

23rd REVES MEETING

Are sex differences in health expectancy a social issue?

Paris, France

THE SEX GAP IN LIFE EXPECTANCY AND HEALTHY LIFE EXPECTANCY IN CUBA.

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25-27 May, 2011

- Why to study life expectancy in Cuba?
- Data and Methods
- Characteristics of Cuban population
- International comparison of life expectancy
- Mortality trend in Cuba
- Differential of life expectancy by age and causes of death
- Final considerations

Why to study life expectancy in Cuba?

- Cuba behaves similarly to developed countries in its demographic indicators, but having an economy of developing country.
- In 1960 Cuba was already in the second stage (out of fourth) of the Demographic Transition according to J. Chackiel scheme.
- Since 1978 fertility was set below replacement level.
- Infant mortality strongly reduced since 1950 (4.8 ‰ in 2009)
- Life expectancy has reached high levels, but contrary to what occurs in other countries, sex differential in life expectancy has always been around 3 to 4 years.

Aim of the study

- To get some insights on the evolution of life expectancy in Cuba, analyzing the sex gap.
- To decompose the effect of different causes of death on these differentials in three points in time: 1987, 1995 and 2007.
- To decompose the effect at older ages (60+) of the mortality and disability to the Healthy life expectancy.

International data:

Human Mortality Database (HMD)

Latin American and Caribbean Demographic Centre (CELADE)

National data:

National Statistics Office (ONE), Cuba

Public Health Ministry, Cuba

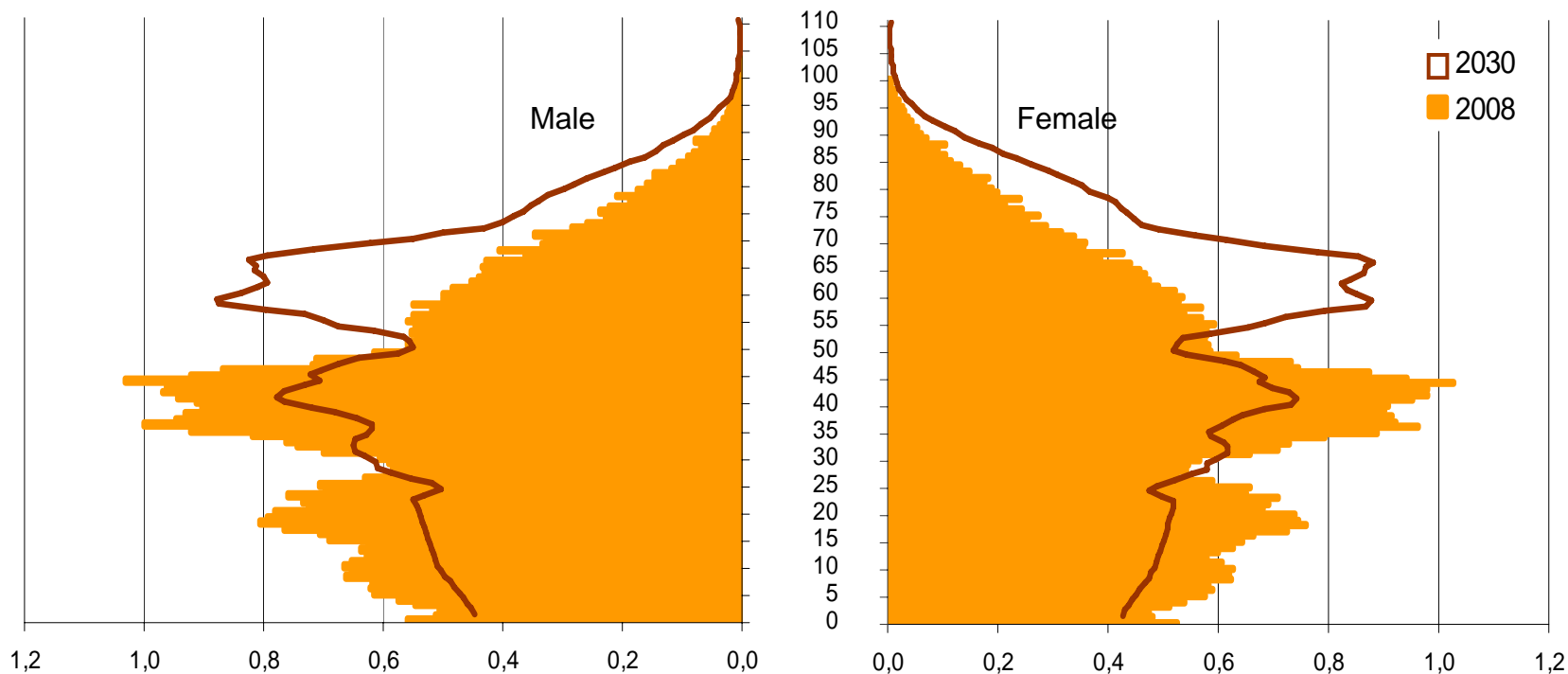
Methods:

Decomposition method of the differential of life expectancy by age and causes of death (Andreev et. al., 2002)

R-macro (from the Training on Health Expectancy Decomposition Techniques by Dr. Wilma Nusselder)

Characteristics of Cuban population

Pyramids of Cuban population 2008 and projected.



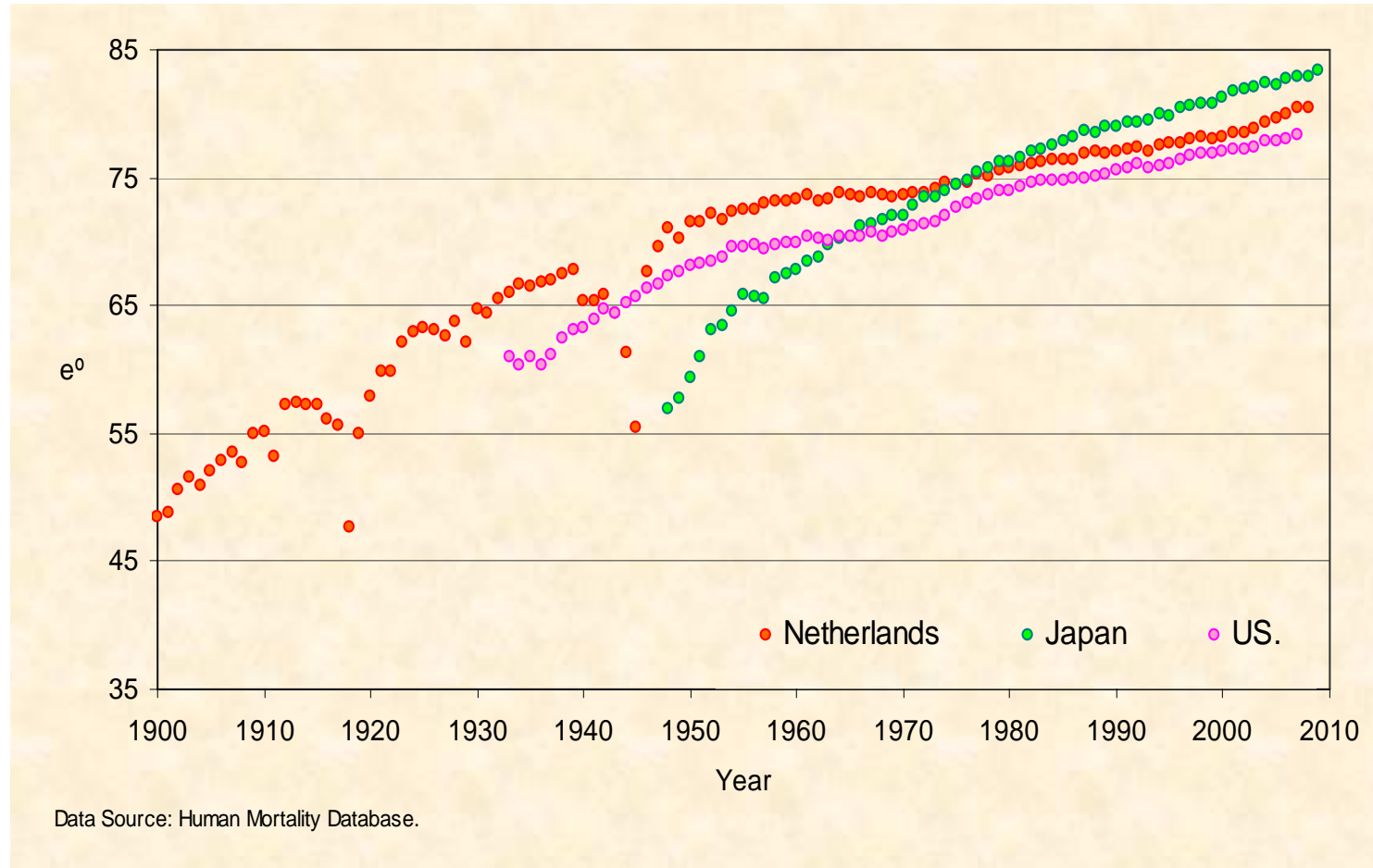
Scenario: Fertility, Mortality and Migration are constants.
TFR: 1.59

Source: National Statistics Office, Cuba.

Population } 2008: 11.236.129
 } 2030: 11.270.114

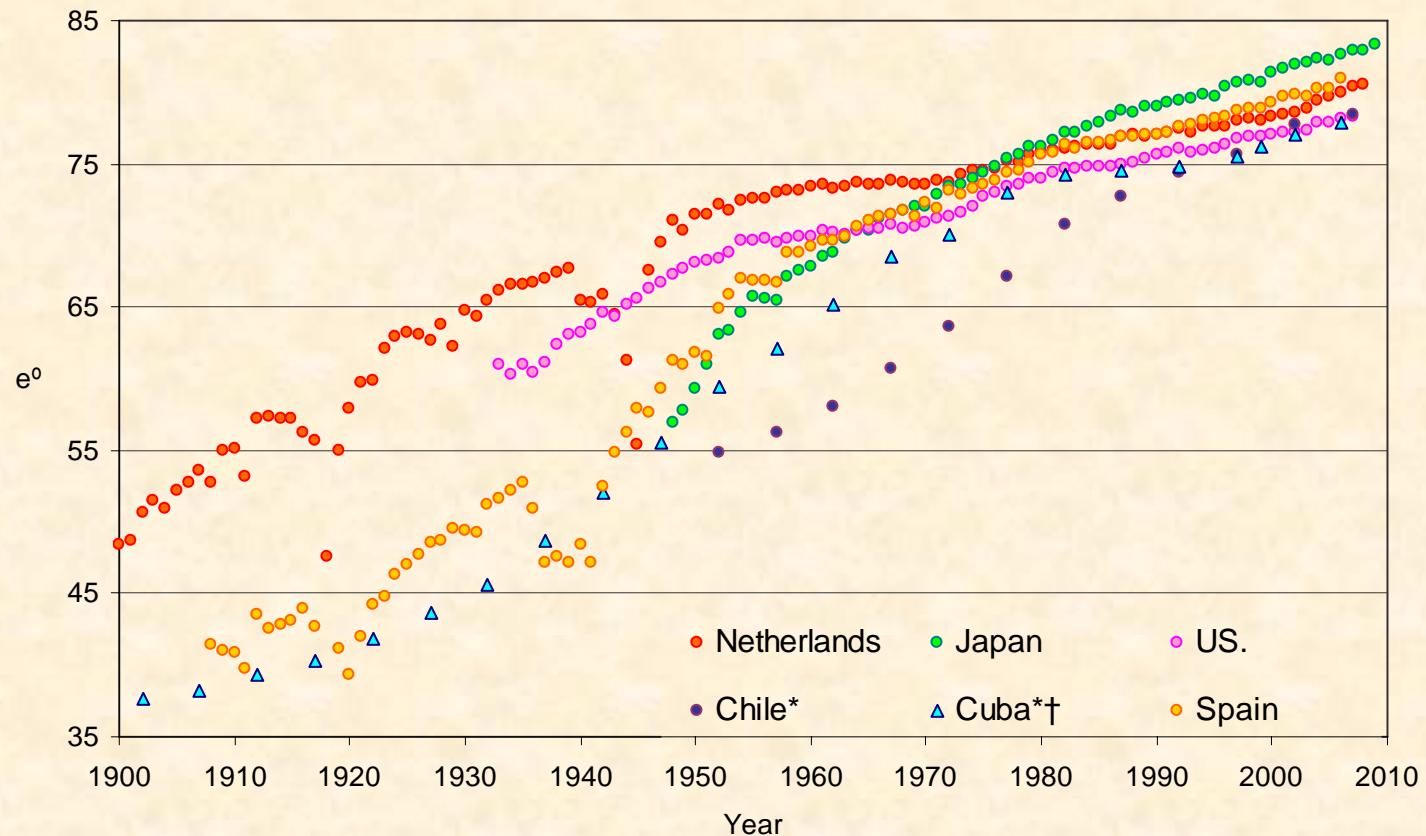
International comparison of life expectancy

Life expectancy at birth in selected countries, 1900-2009.



International comparison of life expectancy

Life expectancy at birth in selected countries, 1900-2009.

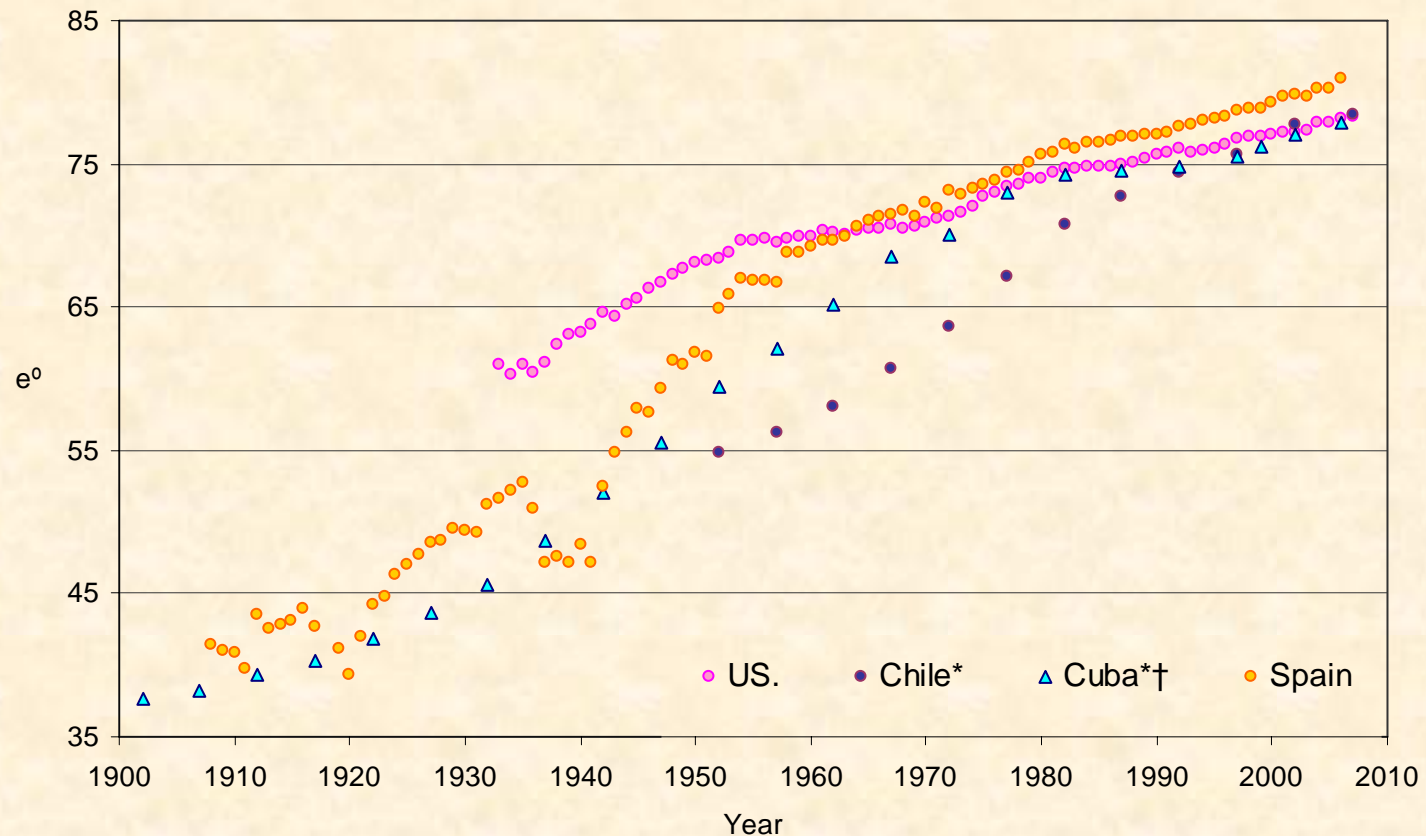


Data Source: Human Mortality Database, Celade database and National Statistics Office, Cuba.

*Average of five-years group, † three-years group for the last 3 observations

International comparison of life expectancy

Life expectancy at birth in selected countries, 1900-2009.

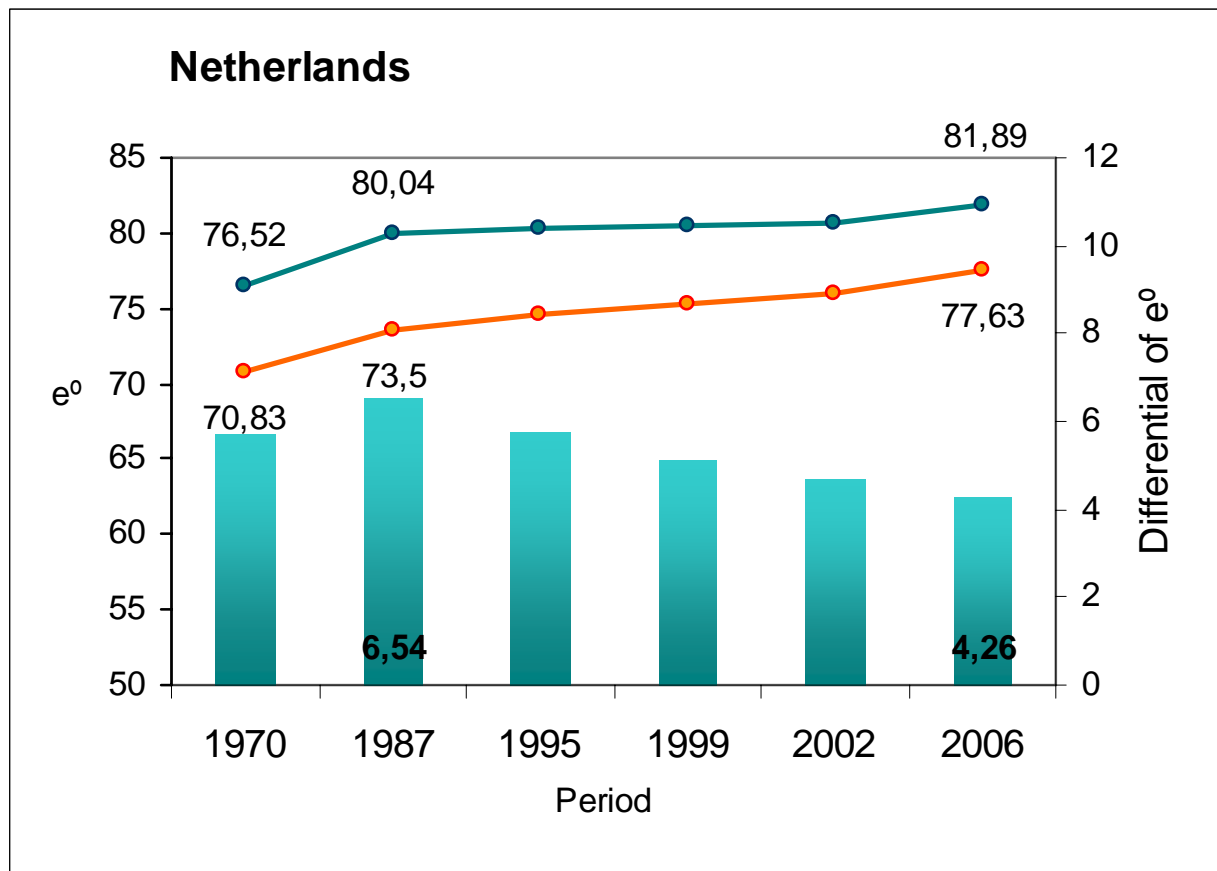


Data Source: Human Mortality Database, Celade database and National Statistics Office, Cuba.

*Average of five-years group, † three-years group for the last 3 observations

International comparison of life expectancy

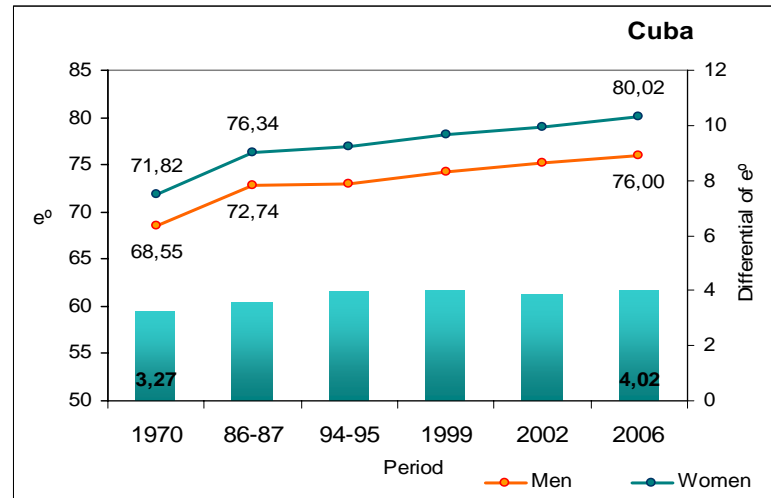
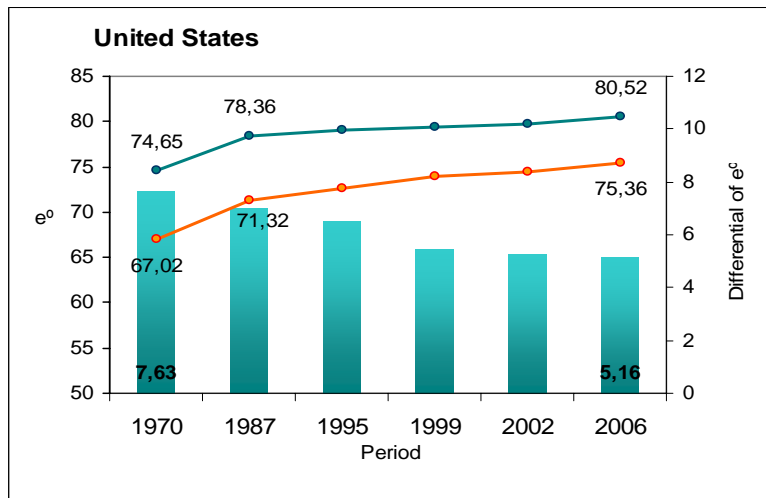
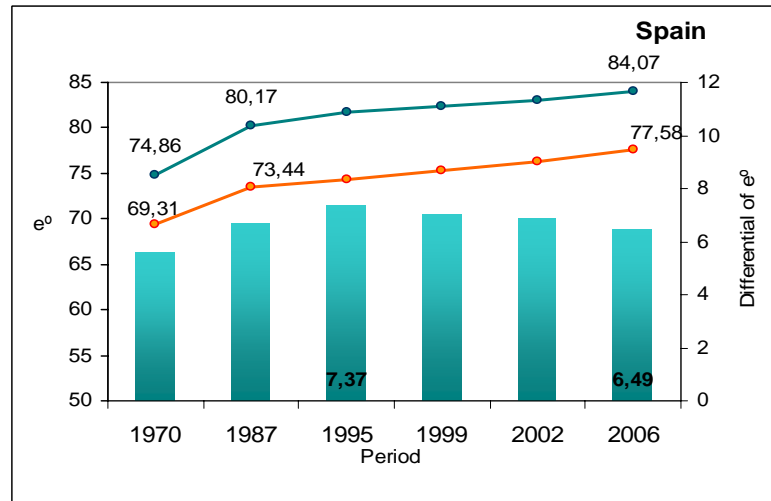
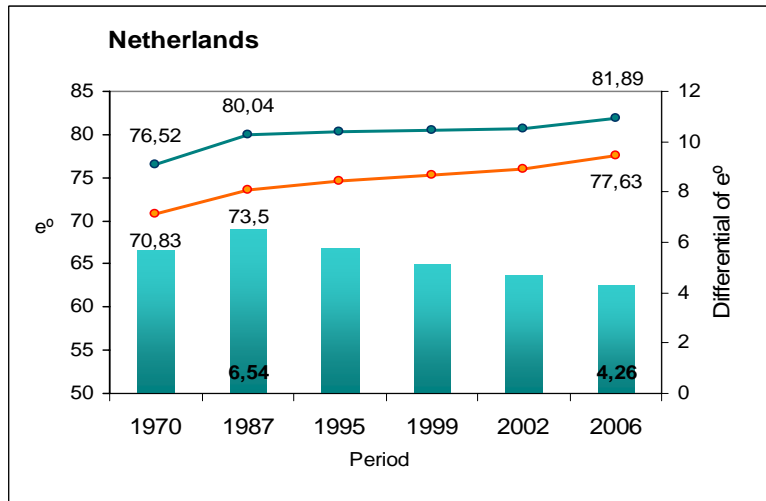
Life expectancy at birth and its differential by sex.



Source: HMD.

International comparison of life expectancy

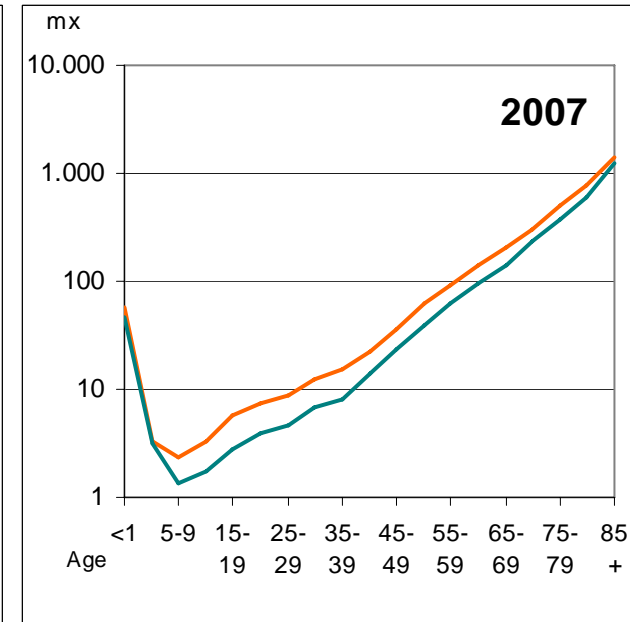
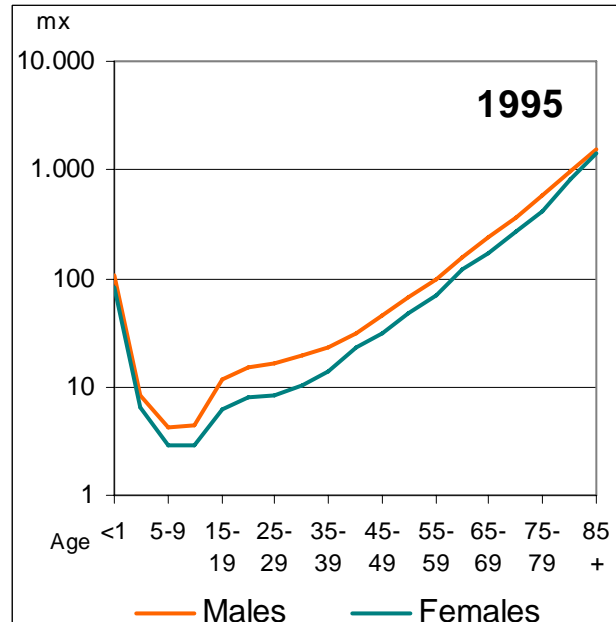
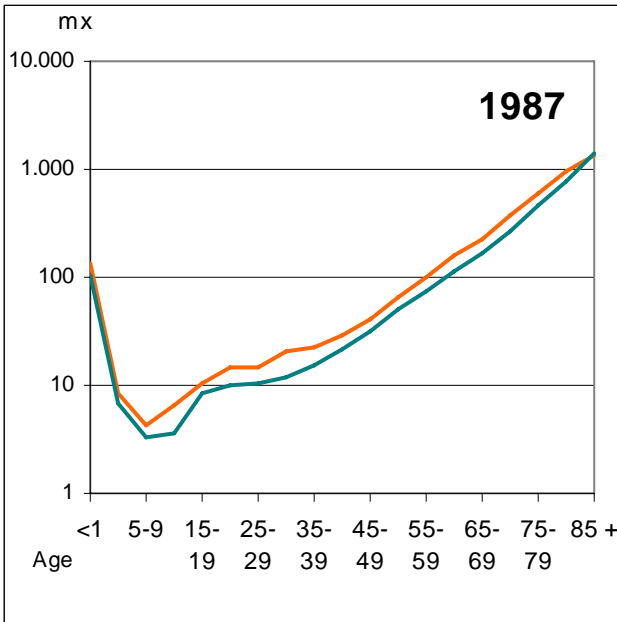
Life expectancy at birth and its differential by sex.



Source: HMD,
ONE (Cuba)

Mortality trends in Cuba

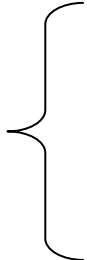
Mortality curves by age and sex, Cuba, 1987, 1995 and 2007.



Source: National Statistics Office, Cuba.

Ranking of main causes of death in 2008:

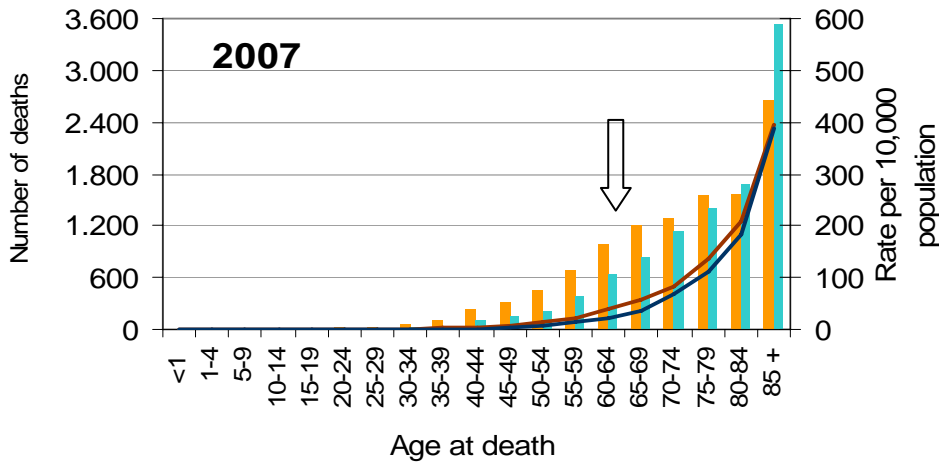
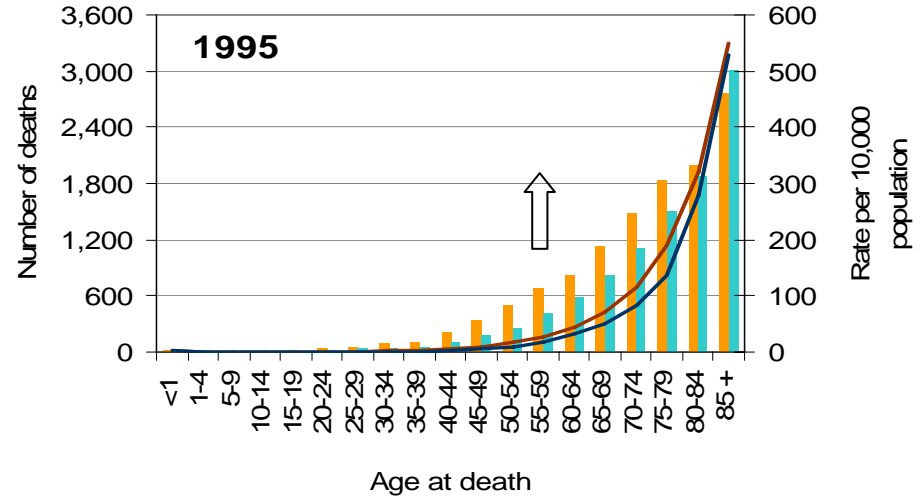
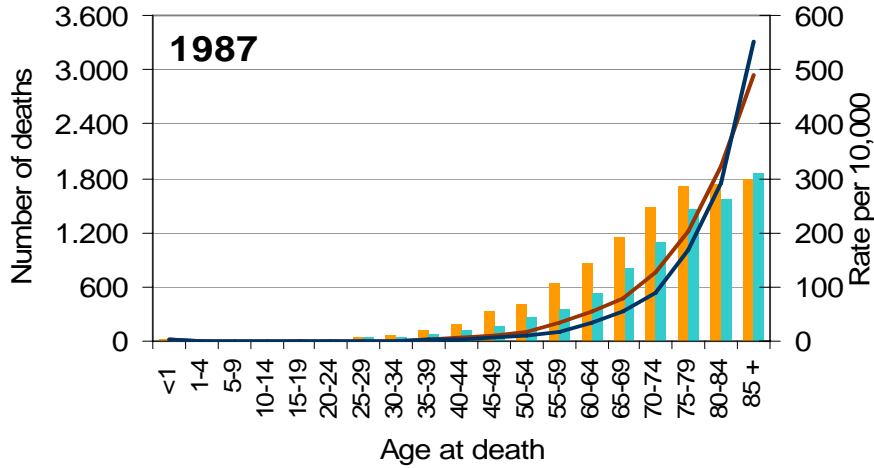
Since 1970

- 
1. Heart diseases
 2. Cancer (lung, colon and lymphoma)
 3. Cerebrovascular diseases
 4. Accidents (falls and car accidents)
 5. Influenza and pneumonia

Causes of death used in the study

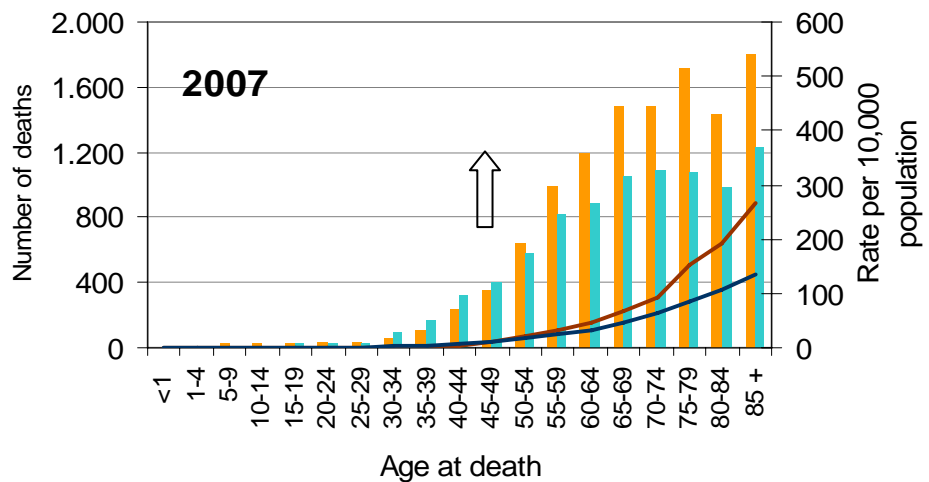
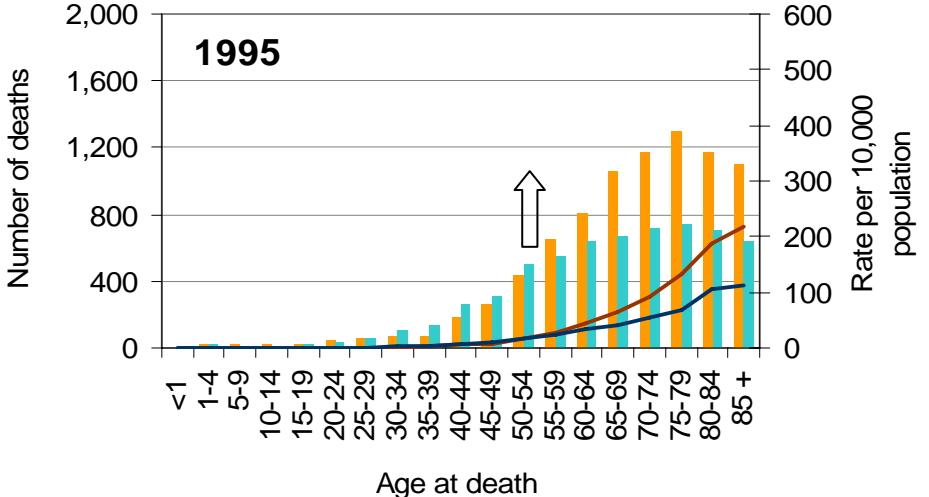
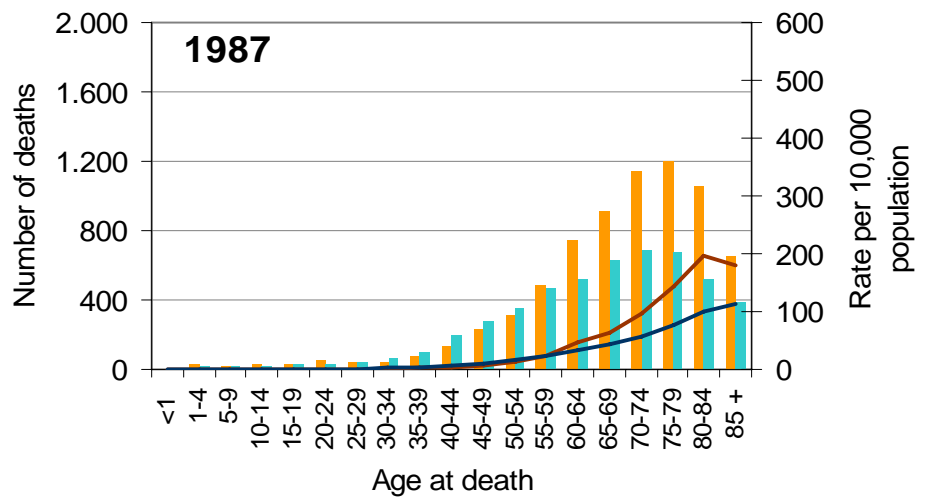
- 1 Heart Disease
- 2 Cancer
- 3 Cerebrovascular Disease
- 4 External causes (Accidents, Violent deaths and Suicide)
- 5 Respiratory diseases (including influenza)
- 6 Artery and arterioles
- 7 Diabetes
- 8 Liver, Kidney and obstruction
- 9 Congenital Malformation
- 10 Mental Disorders (including Alzheimer's disease)
- 11 Others

Heart Diseases age-specific mortality rates and number of deaths by sex, Cuba.



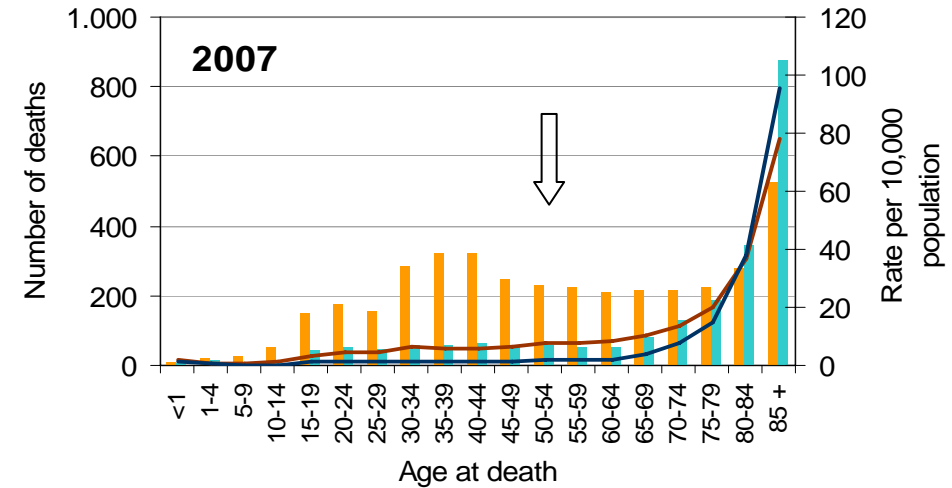
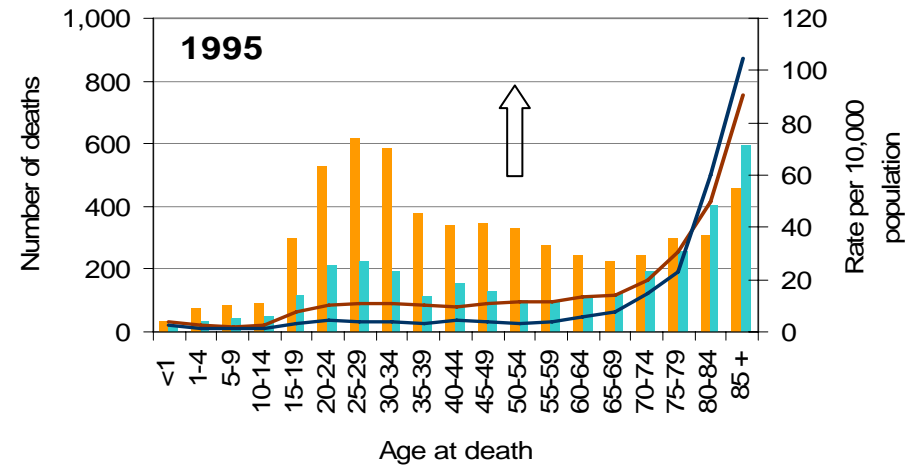
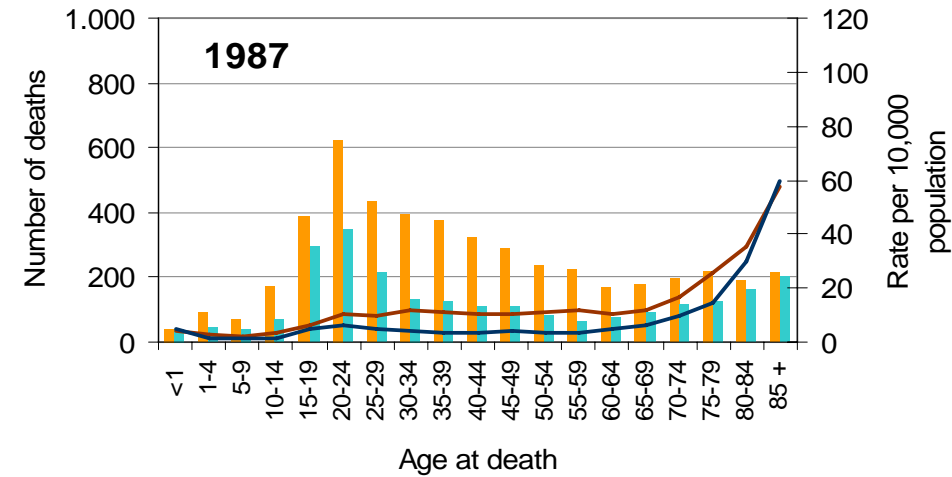
■ Male deaths ■ Female deaths
— Male rates — Female rates

Cancer age-specific mortality rates and number of deaths by sex, Cuba.



■ Male deaths ■ Female deaths
— Male rates — Female rates

External causes age-specific mortality rates and number of deaths by sex, Cuba.



■ Male deaths
 ■ Female deaths
 — Male rates
 — Female rates

Differential of life expectancy by age and causes of death

Sex Differential

Female - Male

1987

1995

2007

Difference in Time

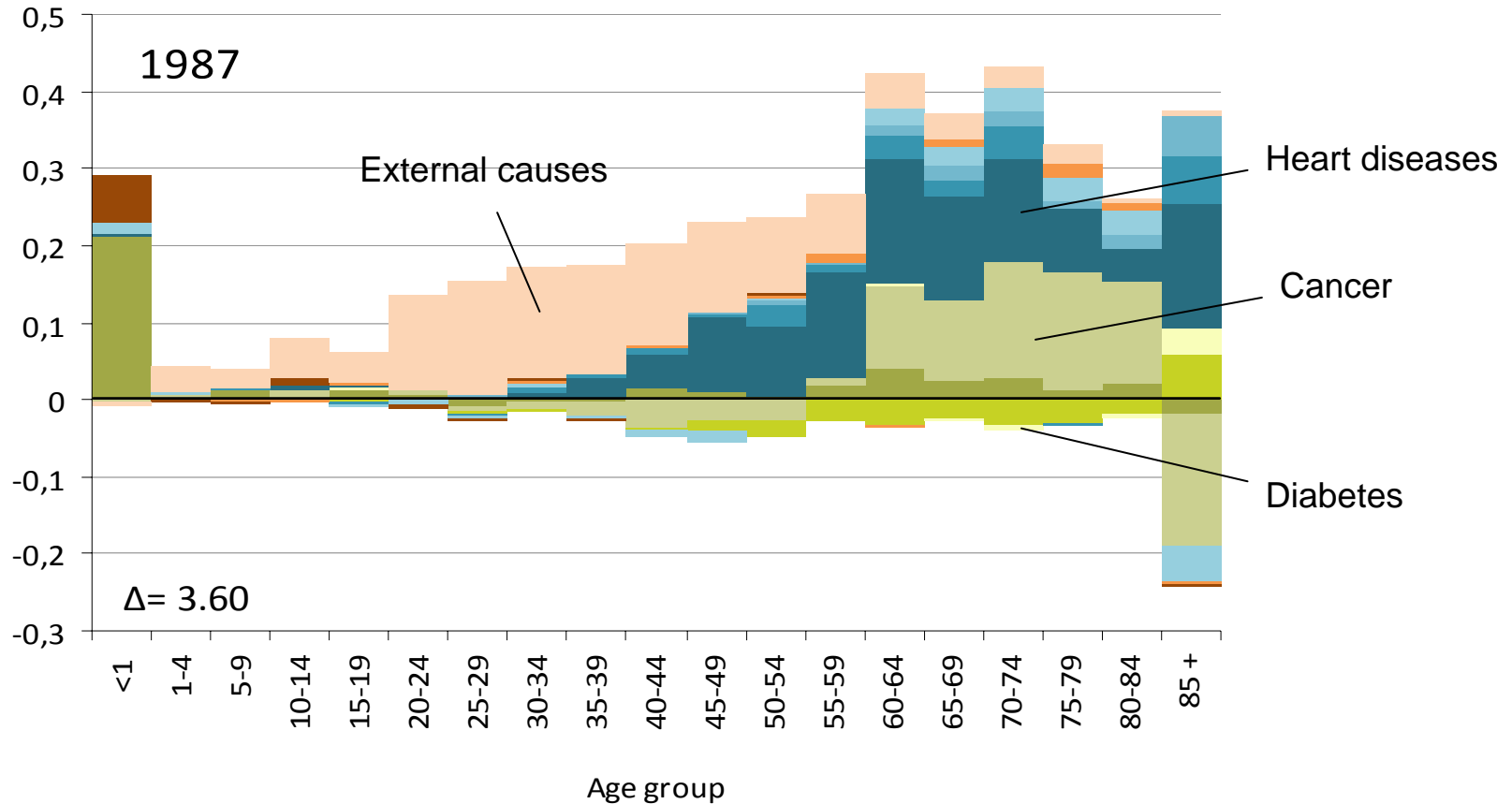
1987 - 1995

1995 - 2007

Males

Females

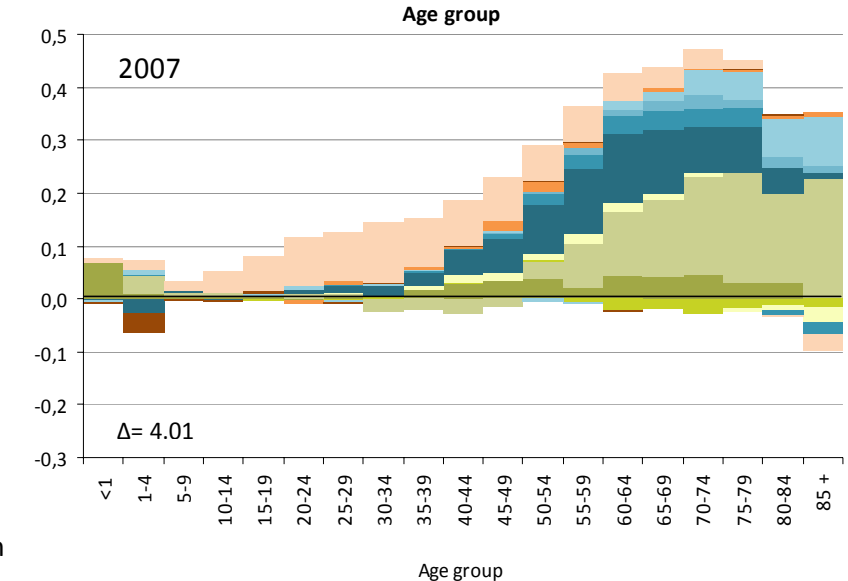
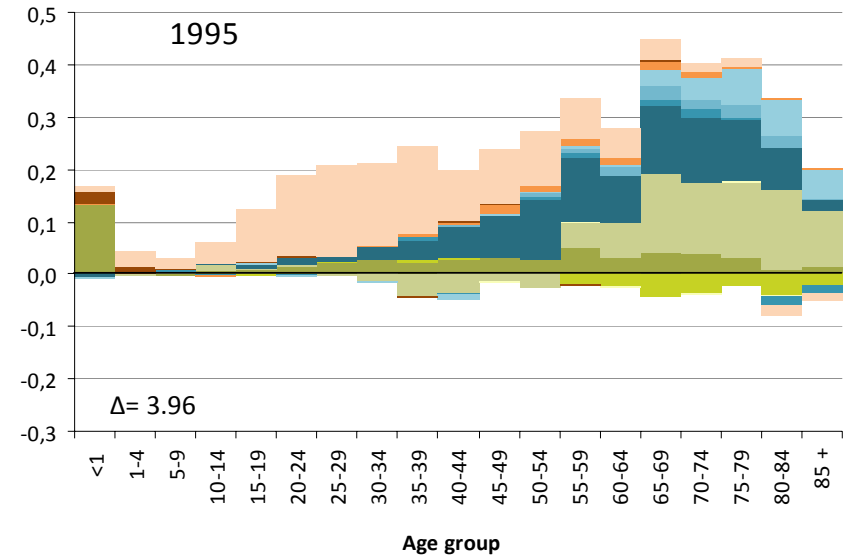
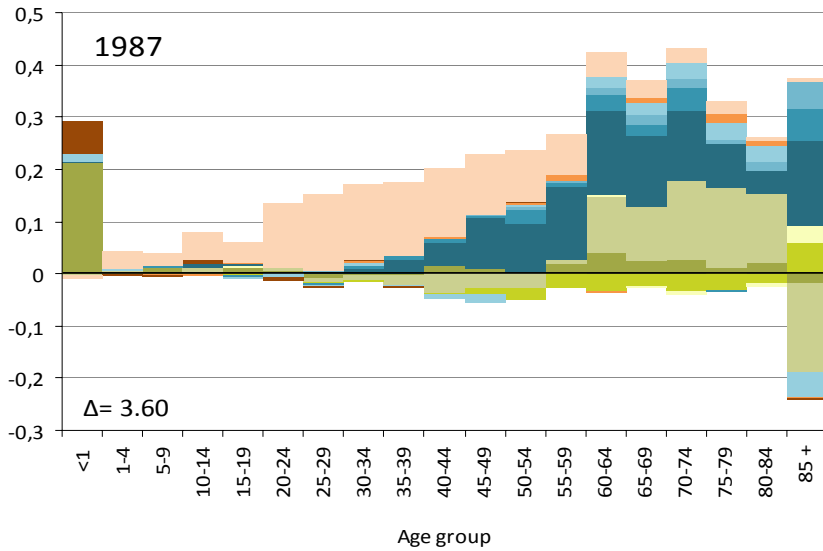
Decomposition of the difference in life expectancy at birth between males and females, by age and causes of death. Cuba, 1987, 1995 and 2007.



Δ 1987, Contribution of $D_{60+} = 50\%$

- Influenza
- Mental disorders
- External causes
- Artery and arterioles
- Diabetes
- Congenital malformation
- Cerebrovascular diseases
- Cancer
- Liver, kidney and obstruction
- Heart diseases
- Others

Decomposition of the difference in life expectancy at birth between males and females, by age and causes of death. Cuba, 1987, 1995 and 2007.



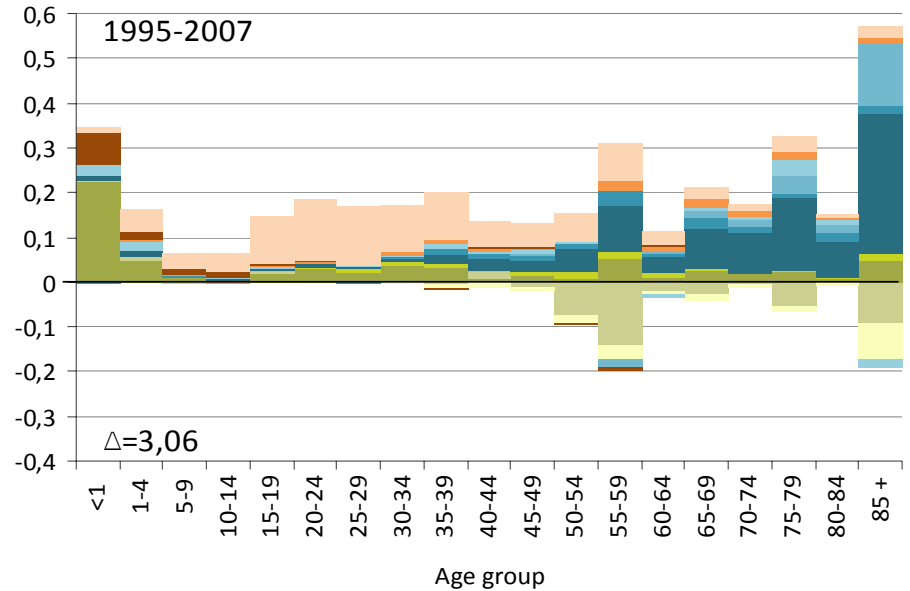
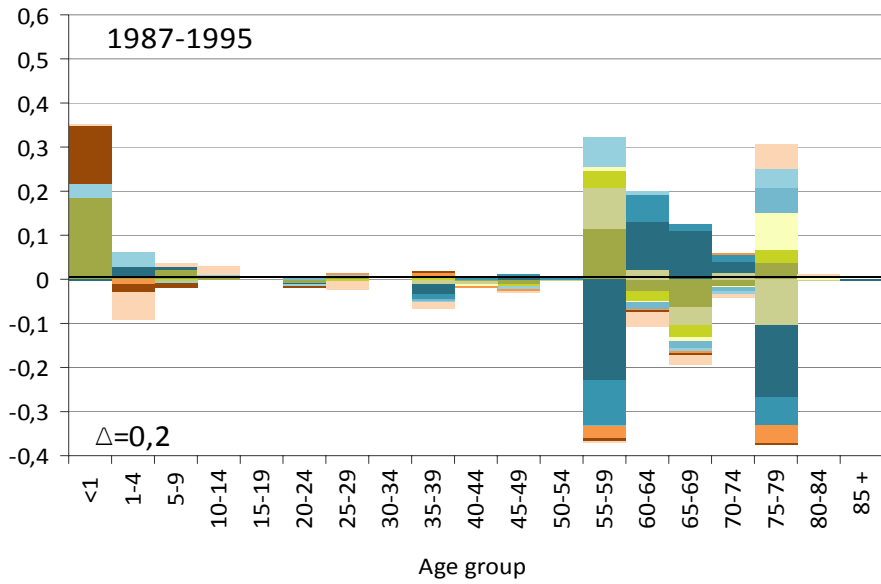
Δ 1987, Contribution of $D_{60+} = 50\%$

Δ 1995, Contribution of $D_{60+} = 46\%$

Δ 2007, Contribution of $D_{60+} = 57\%$

- Influenza
 - Artery and arterioles
 - Cerebrovascular diseases
 - Heart diseases
- Mental disorders
 - Diabetes
 - Cancer
 - Others
- External causes
 - Congenital malformation
 - Liver, kidney and obstruction

Decomposition of the difference in life expectancy at birth between 1987-1995 and 1995-2007, by age and causes of death. Males, Cuba.

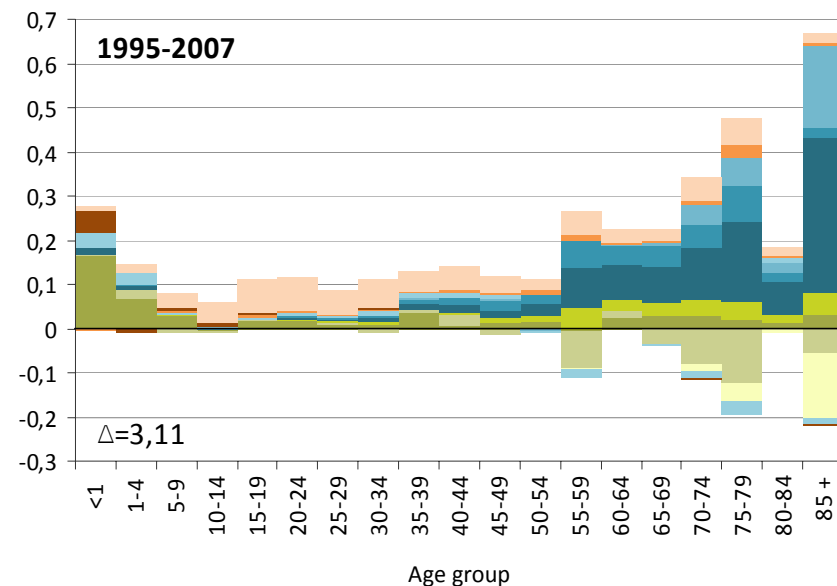
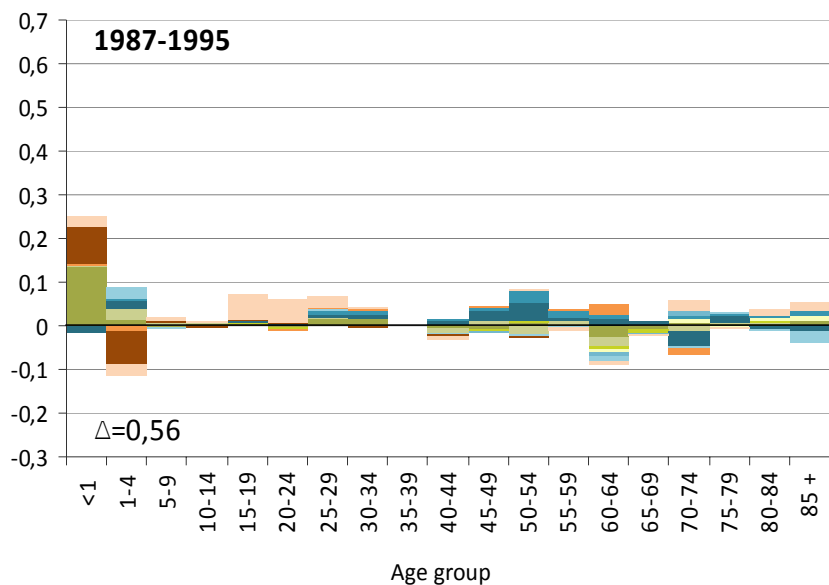


Contribution of D_{60+} to Δ (1987-1995) = - 8,6%

Contribution of D_{60+} to Δ (1995-2007) = 39 %

- Influenza
- Mental disorders
- External causes
- Artery and arterioles
- Diabetes
- Congenital malformation
- Cerebrovascular diseases
- Cancer
- Liver, kidney and obstruction
- Heart diseases
- Others

Decomposition of the difference in life expectancy at birth between 1987-1995 and 1995-2007, by age and causes of death. Females, Cuba.



Females Δ 1987-1995 (60+)= 1,5 %

Females Δ 1995-2007 (60+)= 50 %

- | | | |
|---|---|--|
| ■ Influenza | ■ Mental disorders | ■ External causes |
| ■ Artery and arterioles | ■ Diabetes | ■ Congenital malformation |
| ■ Cerebrovascular diseases | ■ Cancer | ■ Liver, kidney and obstruction |
| ■ Heart diseases | ■ Others | |

Healthy Life Expectancy, Havana, 1999

SABE Survey

“ Health Well-being and Aging in Latin America and the Caribbean”.

PAHO / National Statistic Office, Cuba

| | | | | |
|-------------------|--------------|------------------|-------|-----|
| Population | 1,905 | Age group | 60-64 | 483 |
| Females | 1,197 | | 65-69 | 402 |
| Males | 708 | | 70-74 | 349 |
| | | | 75-79 | 257 |
| Response rate | 95 % | | 80 + | 414 |

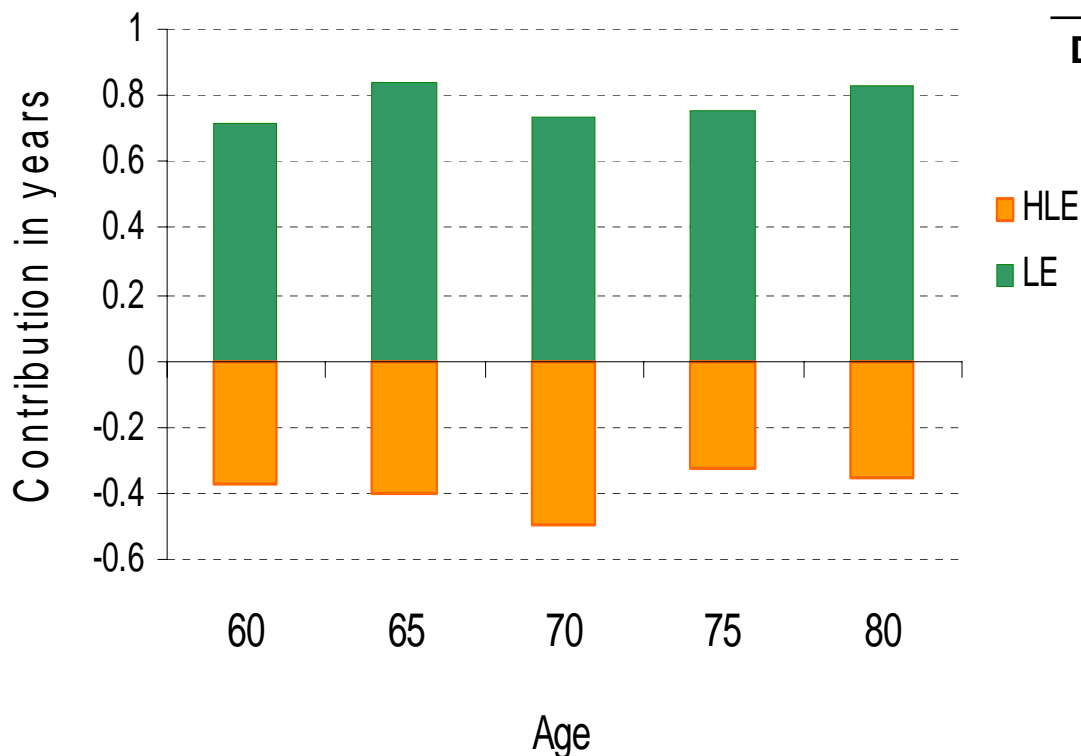
- **Diseases**

Heart, Cancer, Cerebro-vascular, Lung, Diabetes, Hypertension, Cognitive Impairment, Depression and Artrosis.

- **ADL**

Life expectancy and healthy life expectancy by age, Havana 2000

HLE: Life Expectancy without any disease.

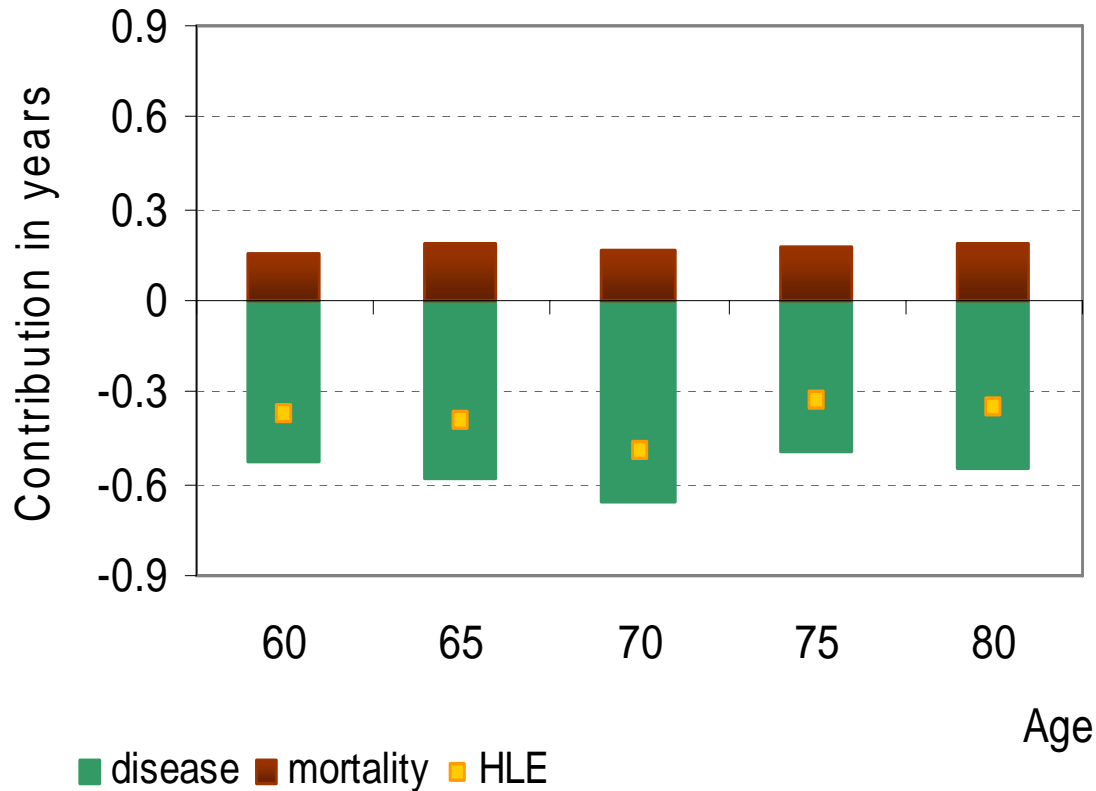


| | LE | HLE | Difference |
|-------------------|-------------|--------------|------------|
| Females | 22.55 | 3.24 | 19.31 |
| Males | 18.68 | 5.19 | 13.49 |
| Difference | 3.87 | -1.95 | |

Source: SABE Survey, National Statistics Office, 2000, Cuba.

Decomposition of the sex differential of healthy life expectancy, Havana 2000.

HLE: Life Expectancy without any disease.

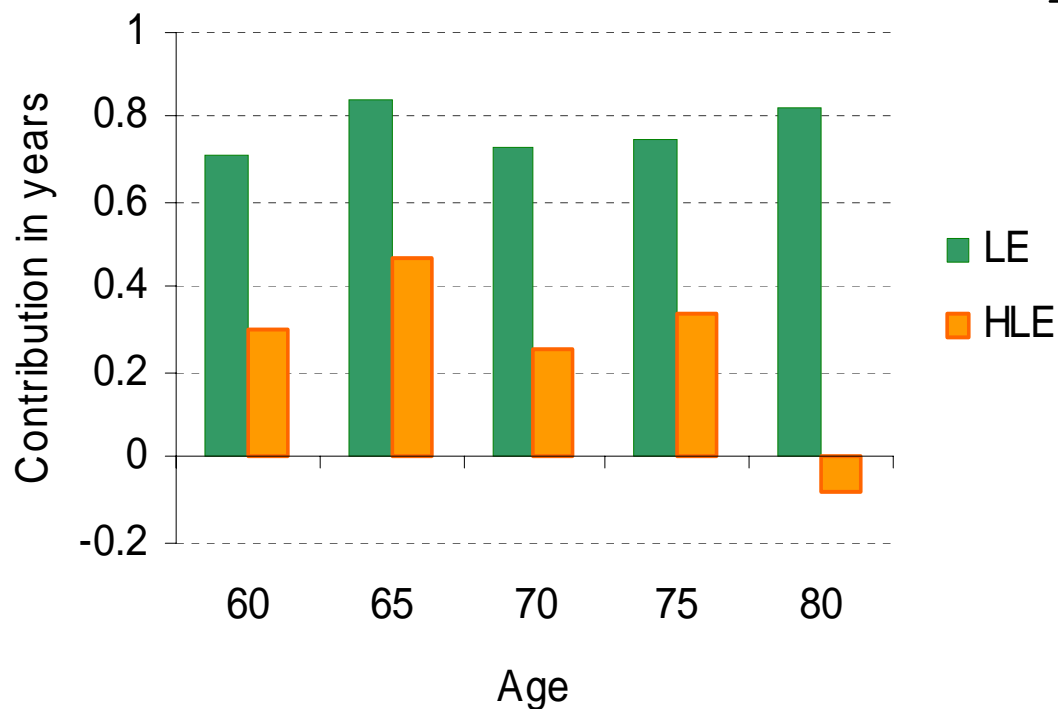


| | |
|--------------------------|--------------|
| Difference in HLE | -1.95 |
| due to health | -2.81 |
| due to mortality | 0.86 |

Source: SABE Survey, National Statistics Office, 2000, Cuba.

Life expectancy and healthy life expectancy by age, Havana 2000

HLE: Life Expectancy without limitations in at least one ADL.

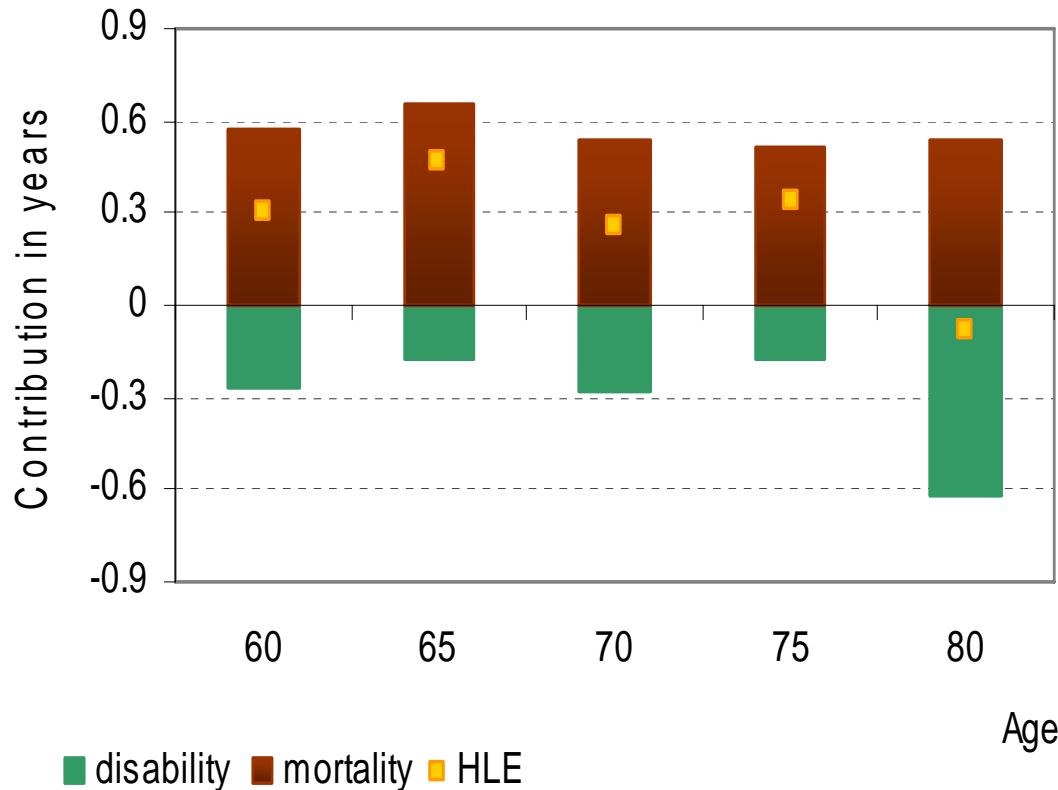


| | LE | HLE | Difference |
|-------------------|-------------|-------------|------------|
| Females | 22.55 | 17.16 | 5.39 |
| Males | 18.68 | 15.87 | 2.81 |
| Difference | 3.87 | 1.29 | |

Source: SABE Survey, National Statistics Office, 2000, Cuba.

Decomposition of the sex differential of healthy life expectancy, Havana 2000.

HLE: Life Expectancy without limitations in at least one ADL.



| | |
|--------------------------|-------------|
| Difference in HLE | 1.29 |
| due to health | -1.52 |
| due to mortality | 2.8 |

Source: SABE Survey, National Statistics Office, 2000, Cuba.

Final considerations

period

- females show higher improvement of their life expectancy over the period (1987-2007)
- during the economic crisis (1995), an increase of mortality of younger adults was observed.

causes of death

- External causes, Heart diseases and Cancer are the highest contributors to the improvement of life expectancy
- females has advantage in external causes, heart diseases and cancer, and disadvantage for diabetes in ages 60+ and for cancer (30-54).

Health differential

- mortality plays an important rol regarding ADLs
- for diseases is more important the presence of the disease.

Final considerations

- females has advantages over males in terms of mortality (small gap)
 - the economic crisis had an impact on life expectancy (women recovers faster than males)
 - males at older ages live more years in good health than females

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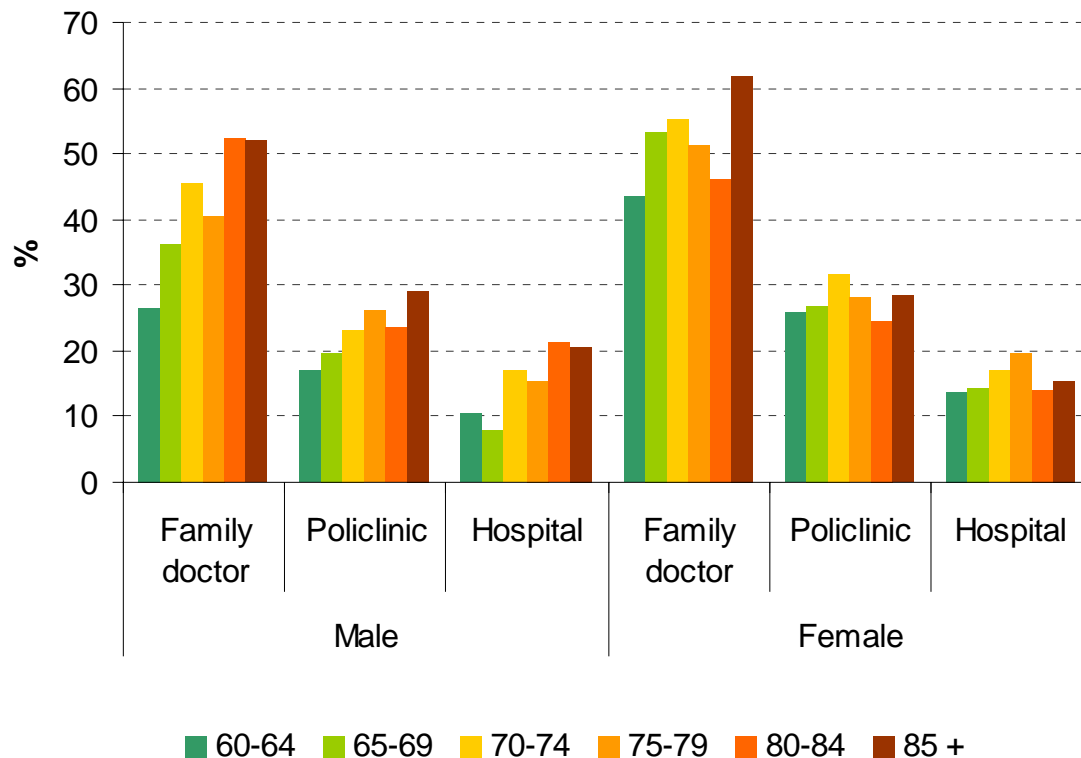
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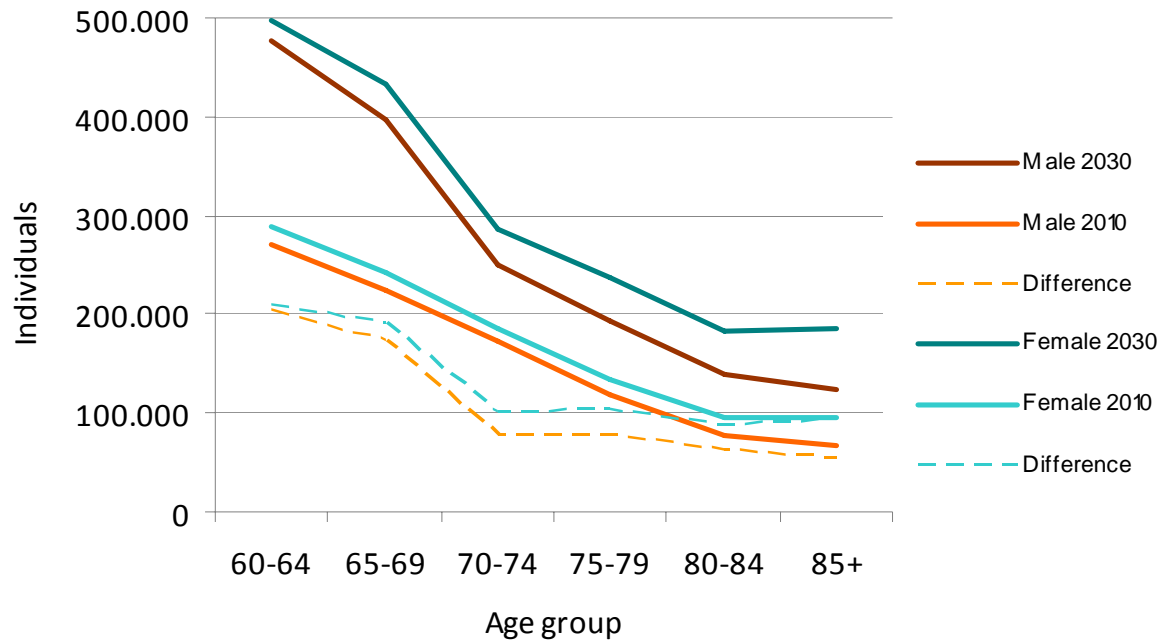
Impact on the Health System

Medical care use of people 60 years and over by type of assistance and sex. Cuba, 2010



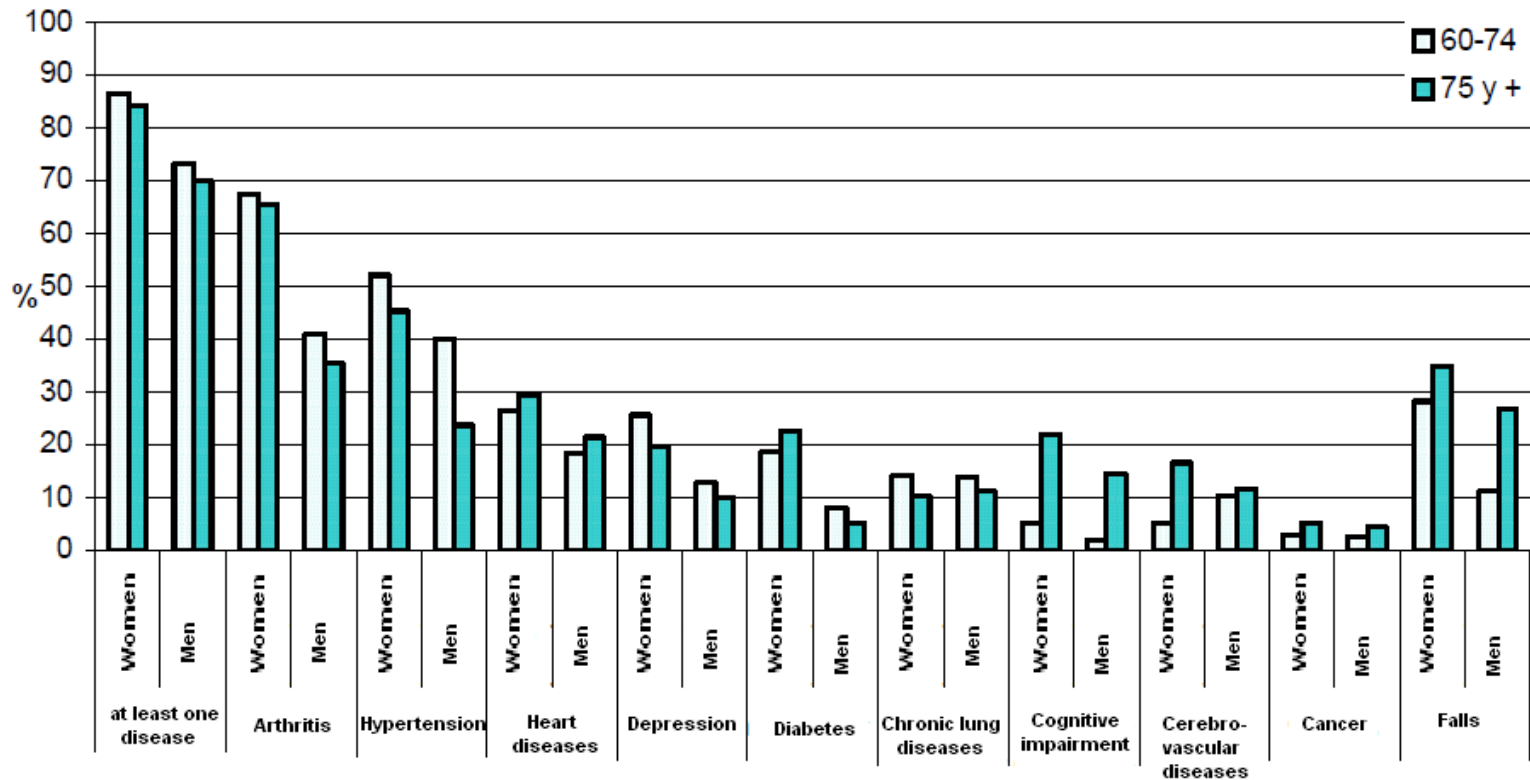
Source: National Survey of Activity and Economic Situation of Household, Cuba 2009.

Population of 60 years and over, Cuba, 2010 and projection of 2030.



Source: National Survey of Activity and Economic Situation of Household, 2009; Cuban Projections, 2010-2030, National Statistics Office, Cuba.

Percentage of prevalence of diseases of population 60 + years Havana, 1999.



Source: SABE Survey Database, National Statistic Office, Cuba, 2005.

Life Expectancy by provinces and sex, Cuba 2005 - 2007

