traditional measures. It recognizes that population ageing is not only a function changes that are predicated on national population sizes and age-determined sub-population sizes across time points. Instead, it could be deemed a function of exposure to time-determined stimuli, experiences and lifetime conditions and encapsulates exposure-time as a factor that could facilitate more refined assessments of difference in evaluating ageing characteristics in populations. To this end, the study introduces new concepts with a view towards evaluating their implications for interpreting population ageing and in particular, trends in other sets of attributes that are associated with population ageing. Accordingly, the study is exploratory and assumes the form of a pilot study drawing on data from four Caribbean countries – Barbados, Belize, Jamaica and Saint Lucia.

By engaging a novel conception of ageing, this paper is interpreting population ageing as a demographic process in which human populations experience greater cumulative exposure-time to lifetime rewards and challenges both of which may have positive and/or negative implications for sustaining individual and by extension, the collective well being. Thus, ageing is evident if the number of person-years lived by all living persons at any given point in time is greater than the number of person-years lived by all living persons at an earlier reference point in time but making adjustment for spatial and temporal differences in national population sizes. In the context of this exploratory paper, the reference points are the respective census dates for the rounds of censuses in the 1980s, the 1990s and the 2000s in four Caribbean countries. The four countries include Barbados, Belize, Jamaica and Saint Lucia.

Research Questions

Given the aim of the study, three key research questions evolve. They are as follows:

1. What have been emergent trends in population ageing in the countries under review based on traditional conceptions of population ageing?
2. What are the magnitudes of ageing parameters based upon alternative conceptions that have been advanced to evaluate population ageing in each of the four countries under review?
3. What lessons and new insights emerge due to similarities and difference observed with respect to population ageing parameters based on traditional and alternative conceptions. a range of ageing parameters are estimated and compared for the respective populations including disaggregation according to sex.

Insofar as this paper adopts an alternative conception for gauging population ageing as a human phenomenon, it facilitates an exploratory account that would examine similarities and differences in ageing dynamics when compared to those emerging in the context of traditional measurement standards. In essence, the paper lays the platform for discussing likely implications of unexpected findings from the standpoint of interpreting ageing dynamics, reflects upon challenges associated with data availability and offers some direction for refining proposed measurement strategies.

Methodology

The research design is based on the analysis of secondary data. For each of Barbados, Belize, Jamaica and Saint Lucia, the requisite data are drawn from the Population and Housing Census Rounds in the 1980s, 1990s, 2000s and 2010s. Specifically, the distribution of the respective populations by single years of age disaggregated by sex are obtained and analyzed to obtain magnitudes for the respective parameters based traditional and alternative conceptions. Age-reporting and age-recording errors are evaluated for each of the four countries using appropriate demographic techniques that make allowances for detecting such content errors. Although age is observed in accordance with completed

years of life, more sophisticated statistical modeling maybe necessary to obtain approximations in accordance with exact age. Preliminary analyses are based on the capture and analysis of the data in an EXCEL platform and data captured on such a platform are double-checked for key punching errors. Open-ended age groups and variations in such age groups across space and time pose challenges. However, a possible solution hinges upon the determination of average age in the open interval using appropriate life table functions.

While traditional parameters of population ageing include the proportion of the total population aged 65 + years, the ageing index, the elderly dependency ratio, median age and synthetic pace of ageing , the novel parameters based on the alternative conception introduces the following – absolute breadth of ageing, relative breadth of ageing, the intrinsic pace of ageing and the depth of ageing. Absolute breadth of ageing is defined in terms of spatially bounded unit and the extent of exposure to life that is characteristic of the human population within that spatial unit at any given instant in time. It is measured in terms of the number of person-years lived by persons in a population at a given time point. It can be interpreted as an instantaneous measure of exposure-time to life. This is only relevant in the context of ageing based on temporal analyses of a spatially bounded population. Moreso, it is relevant only in the contexts of spatially bounded populations insofar as it is sensitive to variability in population sizes. Relative breadth of ageing is a standardized measure of the extent of exposure to life that is characteristic of human populations and permit inter-spatial comparisons by removing the impact of spatial differences in population sizes. The intrinsic pace of ageing is the relative change in the absolute breadth of ageing between two time points. Over several intervals, it is possible to determine rates of acceleration in population ageing.

Depth of ageing is a measure of the concentration of exposure to life at different but critical age-determined thresholds within the life cycle, for example, at the age when persons are presumed to enter into retirement or develop greater exposure to risks associated with frailty and physiological degeneration. It can be operationalized as the share of a population's total exposure-time due specifically to the exposure-time of the sub-population that has lived within some specified age range at a given point in time. Reference could be to the population aged 65+ years, 80+ years or even younger populations aged 45-64 years or 15-24 years. This could be important from the standpoint of informing public policy that is either influenced by experiential attributes of age-determined sub-populations or provides a basis for molding experiences of future age-determined sub-populations.

Preliminary Observations

Traditional Measures

With respect to traditional measures, in particular, the proportion of the population aged 65 years or older, the ageing index and the median age, the data confirm a consistent pattern indicative of population ageing in each of the four countries in the periods 1980s-1990s, 1990s-2000s

With respect to the elderly dependency ratio, the data confirm a consistent pattern indicative of population ageing, only in St. Lucia in the periods 1980s-1990s and 1990s-2000s. In Jamaica and Barbados, elderly dependency ratios were indicative of population ageing only between the 1980s and 1990s.

The traditional measures consistently reveal that the synthetic pace of ageing has been lower in the 1990s-2000s than in the 1980s-1990s in all countries.

Alternative Measures

The breadth of ageing reinforces the persistence of population ageing in each of the four countries across the periods under review.

However, compared to the 1980s-1990s period, the true pace of ageing in the 1990s-2000s period had increased in St. Lucia and Jamaica and decreased in Barbados.

With respect to the depth of ageing, the phenomenon of ageing gained momentum in St. Lucia between the 1980s and the 2000s. In the case of Barbados and Jamaica, this was only evident between the 1980s and the 1990s.

Observations pertaining to the depth of ageing may be reflecting the impact of immigration that is predicated upon economic motives in Jamaica and more so Barbados.

As such, the latter reinforces the importance of considering exposure-time conceptions insofar as the traditional measures yield contradictory evidence that masks the effects of population dynamics associated with migration.

Preliminary Conclusions

Whether based on traditional or alternative conceptions, population ageing is evident in each of the four countries between the 1980s and the 2000s.

However, the depth of ageing is impacted by population dynamics associated with events such as migration which is masked when population ageing is determined on the basis of traditional measures.

The true pace of ageing shows that except in Barbados, population ageing had been gaining momentum across the two periods under review. In Barbados, an ageing threshold has been attained notwithstanding the persistence of ageing.

Table 1: Traditional Measures

Parameter	1980	1990	2000	1980-1990	1990-2000
Proportion 65+	Magnitude of Indicators			Synthetic Pace of Ageing	
St. Lucia	5.4	6.5	7.5	120.4	115.4
Belize					
Jamaica	6.9	7.3	7.6	105.8	104.1
Barbados	10.5	11.8	11.8	112.4	100.0
Ageing Index					
St. Lucia	13.0	17.7	24.5	136.2	138.4
Belize					
Jamaica	18.0	20.9	23.6	116.1	112.9
Barbados	35.5	49.1	53.9	138.3	109.8
Elderly Dependency					
St. Lucia	10.2	11.5	12.1	112.7	105.2
Belize					
Jamaica	12.6	12.8	12.5	101.6	97.7
Barbados	17.6	18.4	17.7	104.5	96.2
Median Age					
St. Lucia	17.5	21.5	24.7	122.9	114.9
Belize					
Jamaica	19.2	22.1	24.5	115.1	110.9
Barbados	24.4	28.3	33.0	116.0	116.6

Table 2: Alternative Measures

Parameter	1980	1990	2000	1980-1990	1990-2000
	Magnitude of Ageing			Intrinsic Pace of Ageing	
Depth of Ageing					
St. Lucia	16.9	18.8	19.5		
Belize					
Jamaica	20.0	20.6	20.2		
Barbados	25.9	27.1	25.9		
Breadth of Ageing					
St. Lucia	2791422	3398643	4397645	121.7	129.7
Belize					
Jamaica	55594505	61320486	73751195	110.3	120.3
Barbados	7214740	8055621	8680349	111.7	107.8