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The evolution of the population through censuses

Since the 2011 census, the population has increased by 25.7% (131,588 people) to reach 643,941 inhabitants on 8 November 2021. In addition to this significant demographic growth, an ageing of the population is observed: the average age of the population is 39.7 years, i.e. 1 year older than in 2011. This ageing can also be seen in the age pyramids. To represent the relative importance of the different age groups, the young-age dependency ratio and the old-age dependency ratio can be calculated. The young-age dependency ratio indicates the number of children and young people between 0 and 14 years of age per 100 people aged 15 to 64. This ratio has decreased from 25.2% in 2011 to 23.0% in 2021. The old-age dependency ratio, which indicates the number of people aged 65 and over per 100 people aged between 15 and 64, has increased from 20.4% in 2011 to 21.2% in 2021.

Strong population growth since 2011

With a population of 643,941 inhabitants on the reference date of 8 November 2021, the population of the Grand Duchy of Luxembourg has increased by 131,588 people compared to the 2011 census when there were 512,353 inhabitants, which corresponds to an overall increase of 25.7%. This demographic dynamism characterises Luxembourg, especially in comparison with the other EU-27 countries¹.

Compared to 2011, the share of women is slightly lower than that of men (49.6% women in 2021 compared to 50.2% in 2011). This over-representation of men has been observed since 2014 and is due to the structure of migrants where men are slightly over-represented.

Another trend, observed in Luxembourg and in other highly developed countries, concerns the ageing of the population. The average age of the population is 39.7 years, which corresponds to an increase of 1 year since the 2011 census. The median age, the age that separates the youngest half of the population from the oldest half, is 39 years in 2021. This median age does not change compared to the previous census.

¹ The population of the EU-27 increased by 1.7% between 2011 and 2021.

The number of centenarians has increased from 67 in 2011 to 91 in 2021 (+35.8%).

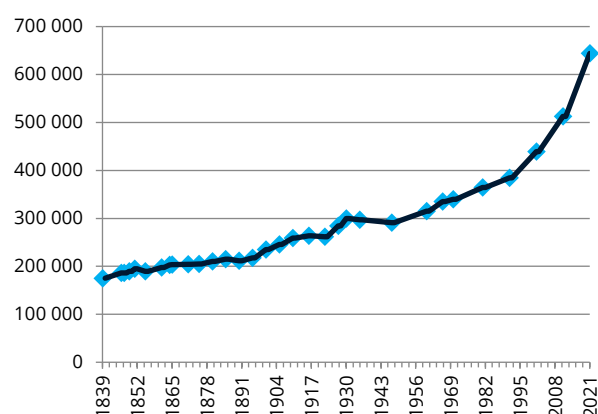
TABLE 1: DEMOGRAPHIC INDICATORS FOR LUXEMBOURG, 2011 VS 2021

	Census 2011	Census 2021
Population	512 353	643 941
Women	257 386	319 586
Men	254 967	324 355
Share of women	50.2%	49.6%
Share of men	49.8%	50.4%
Average age	38.7 ans	39.7 ans
Average age of women	39.7 ans	40.4 ans
Average age of men	37.8 ans	39.0 ans
Median age	39.0 ans	39.0 ans
Median age of women	39.0 ans	40.0 ans
Median age of men	38.0 ans	39.0 ans
People aged 100+ years	67	91

Source: STATEC

Since Luxembourg's independence in 1839, the population has grown almost continuously, with the notable exception of the two world wars. In the 20th century, decreases were only noted in the censuses of 1922, 1935 and 1947.

GRAPH 1: EVOLUTION OF THE POPULATION OF LUXEMBOURG FROM THE 1839 CENSUS TO THE 2021 CENSUS



Source: STATEC

The evolution of the population through the respective censuses since 1839 is illustrated in the table below. The column "Balance" shows the absolute change in the number of inhabitants, while the column "%" represents the rate of change between two census dates. Thus, the population increased by 10,917 people between 1839 and 1846, or by 6.2%. However, the annual growth (column "p.a.") is more significant since the intercensal intervals are not identical. In this column we find the

average annual variations of the population between two censuses (in %).

TABLE 2: TOTAL POPULATION CHANGE IN ABSOLUTE TERMS, BALANCES AND GROWTH RATES, 1839-2021

Census	Population	Balance	%	p.y. (in %)
1839	175 223	-	-	-
1846	186 140	10 917	6.2	0.9
1847	186 062	-78	0.0	0.0
1849	189 783	3 721	2.0	1.0
1851	194 719	4 936	2.6	1.3
1855	189 480	-5 239	-2.7	-0.7
1861	197 731	8 251	4.4	0.7
1864	202 937	5 206	2.6	0.9
1865	203 664	727	0.4	0.4
1871	204 028	364	0.2	0.0
1875	204 606	578	0.3	0.1
1880	210 507	5 901	2.9	0.6
1885	214 633	4 126	2.0	0.4
1890	211 481	-3 152	-1.5	-0.3
1895	217 716	6 235	2.9	0.6
1900	234 674	16 958	7.8	1.5
1905	245 888	11 214	4.8	0.9
1910	259 027	13 139	5.3	1.0
1916	263 490	4 463	1.7	0.3
1922	261 643	-1 847	-0.7	-0.1
1927	284 702	23 059	8.8	1.7
1930	299 782	15 080	5.3	1.7
1935	296 913	-2 869	-1.0	-0.2
1947	290 992	-5 921	-2.0	-0.2
1960	314 889	23 897	8.2	0.6
1966	334 790	19 901	6.3	1.0
1970	339 841	5 051	1.5	0.4
1981	364 602	24 761	7.3	0.6
1991	384 634	20 032	5.5	0.5
2001	439 539	54 905	14.3	1.3
2011	512 353	72 814	16.6	1.5
2021	643 941	131 588	25.7	2.1

Source: STATEC

The average growth rate of 2.1% per year between 2011 and 2021 is by far one of the highest since 1839. The second period with the highest population growth was from 1922 to 1930 (1.7% annual growth). The strong population growth from 1991 onwards also reflects the economic development of the past years. Conversely, population decreases were

recorded during economic crises accompanied by waves of emigration (e.g. in 1920/21 and during the Great Depression from 1929 onwards) and following the 1940-1945 war.

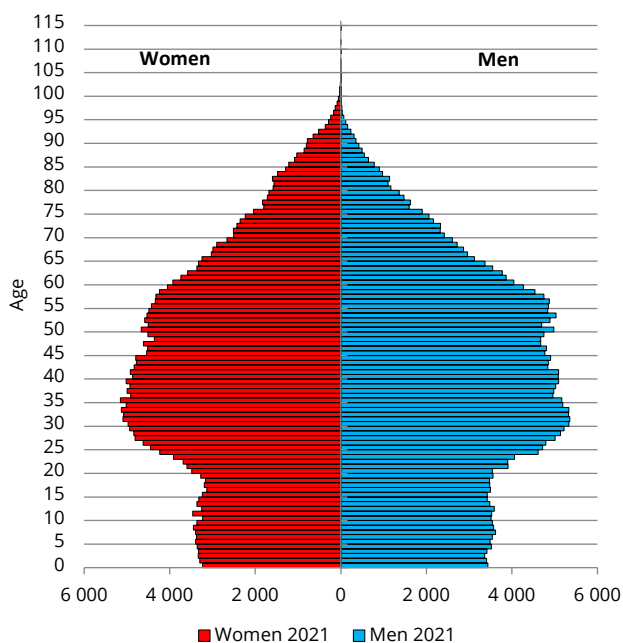
A strongly represented population of working ages

The age structure of the Luxembourg population has changed over the last few decades. Young people aged 0-19 are, in relative terms, becoming less numerous, while the number of people aged 40-64 and those aged 80 and over is increasing in relative terms. This ageing of the population can be better visualised with the help of age pyramids.

In 2021, the age pyramid is roughly bell-shaped in the upper half: there are few people at the top. From the top of the pyramid, the number of people increases to the 35-39 age group (except for the 45-49 age group) which forms the base of the bell.

The age pyramid takes the form of a trapezoid below the 30-34 age group down to the 20-25 age group: the younger the age group, the fewer people there are. In the lower part of the age pyramid, we can see that the number of people is relatively stable until the age of 19.

GRAPH 2: AGE PYRAMID AS OF 8 NOVEMBER 2021

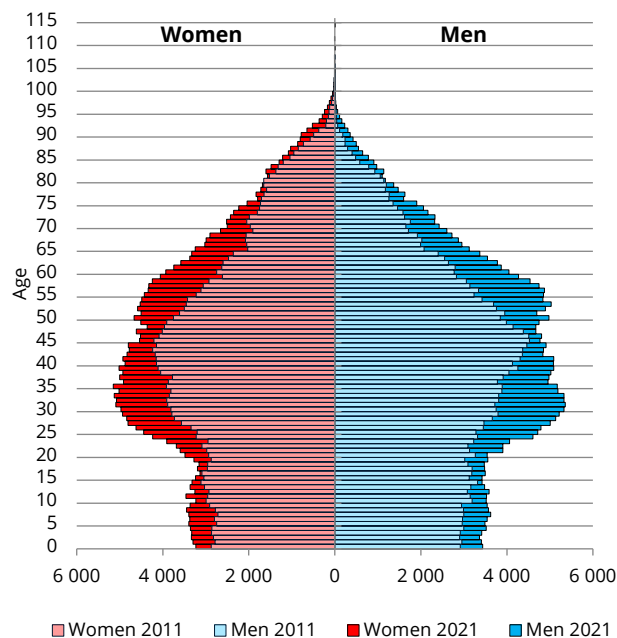


Source: STATEC

In terms of the male/female ratio, there is a more or less marked surplus of men up to the age of 64. From the age of 65, there are systematically more women than men. This is a consequence of the higher life expectancy of women in all developed countries. The surplus of men at younger ages is mainly due to a slightly higher number of male births than female births. This effect exists in most countries. While more boys are born than girls, this masculinity is gradually offset by excess male mortality at each age, leading to a strong preponderance of women at older ages. As age increases, the proportion of people of each sex in a given age group is therefore modified on the one hand by differential migration according to sex (slightly more male migration), and on the other hand by the difference between male and female mortality, which depends in part on various behavioural characteristics. It is also the socio-economic development of a society that has an impact on the age pyramid and the male/female ratio.

To understand the dynamics of the age structure of the population, the age pyramid of 2011 can be superimposed on the pyramid of 2021.

GRAPH 3: POPULATION STRUCTURE BY AGE AND SEX IN 2011 AND 2021



Source: STATEC

In 2021, the number of people is higher than in 2011 in almost all age groups. In particular, there are more young people and young adults in 2021, as well as significantly more people between 40 and 75 years of age. Among the elderly, although their numbers have

increased over the past ten years, their share has remained stable. Thus the share of 80+ year olds, which in 2011 was 3.9%, has not changed in 2021.

This growth and change in the age structure can be explained by various factors. On the one hand, there has been a large amount of international migration in the last decade, which has mainly involved people of working age. On the other hand, the most remarkable change between 2011 and 2021 comes from the fact that the baby-boom generations of the 1960s are pushed up the age pyramid, which has an impact on the ageing of society. To express the ageing of a society in simple ratios, one calculates what is called the young-age dependency ratio, the old-age dependency ratio and the overall dependency ratio. The evolution of these ratios from 1960 to 2021 is shown in Figure 5.

The age structure of the population has changed considerably over time

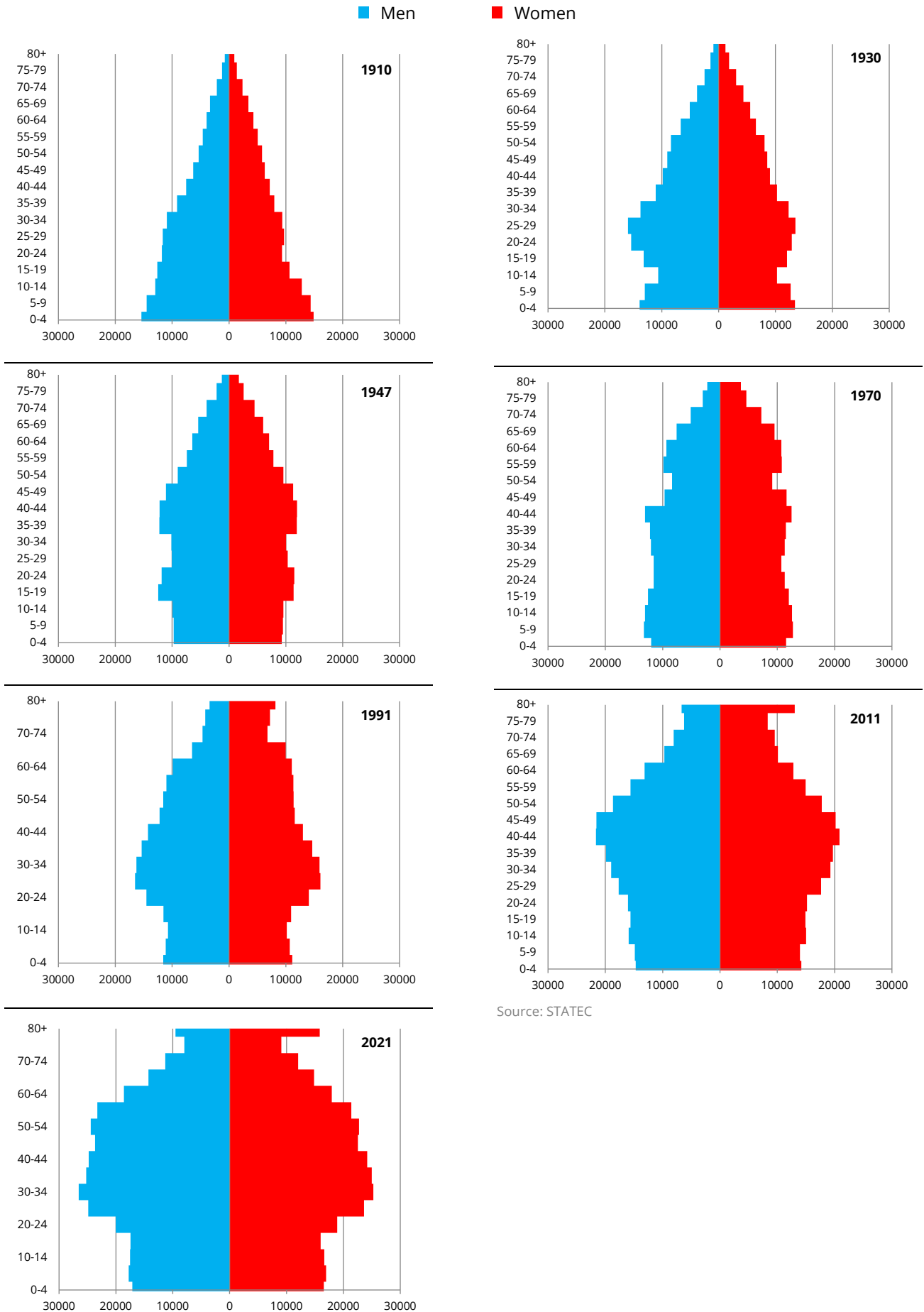
In 1910, the age pyramid still deserves its name, with a broad base and a thin top. On the eve of the First World War, the population structure consisted of a young population (1/3 of the population was under 15 years old) and the number of people decreased with age (6.0% of the population was over 65 years old). The fertility of women at that time explains the large number of people at young ages. The higher the age group, the fewer people there are because the risk of dying increases with age. As life expectancy was still much lower at that time, there were few people at higher ages.

Twenty years later, in 1930, the pyramid bears the scars of the First World War. First of all, there is a shortage of births in the 10-14 age group, this time affecting both sexes. When this generation reaches fertile age, 25 to 30 years later, it produces a second indentation, less marked than the first but very visible on the 1947 pyramid. As fertility declined during the Second World War, there is a dip between the ages of 0 and 4, but much less than 25 years earlier.

By 1970, the pyramid shape is no longer very recognisable. The base has shrunk as a result of lower fertility, while the number of people in the middle and older age groups has risen sharply. The effects of the two world wars can be seen in the lower number of births during these uncertain times. First, the notch at

50-54 years corresponds to the birth deficit during the First World War. The birth deficit during the Second World War is less visible, with a slight dip between the ages of 20 and 29. The baby boom just after the end of the Second World War is also very apparent. It results in a significant increase in the birth rate and thus a surplus of people aged between 5 and 24.

GRAPHE 4: POPULATION STRUCTURE BY AGE AND SEX FROM 1910 TO 2021



The increase in migration to Luxembourg can be seen in the 1991 and especially the 2011 pyramids, which show an increase in the number of people of working age. Since the beginning of the 1990s, the number of arrivals has more than doubled (+146.4%), while departures abroad have increased even more (+151.8%). The population of Luxembourg is therefore characterised by pronounced migratory flows leading to its 'renewal'. The immigration of people often of working age means that the ageing of the population is less pronounced than in other European Union countries. The surplus of entries over departures has also increased over time. It has increased from +3,942 in 1990 to +9,376 in 2021 (+137.8%).

The age pyramid for the year 2021 is characterised above all by a fairly narrow base which widens considerably in the middle before narrowing again towards the top. The surplus of people of working age is explained in particular by migrants who come to Luxembourg for professional reasons. The ageing of the Luxembourg population is also very clearly apparent, with a fairly high number of people aged 80 and over.

A dependency ratio that has been declining for two decades

The overall dependency ratio is an indicator for the economic "burden" resulting from the age structure. If we consider that the under-15s and the over-64s are inactive, and that the 15-64s constitute the working population, the overall dependency ratio indicates how many inactive people are dependent on 100 working people.

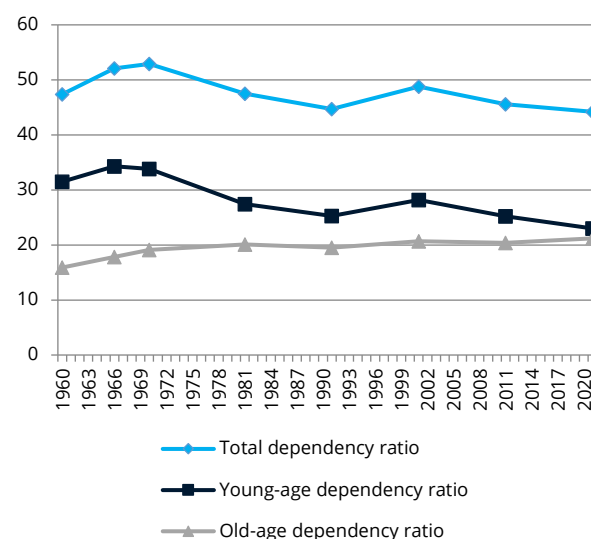
This indicator is composed of two sub-indicators: (i) the young-age dependency ratio (ratio of the number of persons aged 0-14 to the number of persons aged 15-64) and (ii) the old-age dependency ratio (ratio of the number of persons aged 65 and over to the number of persons aged 15-64). These two sub-indicators indicate whether the working population is more likely to be "caring" for children and young people or for the elderly.

The old-age dependency ratio is 21.2% in 2021 (20.4% in 2011). In other words, in 2021, there are 21.2 people aged 65 and over for every 100 people aged 15 to 64. This old-age dependency ratio has remained at almost 20% since the 1970s.

In contrast, the young-age dependency ratio shows a wave pattern: after peaking at around 34.3% in 1966, it dips temporarily to 25.3% in 1991 and rises again to a value of 28.2% in 2001. Since then, the ratio has fallen to 25.2% in 2011 and to 23.0% in 2021.

Since the old-age dependency ratio is almost constant and the young-age dependency ratio has a wave form, the overall dependency ratio also takes the latter form. The economic burden is high in the 1970s (53% or 53 persons under 15 and over 65 per 100 persons aged 15-64), then decreases until the early 1990s (45%), and then increases again until the turn of the millennium (49% in 2001). Since 2001, the overall dependency ratio has been falling and will be 44% in 2021.

GRAPH 5: EVOLUTION OF THE YOUNG-AGE DEPENDENCY RATIO AND THE OLD AGE DEPENDENCY RATIO IN LUXEMBOURG BETWEEN 1960 AND 2021

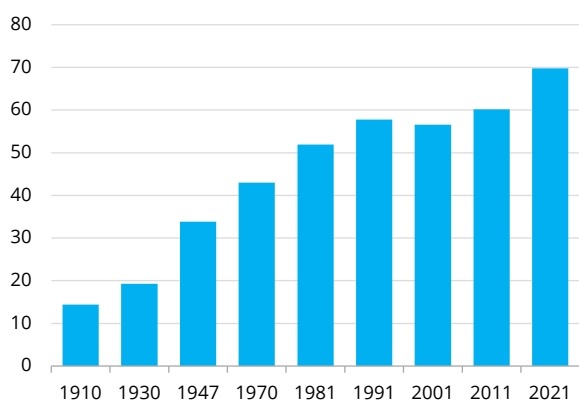


Source: STATEC

A young but ageing population

The ageing of a population can be captured by the population ageing index. This indicator reports the number of people aged 65 and over for every 100 people under 20 years of age. The higher the index, the greater the ageing.

GRAPH 6: AN INCREASINGLY AGEING POPULATION



Source: STATEC

This indicator shows that the ageing of the population of Luxembourg is almost continuous. At the time of the 1910 census, there were 14 people aged 65+ for every 100 people under the age of 20. Sixty years later, this number was 43 and has now risen to 70.

FOR MORE INFORMATION

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This publication was produced by François Peltier and Charlie Klein. STATEC would like to thank all the contributors to this publication.

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