



CARIBBEAN ACTUARIAL ASSOCIATION



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2016 Annual Conference

Connecting Minds: Sharing Knowledge and Impacting Societies

**CAA 26th Annual Conference &
25th Anniversary Celebration**

**Torarica Hotel
Paramaribo, Suriname**

30th November to 2nd December 2016



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The Changing Demographics in the Caribbean

(Expect no economic & Health data / explanations)

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Presentation Outline

- The Caribbean, CARICOM, CARICOMM, selected CARICOM members
- Total Population
- Total Population Growth, components of growth
- Demographic Transition in the Caribbean
- Sex Ratio, Common Fallacy and Some Gender issues
- Children, the Elderly and Ageing
- Projected Population
- Closing Remarks



The Caribbean, CARICOM, CARICOMM, selected CARICOM members

- <https://en.wikipedia.org/wiki/Caribbean>:
- The **Caribbean** is a region that consists of the Caribbean Sea, its islands (some surrounded by the Caribbean Sea and some bordering both the Caribbean Sea and the North Atlantic Ocean), and the surrounding coasts. It is said to consist of over 700 islands (including islets, reefs and cays).
- Mind you: The Bahamas alone is said “to comprise of **700 islands** sprinkled over 100,000 square miles of ocean”.
(<http://www.bahamas.com/>)



The Caribbean, CARICOM, CARICOMM, selected CARICOM members

- <http://caricom.org/about-caricom/who-we-are/our-governance/members-and-associate-members/>
- CARICOM: Twenty countries make up the Caribbean Community . **Fifteen are full members** and five are Associate Members.
- The geographical boundaries of our Community stretch from The Bahama Islands in the north, southward to Guyana and Suriname – both on the north coast of the South American mainland. They also extend from Belize in the West on the Central American mainland to Barbados – the most easterly of the islands. Suriname defines the eastern boundary of the Community.
- All CARICOM countries are classified as developing countries. They are all relatively small in terms of population and size, and diverse in terms of geography and population, culture and levels of economic and social development. CARICOM countries share similarities and challenges. On the one hand most countries, have had to make the transition from agriculture or mining to a service-driven economy, especially tourism and financial services. On the other hand, they have to overcome the challenges of frequent natural disasters, in addition to small size with associated lack of economies of scale and vulnerability to external shocks.



The Caribbean, CARICOM, CARICOMM, selected CARICOM members

- Whenever possible, inter alia in terms of available disaggregated data, we will be looking at: **UNCaribbean (or just Caribbean)**, **The wider Caribbean** (i.e. UNCaribbean+Belize+Guyana+Suriname), **CARICOMM (15 Members)**, and selected CARICOM members: Montserrat (the smallest), Jamaica (the statistically most advanced) & Suriname (requires no justification)!
- UNCaribbean comprises: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, British Virgin Islands, Caribbean Netherlands (Bonaire, Saba, St Eustace) Cayman Islands, Cuba, Curacao, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Puerto Rico, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, St Maarten (Dutch Part), Trinidad and Tobago, Turks and Caicos Islands, United States Virgin Islands. (Thus 12 CARICOM members and 4 Associate members are part of UNCaribbean). In what follows only the associate CARICOM member of Bermuda is left out in any case.



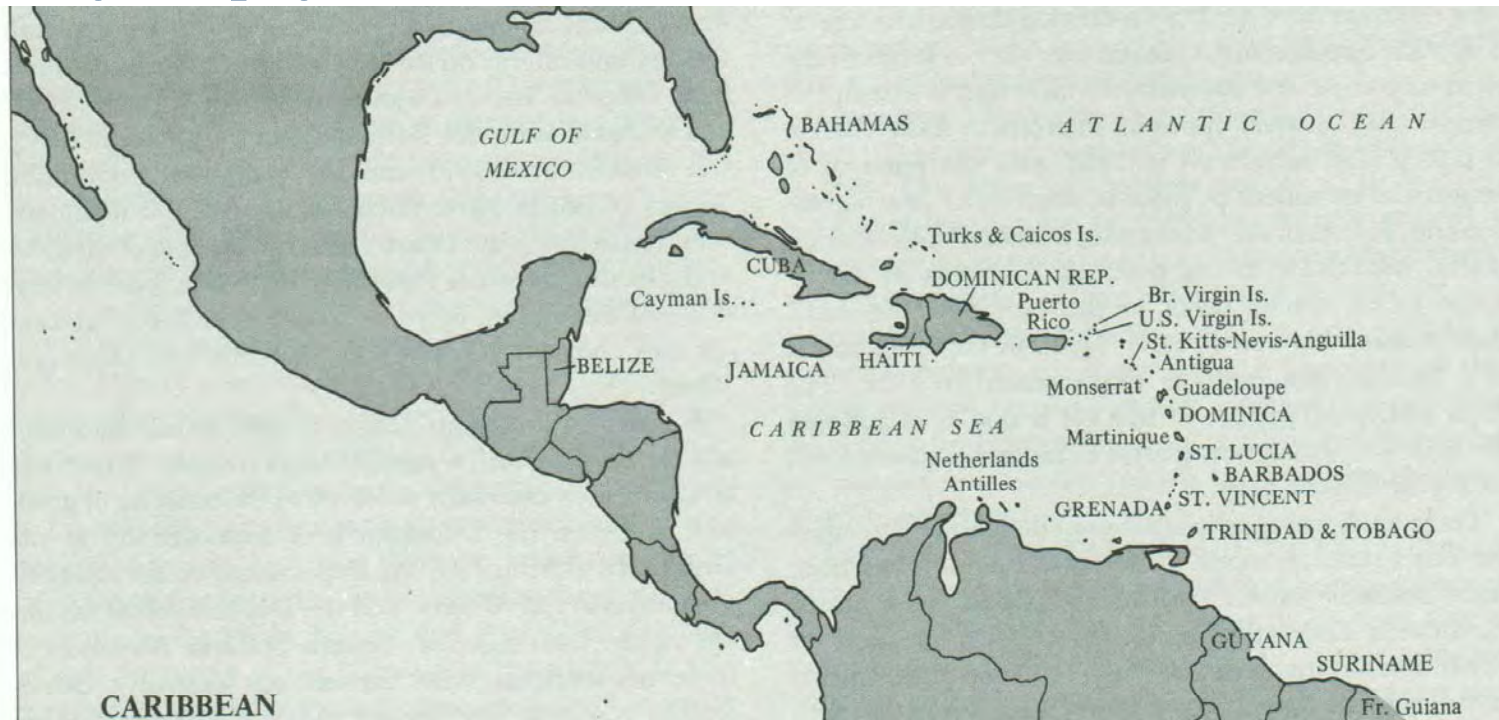
The Caribbean, CARICOM, CARICOMM, selected CARICOM members

- This is not only a matter of convenience but finds justification in the definition of the **International Encyclopedia of Population** for “Caribbean Region”:
- **“The Caribbean region consists of an island arc in the Caribbean sea, stretching from Cuba and the Bahamas off the coast of the United States south and east to Trinidad and Tobago off the coast of Venezuela.”**
- **“Belize, on the Central American mainland and Guyana, Suriname and French Guiana on the South American mainland are historically closely related to the Caribbean islands and are here considered to be part of the region”** (Please note that we have excluded French Guiana)



The Caribbean, CARICOM, CARICOMM, selected CARICOM members

- International Encyclopedia of Population (Caribbean Region, page 82)



- **Our main data source is World Population Prospects, 2015 revision of the UN Population Division**
- **On one slide (29) we use national data for Suriname**

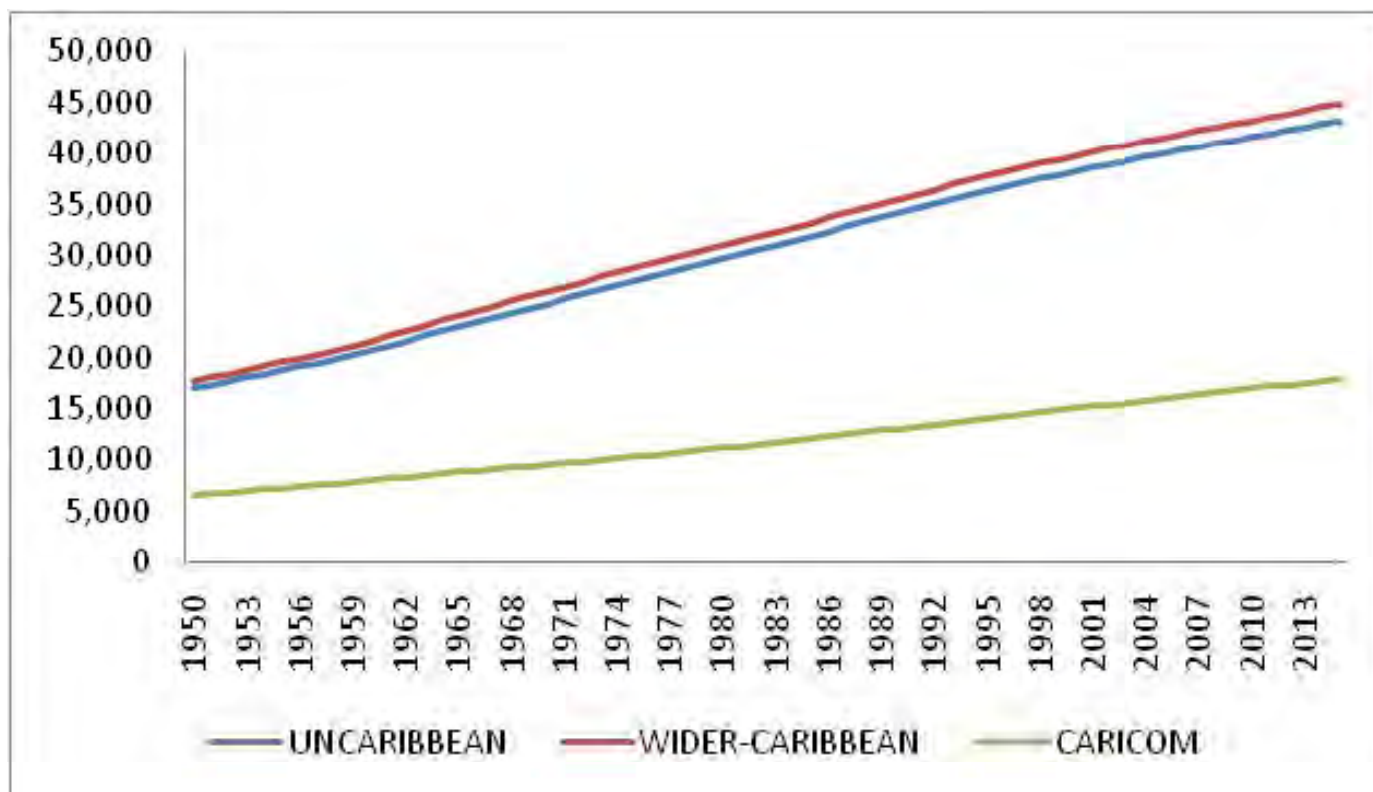
TOTAL POPULATION 1950-2015

- The total population of the Caribbean moved from 17.1 million (reported as 17,076 thousands) in 1950 to 43.2 million in 2015. Below we present a table with all areas of interest (WPP data, so they may differ from national data).

POPULATION-BASE	1950		2015	
	Numbers (X 1000)	% Share	Numbers (X 1000)	% Share
World Population	2,525,149.31	100	7,349,472.10	100
UN-CARIBBEAN	17,075.65	0.676	43,199	0.588
WIDER-CARIBBEAN	17,766.13	0.704	44,869	0.611
CARICOMM	6,633.80	0.263	17,833	0.243
Montserrat	13.52	0.001	5	0.000
Jamaica	1,402.90	0.056	2,793	0.038
Suriname	215.00	0.009	543	0.007

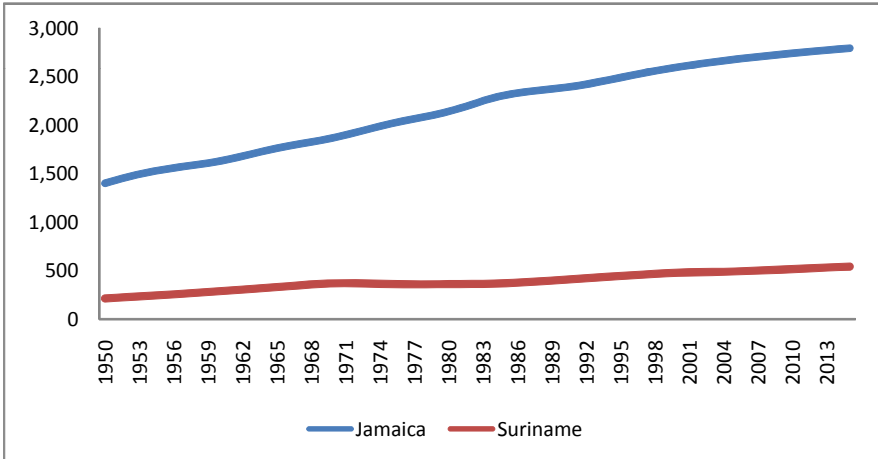
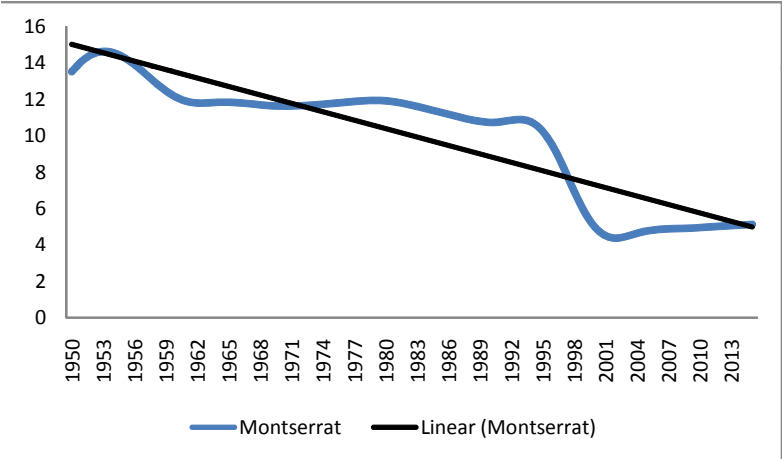
TOTAL POPULATION 1950-2015

- UNCaribbean, Wider Caribbean, CARICOM members



TOTAL POPULATION 1950-2015

- Montserrat, Jamaica and Suriname



Total Population growth, components of growth 1950-2015

- Average annual growth percentage for several areas (1950-2015)

AREA	1950-2015
UN-CARIBBEAN	1.438
WIDER-CARIBBEAN	1.436
CARICOMM	1.533
Montserrat	-1.481
Jamaica	1.065
Suriname	1.435

- The average growth rate masks variations in time spans.

Total Population growth, components of growth 1950-2015

- Average annual growth percentage for several areas, (mostly 10 year spans between 1950 and 2015)

Area	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010	2010-2015
UNCARIBBEAN	2.0	2.0	1.6	1.4	1.1	0.8	0.7
WIDER-CARIBBEAN	2.0	2.0	1.6	1.4	1.1	0.8	0.8
CARICOMM	2.0	1.8	1.5	1.6	1.4	1.2	1.1
Montserrat	-1.1	-0.4	0.2	-1.0	-7.4	0.0	0.7
Jamaica	1.5	1.4	1.4	1.1	0.9	0.5	0.4
Suriname	3.0	2.5	-0.2	1.2	1.6	0.8	0.9

Total Population growth, components of growth 1950-2015

- In principle Population size and composition can only change through the components: Births, Deaths and Net migration (Immigration minus Emigration or sometimes termed In-migration minus Out-migration)
- In principle, because the Quality of the sources (be it Censuses or Administrative data), inclusive compliance of the population with their obligation to respond or register, is also important.
- Finally one has to reckon with “category jumping”, a term coined by ABS (Australia) for migration phenomena. (E.g. Say you respond that you have the intention to stay for less than 6 months (non-migrant), but you actually stay longer than 6 months (migrant))
- It is clear that category jumping is also relevant for other phenomena: Say at time $t=1$ you respond that you are “Chinese” and at time $t=2$ (while nothing has changed in reality) you respond that you are “Mix”.

Total Population growth, components of growth 1950-2015

- For reasons of simplicity we will be using Begin Population (P1), End Population (P2), births (B12) and deaths (D12) as reported by the UN and derive Net-migration (NM12) from the so-called Balancing Equation:
- **$P2 = P1 + B12 - D12 + NM12$**
- This is rearranged to give:
- **$NM12 = P2 - P1 - (B12 - D12)$**
- (By the way: B12 – D12 is called Natural Increase)

Total Population growth, components of growth 1950-2015

- UNCaribbean and Wider Caribbean 1950-2015

Area	POP1950	B1950-2015	D1950-2015	POP2015	NM1950-2015
UNCaribbean	17,076	52 254	17 858	43,199	- 8 273
Wider Caribbean	17,766	54 785	18 538	44,869	- 9 145

Total Population growth, components of growth 1950-2015

- UNCaribbean and Wider Caribbean over 3 sub periods:

Area	POP1950	B1950-1970	D1950-1970	POP1970	NM1950-1970
UNCaribbean	17,076	15 888	5 196	25,306	- 2 462
Wider Caribbean	17,766	16 659	5 393	26,495	- 2 538

Area	POP1970	B1970-1995	D1970-1995	POP1995	NM1970-1995
UNCaribbean	25,306	20 764	6 516	36,375	- 3 178
Wider Caribbean	26,495	21 833	6 775	37,754	- 3 798

Area	POP1995	B1995-2015	D1995-2015	POP2015	NM1995-2015
UNCaribbean	36,375	15 603	6 146	43,199	- 2 633
Wider Caribbean	37,754	16 293	6 370	44,869	- 2 809

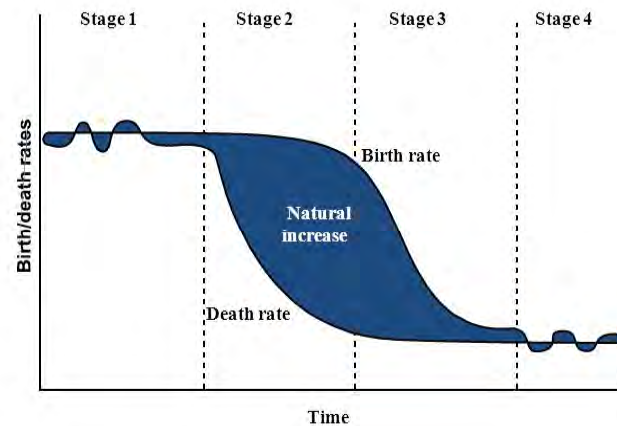
- Take my word for it, for all 5-year periods 1950-2015 we have negative net-migration!
- The Caribbean has a negative migration balance!



Demographic Transition Model

- What is the Demographic Transition Model (Thanks to the Population Reference Bureau: <http://www.prb.org/>)

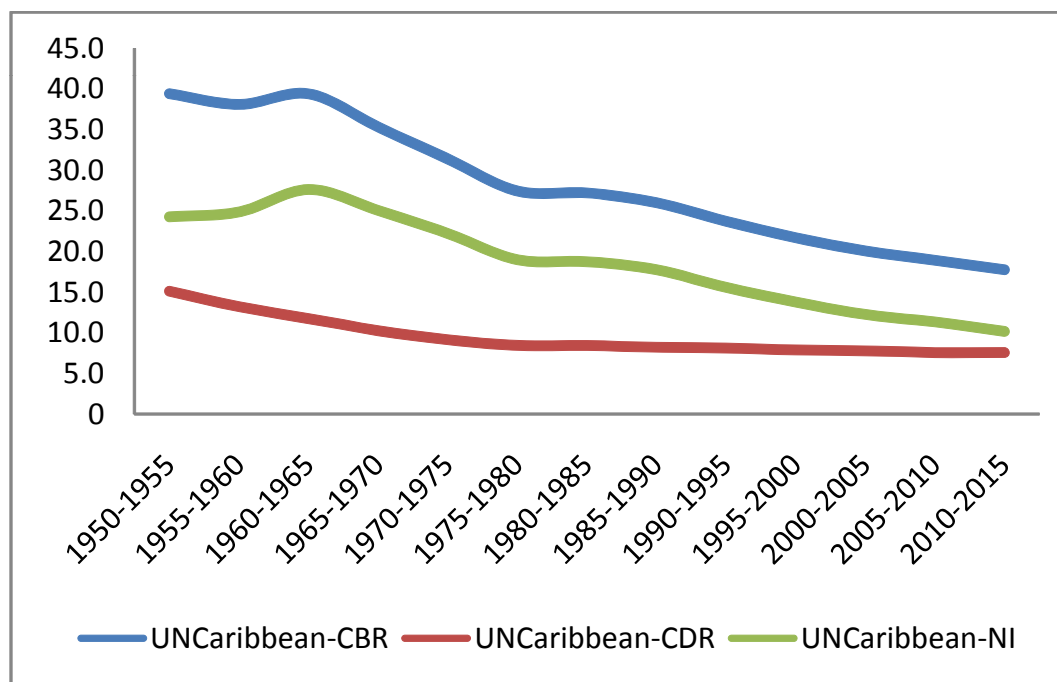
The Classic Demographic Transition



Note: Natural increase is produced from the excess of births over deaths.

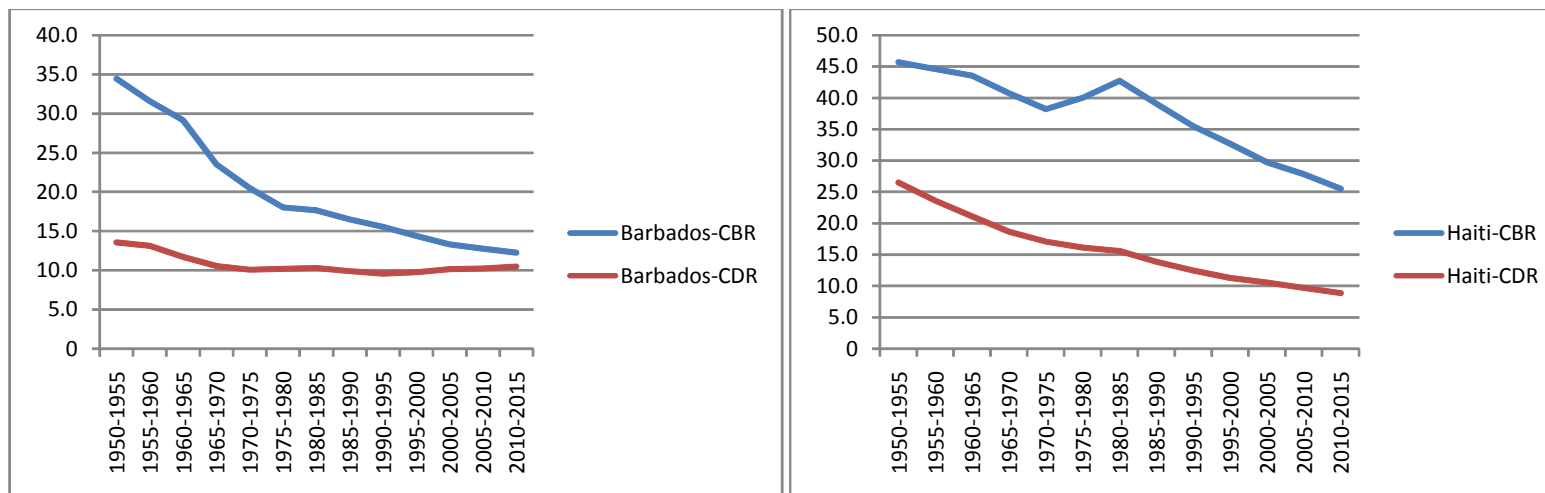
Demographic Transition in the Caribbean

- Crude Birth Rate (CBR), Crude Death Rate (CDR) and Natural Increase (NI) in the UNCaribbean 1950-1955—2010-2015



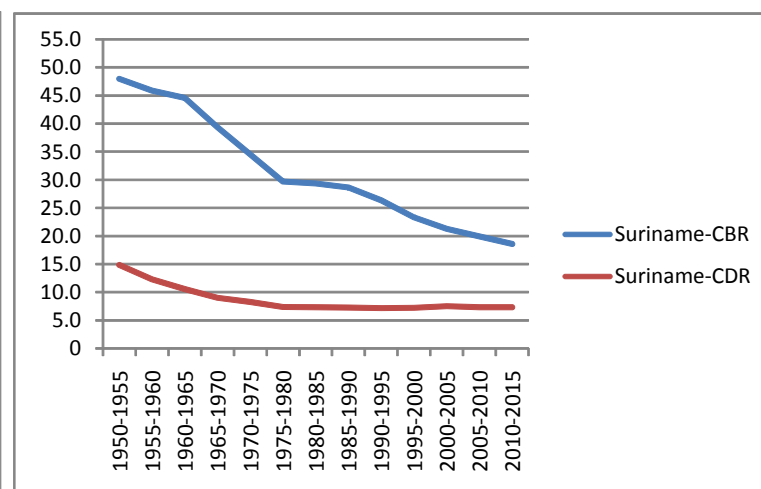
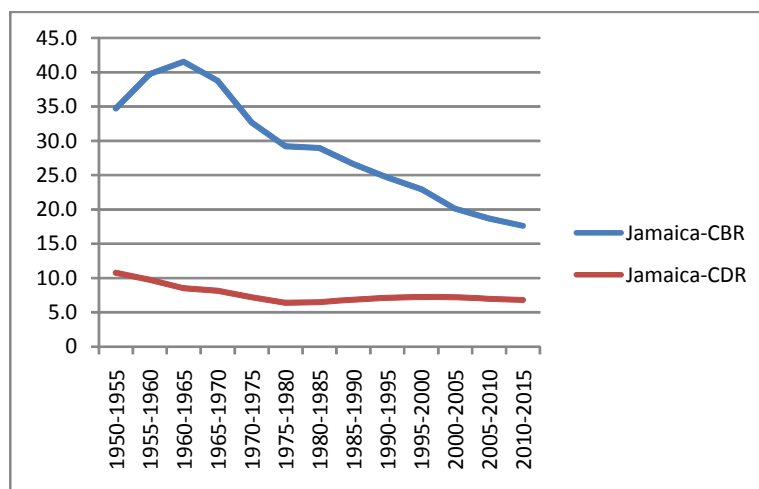
Demographic Transition in the Caribbean

- Selected Caribbean countries (Barbados, very advanced and Haiti: moderate transition, based on ECLAC classification of TFR and Life expectancy)



Demographic Transition in the Caribbean

- Selected CARICOM countries (Suriname and Jamaica, both classified in the “Full” group by ECLAC)



Sex Ratio: Common Fallacy and some Gender Issues

- The Sex Ratio is defined as the number of Males per 100 Females or $M/F \times 100$.
- The most common Sex ratios are the Sex ratio at birth (“normal” values: 102-108; 108 would mean 108 boy births for 100 girl births) and the Sex Ratio for the total Population.
- Sex Ratios are also often computed for 5 year and for 10 year intervals, where they enable the computation of various age-sex accuracy indices.

Sex Ratio: Common Fallacy and some Gender Issues

- **The most common Fallacy:** For some “crazy” reason in various societies (also in Suriname) it is thought that there are many more women than men, thus justifying why each man should be entitled to more (at least 3?) women.
- Barring war periods with high male casualties, this has never been the case in the modern era and it has been proven, inter alia, by one of the greatest Statisticians (Sir Ronald A. Fisher), that for human populations Sex ratio's will be close to 100.
- **In other words circa 50% males and circa 50% females.**

Sex Ratio: Common Fallacy and some Gender Issues

- Sex Ratios 1955-2015 (step 5): World and selected areas

Year	World	Africa	Asia	Europe	North America	LAC	Oceania
1950	99.6	98.6	104.8	87.6	100.1	99.9	103.6
1955	99.8	98.7	104.5	88.6	99.2	99.9	103.6
1960	100.0	98.9	104.3	89.6	98.7	99.9	103.1
1965	100.2	98.9	104.2	90.6	98.1	99.8	102.4
1970	100.4	99.1	104.1	91.3	97.3	99.8	102.0
1975	100.7	99.3	104.2	91.8	97.0	99.6	101.6
1980	100.8	99.5	104.2	92.2	96.4	99.3	100.9
1985	101.0	99.5	104.2	92.4	96.4	99.0	100.8
1990	101.2	99.5	104.3	92.9	96.4	98.7	100.4
1995	101.3	99.6	104.4	93.1	96.9	98.4	100.1
2000	101.4	99.7	104.3	93.1	97.4	98.2	100.2
2005	101.6	99.8	104.5	93.1	97.8	98.0	100.3
2010	101.7	99.9	104.7	93.0	97.9	97.9	100.7
2015	101.8	100.1	104.7	93.2	98.3	97.7	100.4

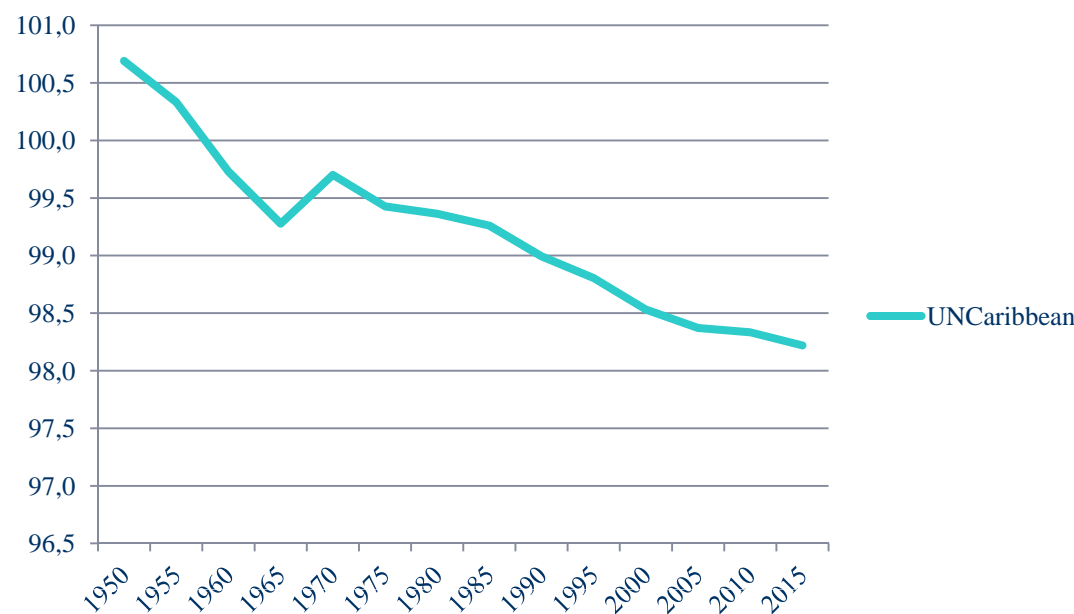
Sex Ratio: Common Fallacy and some Gender Issues

- Minimum and Maximum Sex ratio 1950-2015 (step 5)

Year	Minimum	Country	Maximum	Country	World
1950	74.4	Estonia	210.7	Guam	99.6
1955	76.9	Estonia	172.1	Guam	99.8
1960	79.0	Estonia	173.0	Kuwait	100.0
1965	82.0	Estonia	160.9	Kuwait	100.2
1970	83.4	Ukraine	177.1	Qatar	100.4
1975	84.2	Ukraine	226.9	UAE	100.7
1980	84.9	Ukraine	230.7	UAE	100.8
1985	85.8	Ukraine	201.8	Qatar	101.0
1990	86.9	Ukraine	202.6	Qatar	101.2
1995	85.6	Latvia	199.9	UAE	101.3
2000	85.2	Latvia	210.0	UAE	101.4
2005	84.6	Latvia	245.8	UAE	101.6
2010	84.1	Latvia	305.7	Qatar	101.7
2015	84.5	Martinique	274.0	UAE	101.8

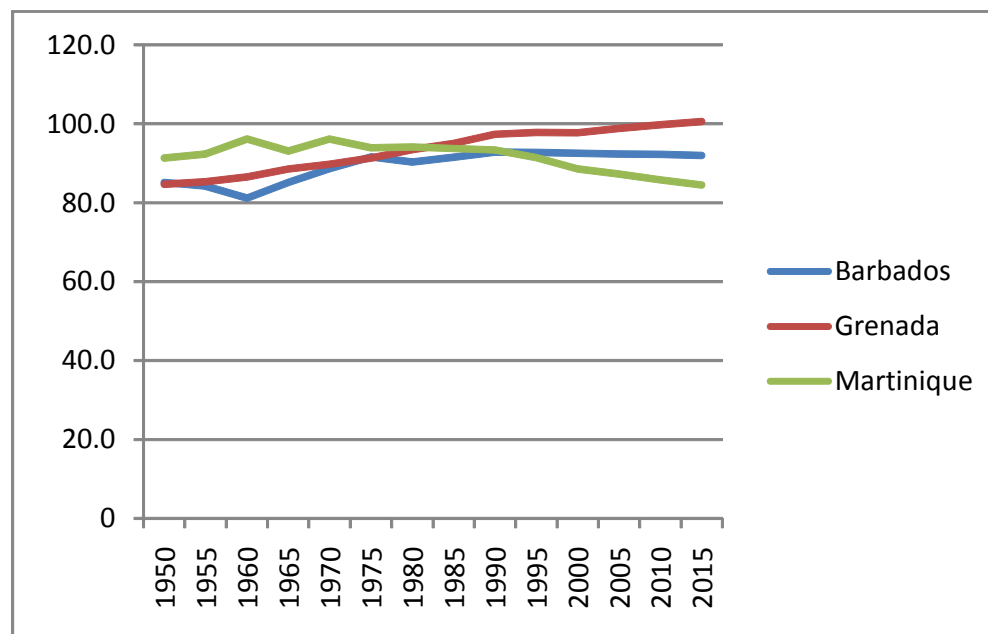
Sex Ratio: Common Fallacy and some Gender Issues

- The Sex ratio in the UNCaribbean moved from 100.7 in 1950 to 98.2 in 2015. In 2015 the corresponding figures for the Wider Caribbean and CARICOM (Dominica, Montserrat and SKN excluded by UNPD) were 98.3 and 98.1 respectively.



Sex Ratio: Common Fallacy and some Gender Issues

- Now some attention will be devoted to selected Caribbean / CARICOM countries: First the countries with the lowest sex ratio's. (For every 80-100 males there are 100 females)

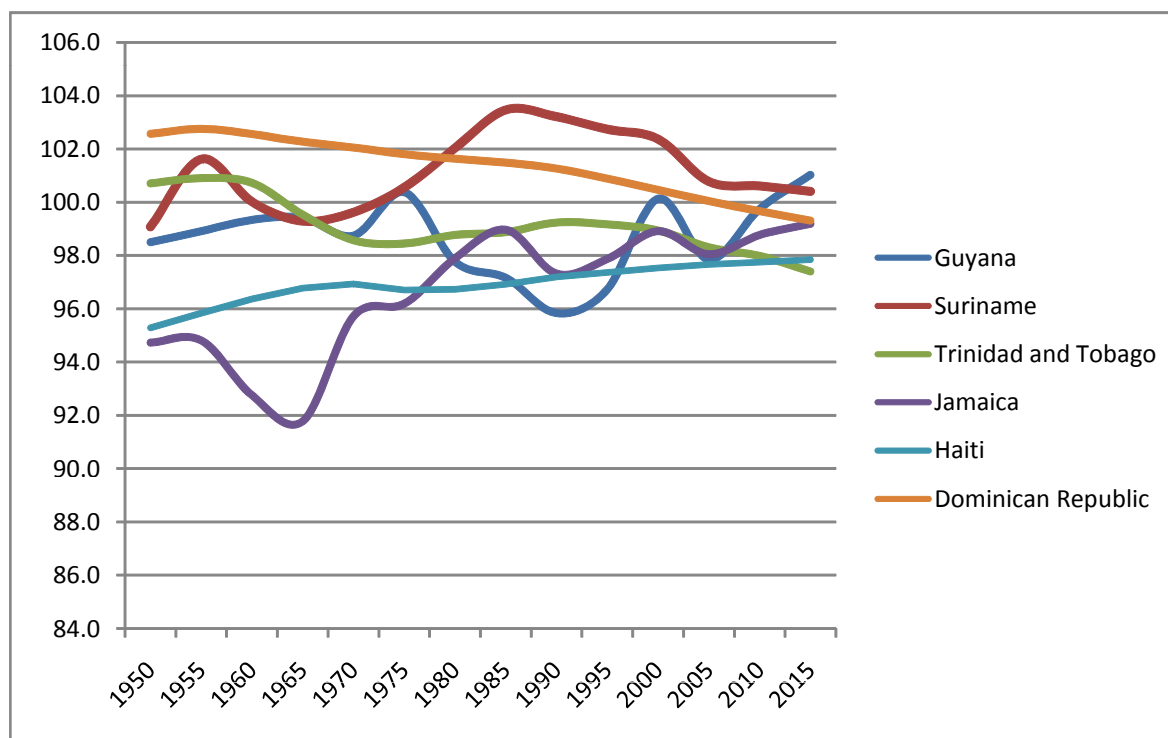


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Sex Ratio: Common Fallacy and some Gender Issues

- Countries (excluding Cuba) with the highest sex ratios (and some have a bit of a “macho” culture).



Sex Ratio: Common Fallacy and some Gender Issues

- Sex Ratio in Suriname per Census date, as of 1950

Census date	Males	Females	Sex Ratio*
31/10/1950	91,505	92,176	99.3
31/03/1964	161,855	162,356	99.7
01/01/1972	190,497	189,110	100.7
01/07/1980	175,634	179,226	98.0
01/08/2004	247,846	244,618	101.3
13/08/2012	270,629	271,009	99.9

- * Excluding those with “Sex unknown” (some data may differ from the WPP data, which have been adjusted by UNPD and are midyear estimates and not Census data)

Sex Ratio: Common Fallacy and some Gender Issues

- Why do the males need to be on top in the formula?
- Is it wrong if the females are on top in the formula?
- The convention in demography (and also in use by UNSD) is to have the males in the numerator and the females in the denominator. If people would be at liberty to do their own thing this could lead to confusion!
- India and CCS are known to (sometimes) do it the other way around!
- With the females on top the measure is called: **Femininity Index** (see UNFPA 2014- Methodological guidelines for the Gender Analysis of National Population and Housing Census Data)



Children, the Elderly and Ageing

- For this part the population will be divided into three groups:
- **Children 0-14; (*)**
- **The elderly 65+ (*)**
- **The Working Age Population 15-64 (*)**
- _____
- (*) In World Population Ageing, the UN uses 60+, but in WPP (our major source) they use various cut-offs for both Children (0-14; 0-19; 0-24) and the elderly (65+, 70+). As you can see: 60+ is not included.

Children, the Elderly and Ageing

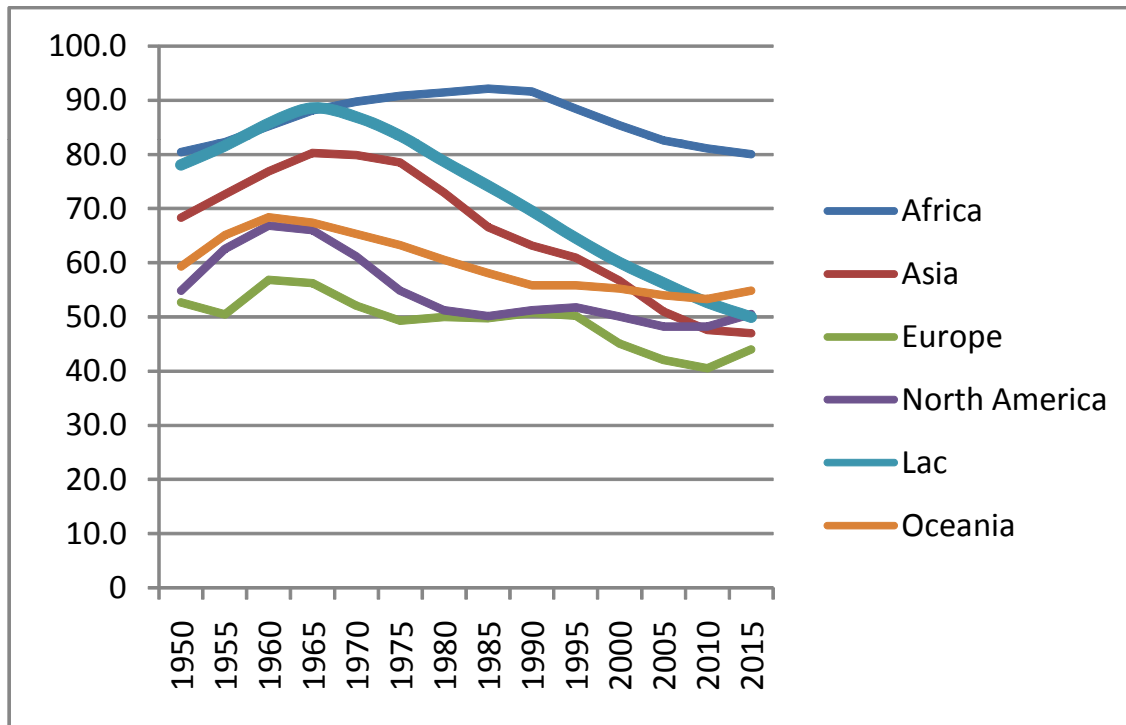
- The first measures to be computed from these are so-called “Dependency ratios”: **Child dependency, old-age dependency and Total Dependency.**
- Child Dependency = $(\text{Pop } 0-14 / \text{Pop } 15-64) * 100$
- Old-Age Dependency = $(\text{Pop } 65+ / \text{Pop } 15-64) * 100$
- Total dependency = $(\underline{\text{Pop } 0-14 + \text{Pop } 65+}) * 100$
- $\text{Pop } 15-64$
- Thus Total Dependency = Child Dependency + Old-Age Dependency

Children, the Elderly and Ageing

- The Dependency ratio gives an indication of how many of the “inactive” population need to be “supported” by the Working Age Population. A high Child Dependency “signals” high(er) investments in schooling and child care, while a high Old-age Dependency signals added pressure to social security and to public health systems.
- Admittedly: Children stay in school longer sometimes, and people do not always retire at age 65 (or 60 or even 70 for that matter), and not everybody of 15-64 is indeed working, which may blur the analysis a bit.
- We still expect this customary approximation of net consumers (young and old, i.e. economically inactive) and net producers (working age / economically active) to be useful. (For the real deal extensive Labour Force information would be necessary).

Children, the Elderly and Ageing

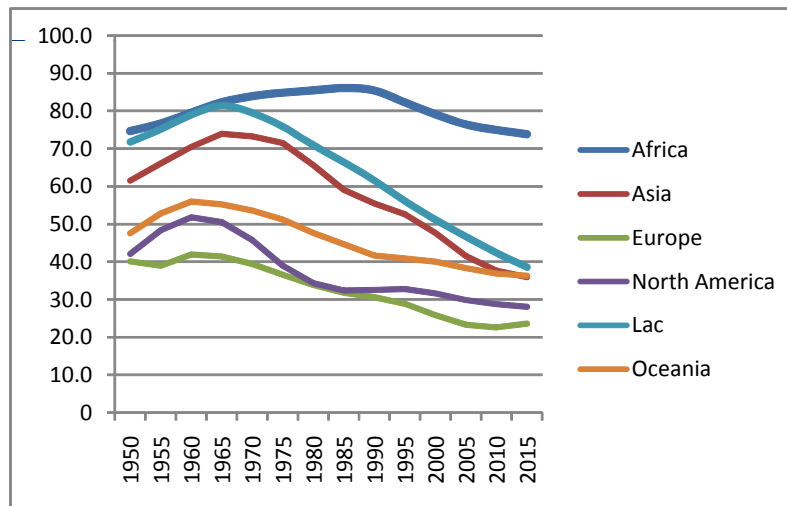
- Total Dependency: Selected Areas of the World 1950-2015



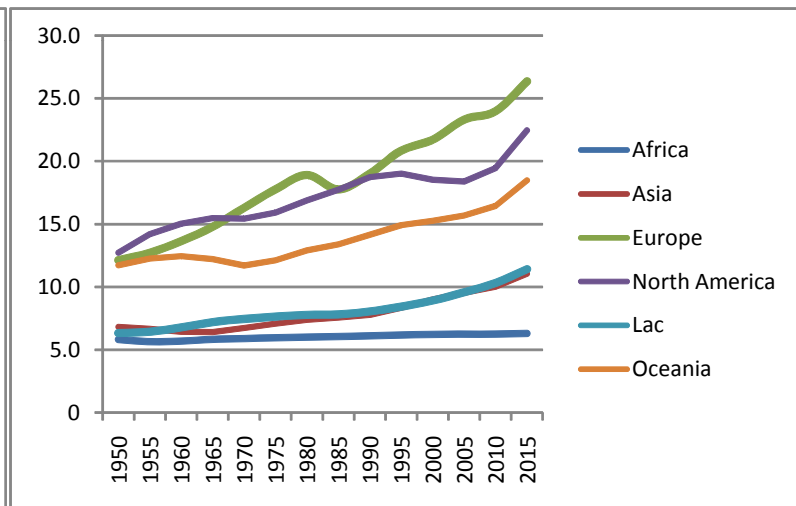
Children, the Elderly and Ageing

- Selected areas of the world, 1950-2015

- Child Dependency

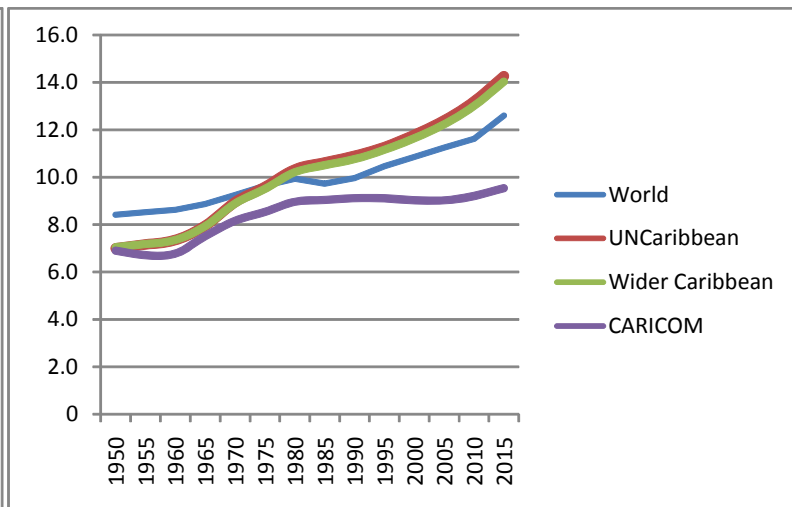
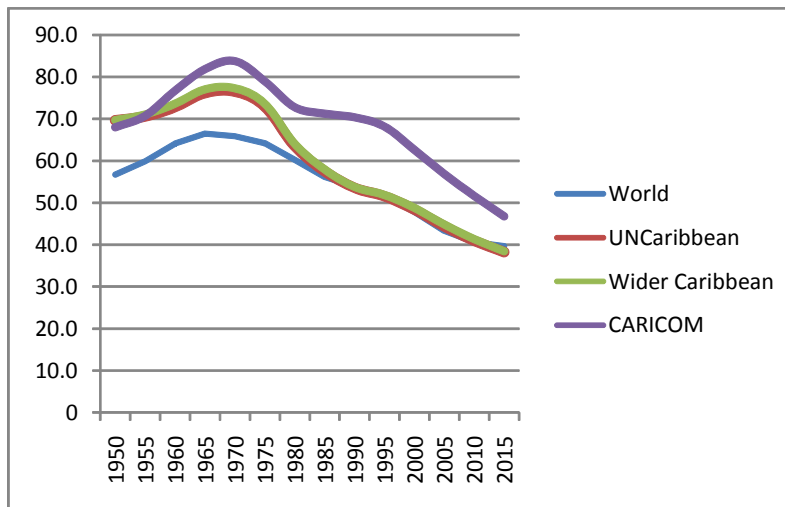


- Old-age Dependency



Children, the Elderly and Ageing

- World, UNCaribbean, Wider Caribbean and CARICOM (1950-2015)
- Child Dependency
- Old-age Dependency



Children, the Elderly and Ageing

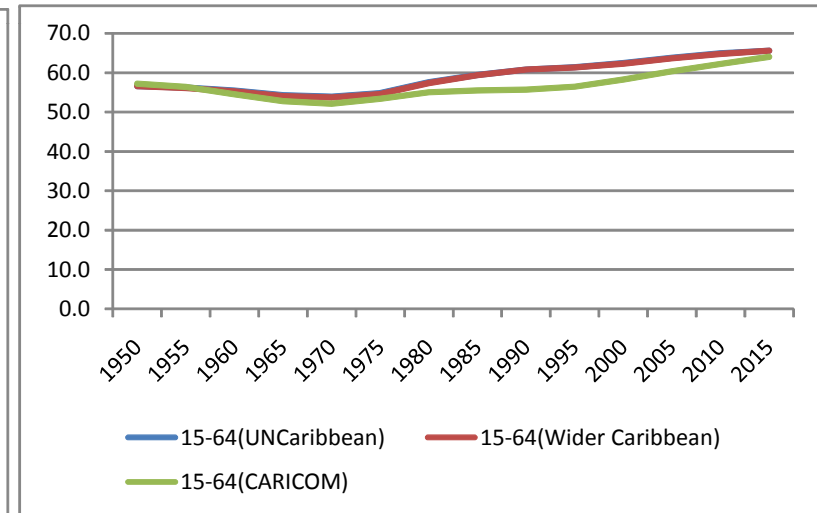
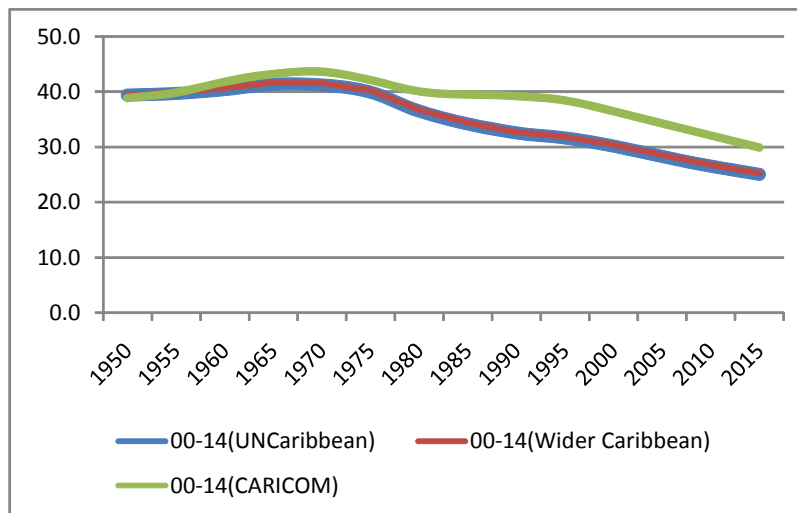
- Before we proceed with further analysis of “children, the elderly and ageing” some criteria in use to classify populations as “young” or “old”.

Variable	Young	Old	Neither
Percentage younger than 15 year	$\geq 35\%$	$< 25\%$	Elsewhere
Percentage 65 year and older	$< 5\%$	$\geq 10\%$	Elsewhere
Median Age	< 20 year	≥ 30 year	Elsewhere
Old/Young ratio	< 15	> 30	Elsewhere

- Note: Old/Young ratio is sometimes called Ageing Index
- Sometimes the variables give a conflicting picture.

Children, the Elderly and Ageing

- Children and the Working Age Population % (1950-2015)
- Children %
- Working Age Population %



Children, the Elderly and Ageing

- Classifications for UNCaribbean

UNCaribbean	% younger than 15	% 65+	Old/Young Ratio
1950	Young	Young	Young
1955	Young	Young	Young
1960	Young	Young	Young
1965	Young	Young	Young
1970	Young	Young	Young
1975	Young	Neither	Young
1980	Young	Neither	Neither
1985	Neither	Neither	Neither
1990	Neither	Neither	Neither
1995	Neither	Neither	Neither
2000	Neither	Neither	Neither
2005	Neither	Neither	Neither
2010	Neither	Neither	Old
2015	Neither	Neither	Old

Children, the Elderly and Ageing

- Classifications for Wider Caribbean

Wider Caribbean	% younger than 15	% 65+	Old/Young Ratio
1950	Young	Young	Young
1955	Young	Young	Young
1960	Young	Young	Young
1965	Young	Young	Young
1970	Young	Young	Young
1975	Young	Neither	Neither
1980	Young	Neither	Neither
1985	Neither	Neither	Neither
1990	Neither	Neither	Neither
1995	Neither	Neither	Neither
2000	Neither	Neither	Neither
2005	Neither	Neither	Neither
2010	Neither	Neither	Old
2015	Neither	Neither	Old

Children, the Elderly and Ageing

- Classifications for CARICOM

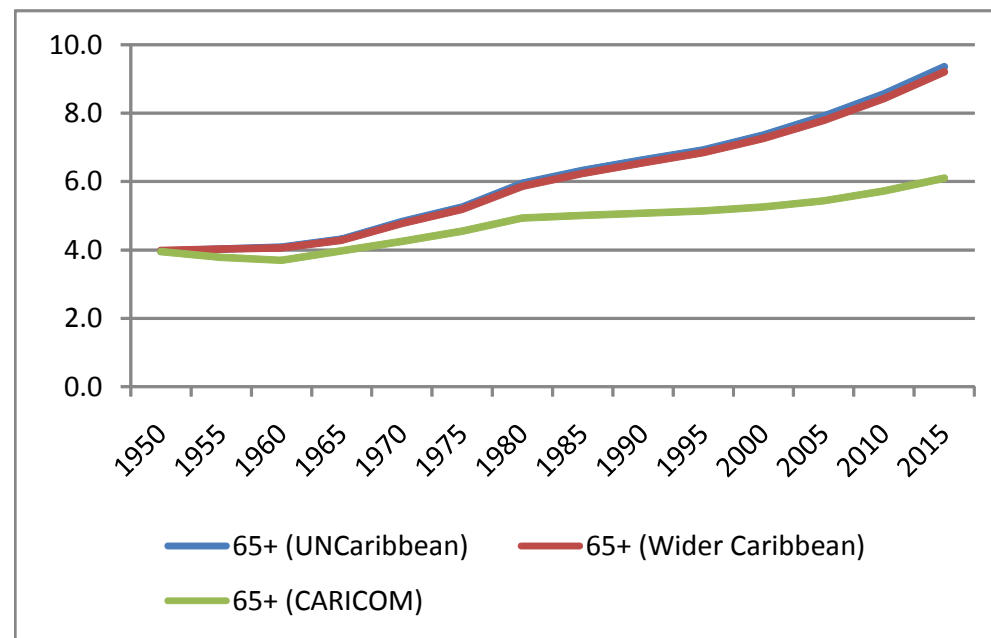
CARICOM	% younger than 15	% 65+	Old/Young Ratio
1950	Young	Young	Young
1955	Young	Young	Young
1960	Young	Young	Young
1965	Young	Young	Young
1970	Young	Young	Young
1975	Young	Young	Young
1980	Young	Young	Young
1985	Young	Neither	Young
1990	Young	Neither	Young
1995	Young	Neither	Young
2000	Young	Neither	Young
2005	Neither	Neither	Neither
2010	Neither	Neither	Neither
2015	Neither	Neither	Neither

Children, the Elderly and Ageing

- Ageing results from declining mortality and declining fertility (it is thus a consequence of the demographic transition).
- Aging refers to an increase in the share of the population in older age groups (65+, 60+, 55+), which usually is reflected in the median age of the population.
- Aging can thus be measured using either the median age of the population or the percentage share of the elderly.

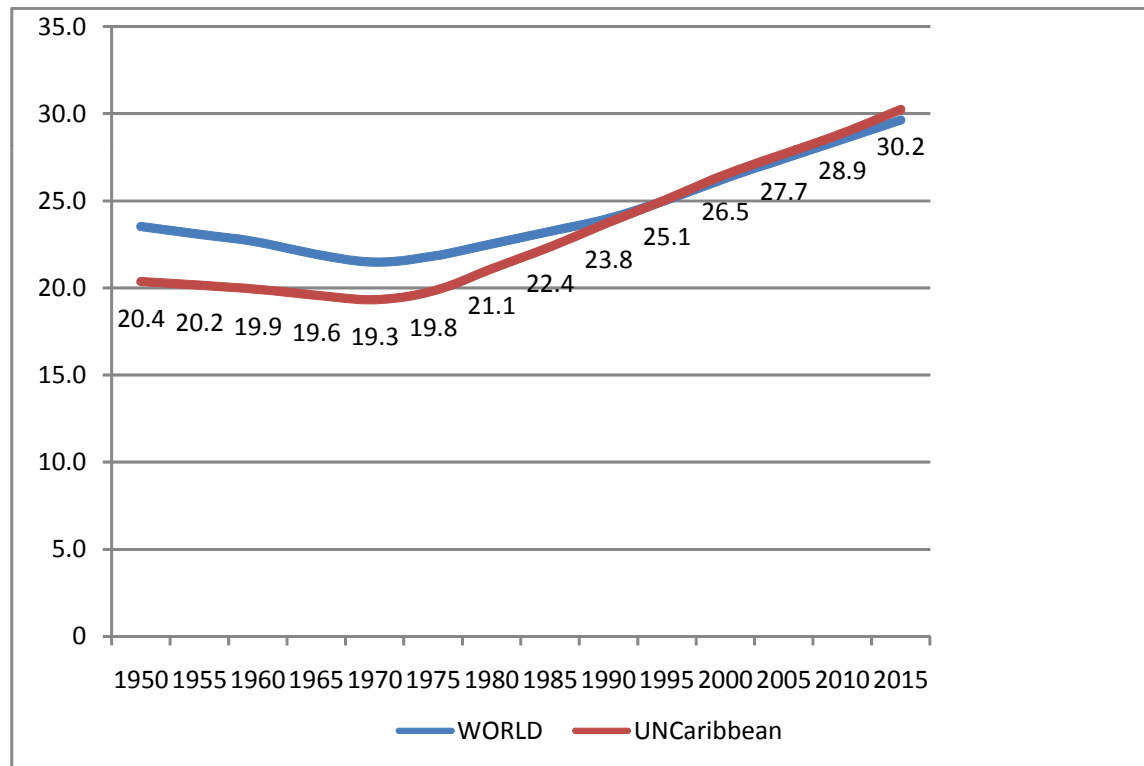
Children, the Elderly and Ageing

- The Elderly and Ageing / What does this graph tell us?
- Population 65 years and over (%) 1950-2015



Children, the Elderly and Ageing

■ Median Age 1950-2015



Projected Population

- The UN Population division produces several (up to 8) projection variants (e.g.: Medium, Low, High, Constant Fertility, etc.) and projects the population up to 2100.
- We shall use the Medium variant (often considered the most likely variant) and only look at the results for the years 2030 and 2050!

Projected Population (Total Population)

- Population 1950, 2015, 2030 and 2050 (selected areas)

POPULATION-BASE	1950		2015	
	Numbers (X 1000)	% Share	Numbers (X 1000)	% Share
World Population	2,525,149.31	100	7,349,472.10	100
UN-CARIBBEAN	17,075.65	0.676	43,199	0.588
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Jamaica	1,402.90	0.056	2,793	0.038
Suriname	215.00	0.009	543	0.007

POPULATION-BASE	2030		2050	
	Numbers (X 1000)	% Share	Numbers (X 1000)	% Share
World Population	8,500,766.05	100	9,725,147.99	100
UNCARIBBEAN	46,700.37	0.549	48,100	0.495
WIDER CARIBBEAN	50,638.02	0.596	52,022	0.535
Montserrat	5.41	0.000	5	0.000
Jamaica	2,866.56	0.034	2,710	0.028
Suriname	599.32	0.007	624	0.006

Projected Population (Growth rate)

- In what follows, regarding projections, we'll concentrate on UNCaribbean (and sometimes selected CARICOM members)
- Total Population growth rate: selected areas and selected time spans

AREA	2010-2015	2015-2020	2025-2030	2030-2035	2045-2050
World Population	1.18	1.08	0.86	0.78	0.57
UNCARIBBEAN	0.74	0.62	0.42	0.32	-0.02
Montserrat	0.68	0.47	0.27	0.17	-0.15
Jamaica	0.38	0.33	-0.00	-0.14	-0.41
Suriname	0.94	0.79	0.52	0.39	0.03

Projected Population (components of growth)

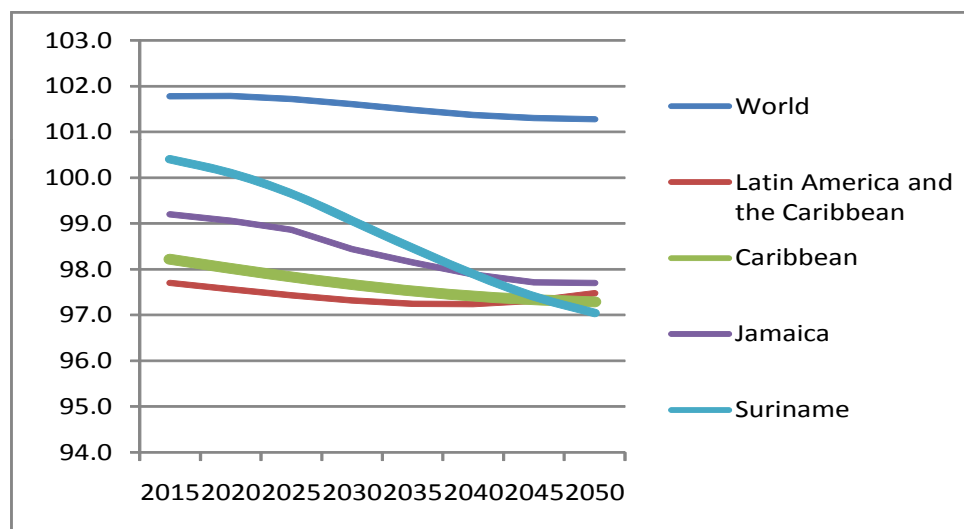
- Components of Population growth (x1000)

2015 Population	2015-2050 Births	2015-2050 Deaths	2050 Population	2015-2050 Netmigrants
43,199	339,570	14,312	48,100	- 320,358

- The Caribbean is projected to continue to have a negative migration balance (circa -9150 annually).

Projected Population (Sex Ratio)

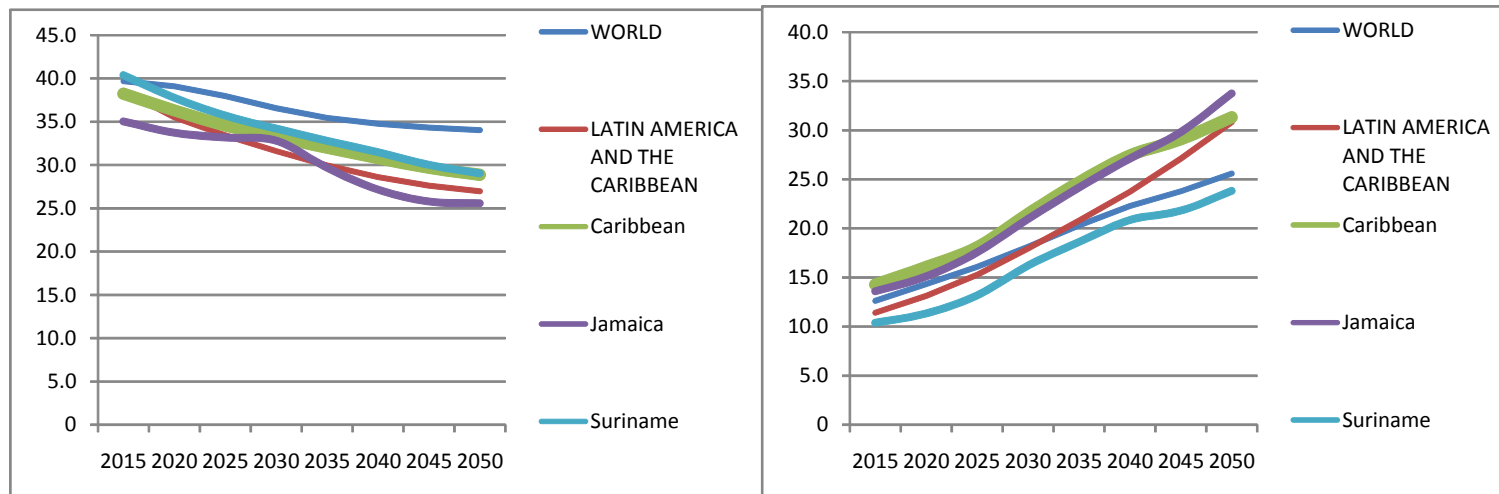
- Sex ratios of the total population for selected areas (2015-2055)



- For the World the ratios will remain between 101 and 102, for the Caribbean as a whole they will remain between 97 and 99, and for Suriname between 97 and 101.

Projected Population (Dependency Ratios)

- Dependency ratios for various areas: 2015-2050
- Child Dependency
- Old Age Dependency



- Child dependency generally going down and Old-age dependency going up!

Closing Remarks

- The Caribbean (UN geographic classification) comprises 26 territories. If a wider view (including history) is taken, the Caribbean comprises 30 territories, of which 29 have been included in the concept of “Wider Caribbean” used in this presentation.
- The Caribbean comprises a wide variety of territories, ranging in size (2015) from: 5125 (Montserrat) to 11.4 million (Cuba).

Closing Remarks

- An important subset of the Caribbean consists of the CARICOM member countries, ranging in size (2015) from 5125 (Montserrat) to 10.7 million (Haiti).
- Caribbean countries do not only exhibit a wide variety in size and shape, but also in some demographic characteristics. Some countries are very advanced regarding the demographic transition (Barbados and Cuba), while others are only at the moderate level (Haiti)

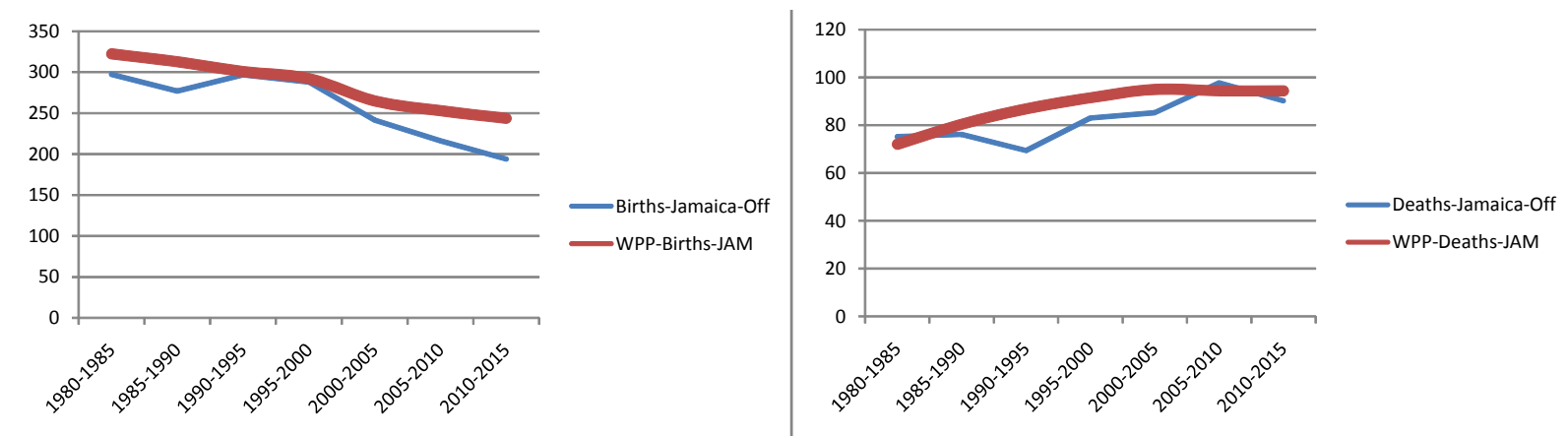


Closing Remarks

- Neither the sex ratios for the World or the Continents, nor the sex ratios for the Caribbean provide a justification for the “belief” that men are “entitled” to more than one woman as there is a vast excess of women! **It is simply not true!**
- The UNCaribbean Population is expected to grow from 43.2 million in 2015 to 48.1 million in 2050.
- Between 2015 and 2050 Child Dependency in the Caribbean is expected to decline from 38.2 to 28.9, while Old-age Dependency is expected to rise from 14.3 to 31.3. Old-age Dependency will thus exceed Child Dependency. Total Dependency in 2050 will be 60.2!

Closing Remarks

- The World Population Prospects data set has been used, even though we do not always agree with the adjustments made by the UN. It simply is the most extensive and consistent data set. Examples for Jamaica are presented below.
- Official vs. WPP Births and Deaths for Jamaica 1980-1985 to 2010-2015



Closing Remarks

- Finally, I apologize for the fact that in this presentation no attention has been given to life expectancies and probabilities of dying, variables that form the bread and butter of actuaries (those active in the fields of pensions and life insurance)
- Suffice it to say that male life expectancy at birth in the Caribbean is expected to improve circa 6.6 years between 2010-2015 and 2045-2050, while female life expectancy at birth is expected to improve circa 5.7 years in the Caribbean.
- Therefore reducing the existing gender gap (female advantage) with almost 1 year



▪ **THANK YOU FOR YOUR ATTENTION**

▪ **QUESTIONS ?**



