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Demographic Ageing of the Population in Bulgaria

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Abstract

Bulgaria is one of the most rapidly ageing countries in the world. The article examines the shift in the age structure of the population in Bulgaria in the period 1960-2014 as a result of the change in the main demographic factors – birth rate, death rate and external migration. The shift in some main measures of population ageing such as median age, dependency ratio and old age dependency ratio is presented and a comparison with some European countries is done. The results show that as a result of the decrease in birth rate, increased life expectancy and external migration, the age structure of the population of Bulgaria is changing and the proportion of the older people becomes higher while the proportion of the younger people decreases. The median age in Bulgaria is one of the highest and the dependency ratios are one of the lowest in Europe mainly due to the decrease in the birth rate.

Keywords: ageing, age structure, death rate, birth rate, migration

Introduction

In almost all countries worldwide the proportion of the people at age 65 and over is increasing. Ageing is related mainly with a change in the age structure as a result of the demographic transition – a process in which a transition from higher birth and death rates to lower birth and death rates occurs.

According to the United Nations Organization report "World Population Ageing: 1950-2050", population ageing is: 1. unprecedented, without parallel in human history; 2. pervasive and is a global phenomenon affecting every person; 3. enduring and 4. population ageing has profound implications for many facets of human life (United Nations, 2002).

Bulgaria is one of the countries where considerable ageing of the population is observed. This process has gained strength in the last decades mainly due to the decrease in fertility, the increase in life expectancy as a result of the drop in mortality predominantly in child age and external migration.

In this article we examine the shift in the age structure of the population in Bulgaria in the period 1960-2014 as a result of the change in the main demographic factors. The shift in some main measures of population ageing like median and mean age, dependency ratio and old age dependency ratio is presented and a comparison with some European countries is done.

Research methods

To examine the shift in the age structure of the population in Bulgaria in the period 1960-2014 are used crude birth and death rates, life expectancy at birth and life expectancy at age 65. External migration is represented by data from the National Statistical Institute (NSI) in Bulgaria and the estimations of the net migration provided by the United Nations Population Division.

The change in the age structure by age is also presented by broad age groups, namely: population under working, working and working age and by age pyramids of the population. Calculated by the author are the main indicators of aging of the population - the median age, dependency ratio and the ratio of dependency in old age. The main indicators of population aging for comparison with other European countries have been calculated on the basis of EUROSTAT data.

Results and discussion

3. 1. Dynamics of the levels of population number, birth and death rates in the period 1960-2014

In order to better understand the reasons leading to population ageing in Bulgaria and more precisely to the shift in the age structure, it would be necessary to study the dynamics in the population number and the factors that have led to this shift in the period 1960 – 2014.

The dynamics in the population number in the period 1960-2014 is presented on figure 1. Figure 1 shows the gradual increase in the population of Bulgaria from 1960 to 1989, when the population grew from a little over 7. 8 million to almost 9 million. In the next 25 years though as a result of the changed socio-economic conditions in

the country, the population started to decrease and in 2014 it reached levels that were lower than the ones at the beginning of the period – 7. 2 million.

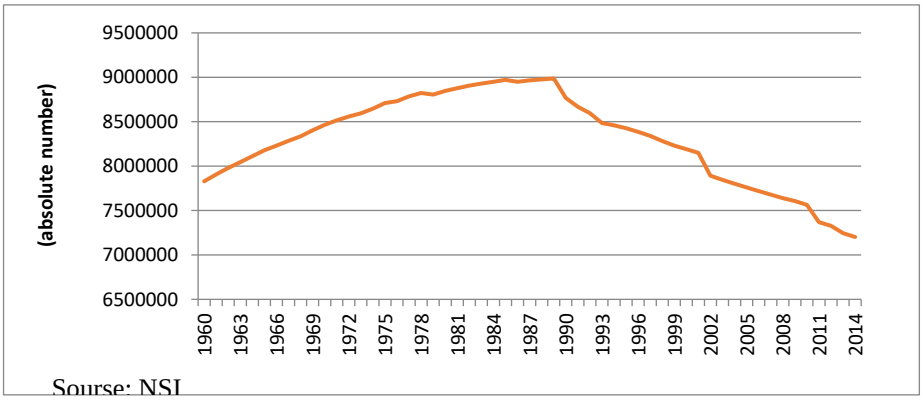

Fig. 1 Dynamics of the population number, the birth rates and the death rates in Bulgaria in the period 1960-2014

The shift in the number of the population is due to the changes in the birth rate, the death rate and the external migration.

The external migration in Bulgaria is one of the most important demographic factors having an impact both on the decrease of the population number and on ageing as it affects predominantly the younger people. The migration of the younger people on the one hand affects negatively the birth rate and the reproduction of the population and on the other hand aggravates the age structure of the population (M. Mourgova, 2016).

Data on external migration has become available since 2007 when Bulgaria joined the European Union and EUROSTAT started monitoring this data. Precise figures on the number of the individuals that have emigrated are not available. The reason for this is that the NSI reports only the individuals that have officially changed their place of residence. It does not take into account the individuals that permanently live abroad without changing their permanent address or in other words the total number of emigrants has significantly been underestimated. The data on people that have emigrated from the country in the period 2007-2014 is presented in Table 1:

Table 1. External migration in Bulgaria in the period 2007-2014

Years	2007	2008	2009	2010	2011	2012	2013	2014
External migration (absolute number)	2, 958	2, 112	19, 039	27, 708	9, 517	16, 615	19, 678	28, 727

Another source of data on migration is the estimations of net migration received from the United Nations Population Division for the period 1960 – 2011. These estimates are presented in Table 2:

Table 2. Estimates of net migration in Bulgaria in the period 1960 - 2010

Years	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010
Net migration (in thousands)	-118	- 43	- 1	- 6	- 43	- 95	- 22	-184	-356	-107	- 83	- 83

Source: UN, Population Division: World Population Prospects: The 2012 Revision

The dynamics in the crude birth rate is presented on Fig. 2. At the beginning of the period the birth rate decreases. An increase is observed after the mid 60s and until the beginning of the 70s, when the birth rate increases as a result of the natalist policy pursued by the state during this period. After the mid 70s there is a significant drop in the birth rate and it reaches its lowest level in 1997. A slight increase in the crude birth rate can be observed after 1997 but the levels in the period between the mid 60s and the 70s were never reached again.

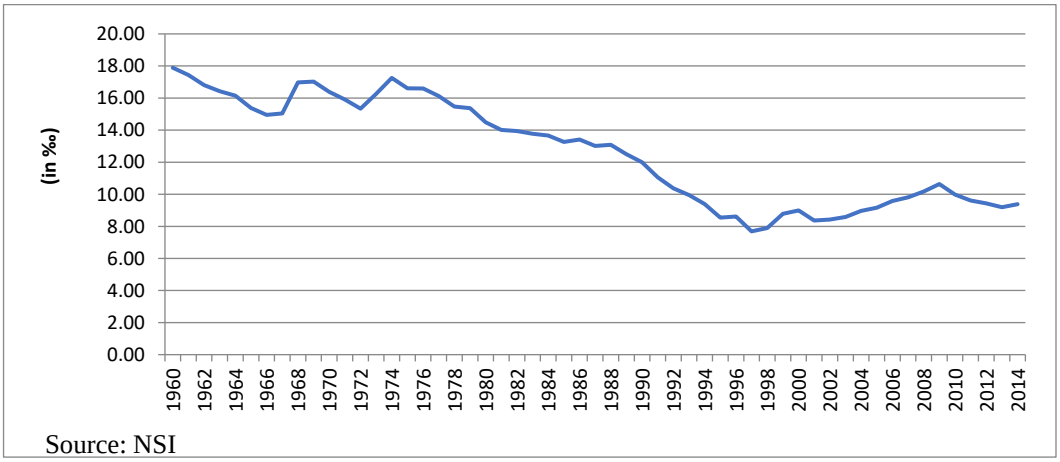

Fig. 2 Dynamics of the crude birth rate in the period 1960 – 2014

Another factor having an impact on the population number is the death rate. In the period 1960 – 2014 the crude death rate among the entire population of Bulgaria increased almost two times (Fig. 3).

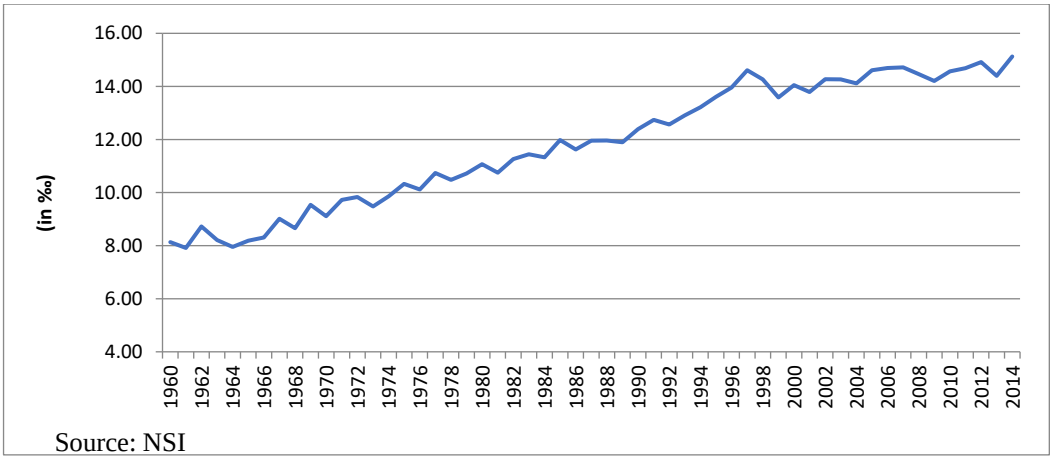

Fig. 3 Dynamics of the crude death rate in the period 1960-2014

The shift in the average life expectancy at birth could be used to measure the shift in the death rate for the entire population. From 1960 to 2014 as a result of the decrease in mortality, the life expectancy at birth increased from 69. 3 years to 74. 69 years or by 5. 39 years (Fig. 4). While the increase by almost two years after 1960 untill the 70s is maintained untill the mid 90s, only for the last 20 years the average life expectancy at birth has increased approximately with four years.

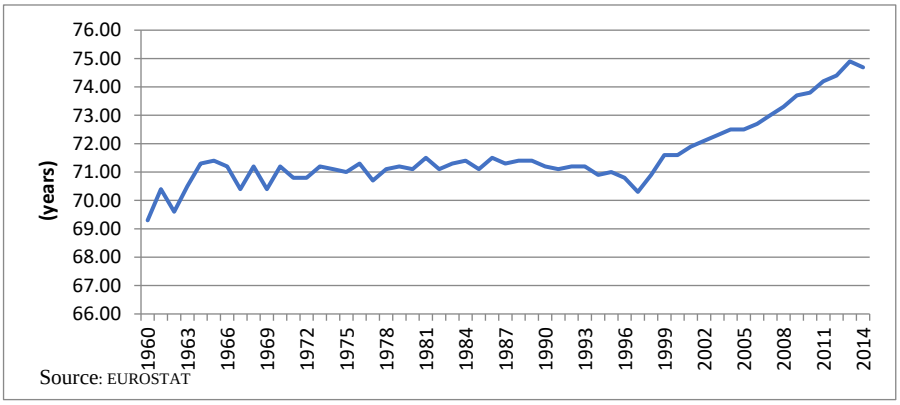

Fig. 4 Dynamics of the life expectancy at birth in Bulgaria in the period 1960 - 2014

In relation with ageing a better indicator is the life acpectancy at the age of 65 (Fig. 5). In 1960 the life expectancy of the people at age 65 was almost 15 years and it marked a slight decrease in the next 35 years but preserved these levels until the mid 90s. After the profound decrease in 1997 the life expectancy of people aged 65 years increased by the end of the period and in 2014 it was about 16, 05 years.

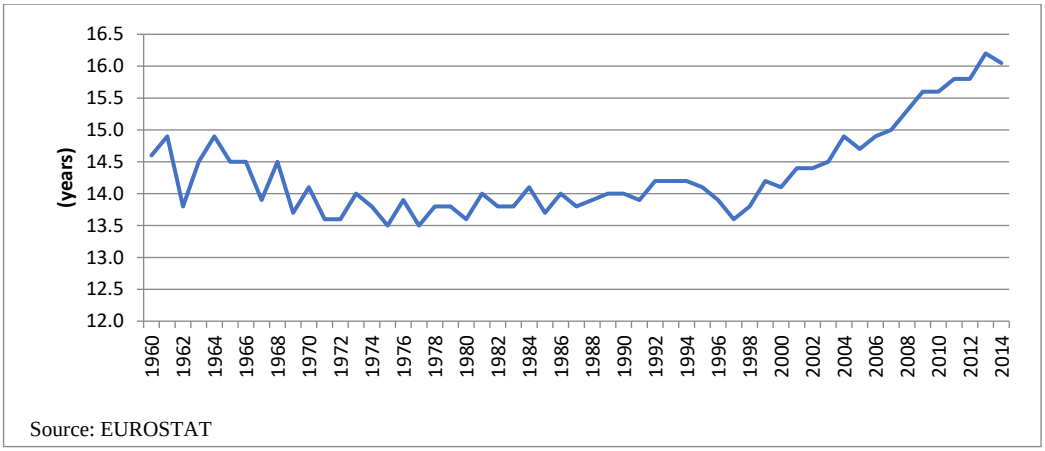

Fig. 5 Dynamics in the life expectancy at age of 65 in Bulgaria in the period 1960-2014

Dynamics in the population by broad age groups

As a result of the shift in the birth rate, the death rate and under the influence of external migration, the population structure changes. There are changes also in the population structure with respect to the broad age groups and namely the below working age, the working age and the above working age population. On Fig. 6 is presented the dynamics of the proportion of these groups of the population. In the last 55 years the proportion of the working age population has marked almost no changes. Changes can be observed though in the proportion of the below working age population and the above working age population - from 1960 until 2014 the proportion of the above working age population has increased almost three times while the proportion of the below working age population has decreased two times as a result of the drop in the birth rate.

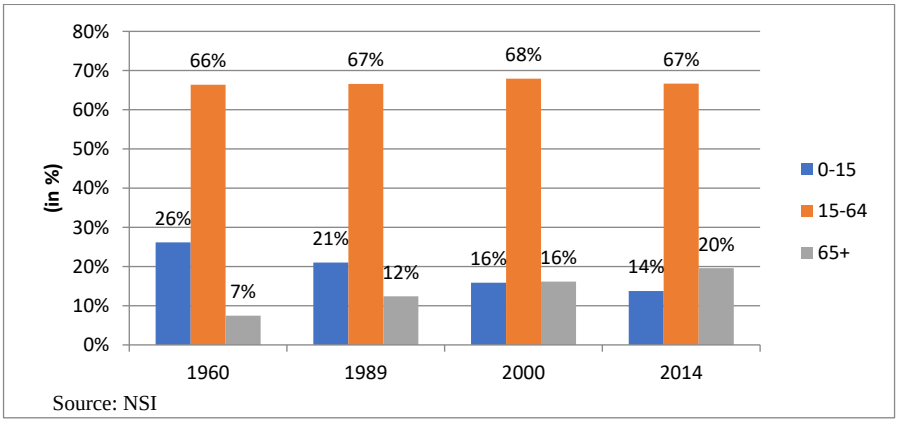

Fig. 6 Dynamics in the relative share of below working age population, working age population and above working age population (1960-2014).

Main measures of population ageing

The main measures of population ageing are median age, dependency ratio and old age dependency ratio.

Median age is the age that divides a population into two numerically equal groups where half of the people are younger than this age and half are older. The median age in Bulgaria has increased significantly in the last 55 years as a result of the population ageing and from 30. 26 years it has risen by 12. 9 years - to 43. 16 years. For males this increase is from 29. 86 to 41. 20 years or an increase of 11. 34 years, while for women the increase is higher - from 30. 72 to 45. 26 years or an increase of 14. 54 years. The higher media age for women is due to the lower death rate in comparison with men.

The dependency ratio expresses the relationship between the broad age groups: the population aged 0 to 15 and aged 65 years and over and the population in the age group 15 to 64 for 100 persons.

Table 1. Main measures of population ageing

Measures	Men	Women	Total
Median age			
1960	29. 86	30. 72	30. 26
1989	34. 96	37. 15	36. 01
2000	37. 45	40. 75	39. 11
2014	41. 20	45. 26	43. 16
Dependency ratio (in %)			
1960	49. 95	51. 29	50. 62
1989	49. 01	51. 40	50. 21
2000	44. 74	49. 58	47. 18
2014	44. 53	55. 49	49. 96
Old age dependency ratio (in %)			
1960	9. 88	12. 55	11. 21
1989	16. 51	20. 77	18. 65
2000	20. 55	27. 00	23. 81
2014	23. 54	35. 25	29. 34

Sourse: EUROSTAT

It measures the "dependency" of the youngest and the oldest population on the working age population. From 1960 to 2014 the dependency ratio has decreased by at least 1 %. The observed trends in the male and female groups are opposite to one another – while for men the dependency ratio decreases by 5. 42%, for women it increases by 4. 2%. The main reason for the decrease in the dependency ratio is the decreased birth rate and consequently the decreased share of children in the 0-15 age group as well as the external migration; the decrease in the dependency ratio for men in comparison with women is due to the higher death rate of the 65-plus age group.

The old age dependency ratio expresses the relationship of the number of population at the aged 65 and over to the working age population. From 1960 to 2014 this ratio has increased more than two and a half times. An increase can be observed for males and females and it is higher for women in comparison to men due to the higher death rate in the male group.

Population age pyramids[1]

Population age pyramids are a graphical illustration that shows the age structure of the population by age and gender as well as the shifts in this structure in time. On figures 7, 8, 9 and 10 are presented the age pyramids for 1960, 1989, 2000 and 2014. Figure 7 shows the typical structure of the "young" population which is presented in the shape of a pyramid with a larger bottom and a narrowing top. Such age structure is typical of high birth rate and high death rate. The next three figures show the gradual shift in the age structure of the population in time. As a result of the changes in the death and birth rates leading to population ageing, the age pyramid also changes and its bottom becomes narrower and the middle of the pyramid, representing the middle ages or the working age, grows larger together with the top of the pyramid. This tendency can be clearly observed from 1989 to 2014. Figures 8, 9 and 10 also show the shift in the age structure by gender and the proportion of women aged 60 and over marks a considerable increase in comparison to men.

[1] The population age pyramids have been developed by the author

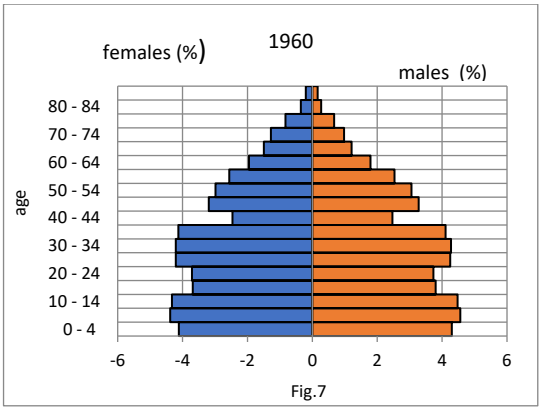

Fig.7

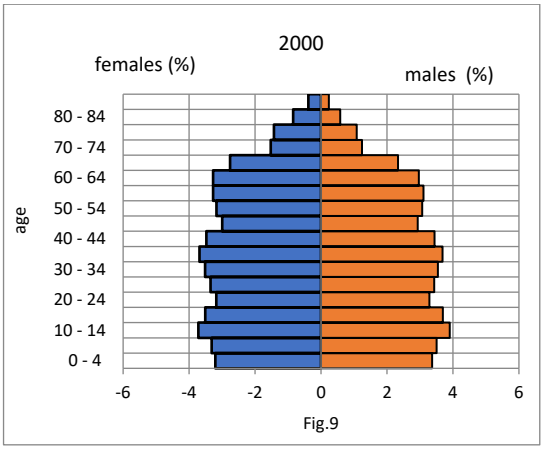

Fig.9

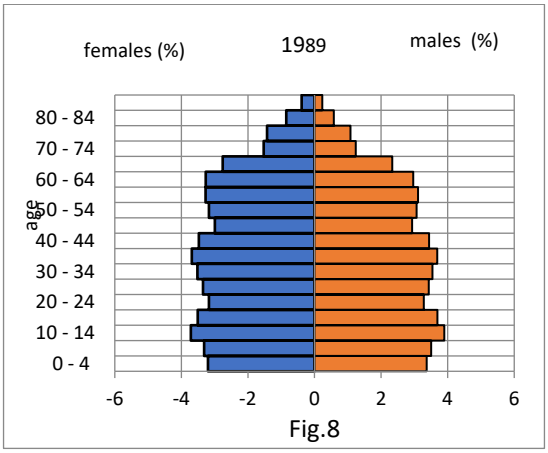

Fig.8

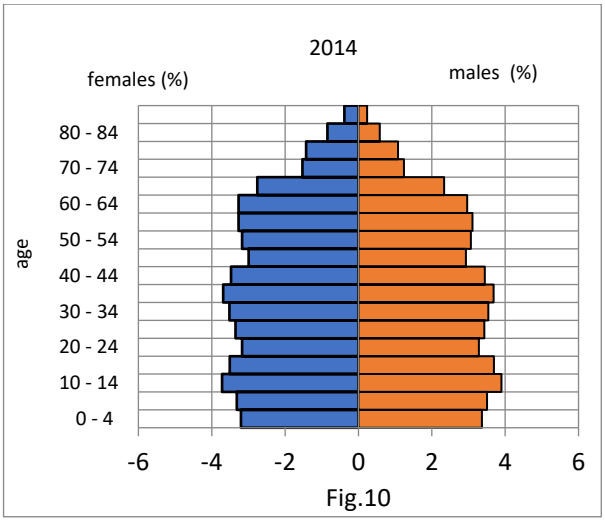

Fig.10

Comparison between the median age, the dependency ratio and the old age dependency ratio in Bulgaria and in some other European countries

The median age in Bulgaria in 2014 is higher than the median age in the EU (table 2 and only the median age in Germany, Greece and Italy is higher. The other compared indicator – dependency ratio, is lower in Bulgaria in comparison with the average for the member states of the EU. With the exception of the Czech Republic, Poland, and Romania the rest of the EU member states have a higher dependency ratio. In contrast to the dependency ratio, the old age dependency ratio in Bulgaria is higher than the average for the EU. In the countries with markedly ageing population (Germany, Greece and Italy) this indicator is higher in comparison with Bulgaria.

Table 2. Median age, the dependency ratio and the old age dependency ratio in some European Union countries in 2014

Country	Median age	Dependency ratio	Old age dependency ratio
European Union	42. 14	51. 84	28. 15
Belgium	41. 19	52. 19	26. 10
Bulgaria	43. 16	49. 96	29. 34
Czech Republic	40. 88	47. 21	25. 02
Denmark	41. 27	53. 80	27. 13
Germany	45. 60	58. 21	30. 32
Greece	42. 94	53. 04	30. 44
Spain	41. 86	48. 65	25. 86

France	40. 79	56. 01	26. 75
Italy	44. 67	52. 99	31. 50
Hungary	41. 35	46. 23	25. 01
Poland	39. 22	42. 07	20. 60
Romania	40. 73	46. 60	23. 77
Great Britain	39. 92	52. 89	25. 71

Sourse: Eurostat

Conclusion

As a result of the decrease in birth rate, increased life expectancy and external migration, the age structure of the population of Bulgaria is changing and the proportion of the older people becomes higher while the proportion of the younger people decreases. Respectively, in the last 55 years, all main indicators of population ageing, like median age, dependency ratio and old age dependency ratio have increased. The comparison with the other European countries shows that Bulgaria has one of the highest median ages in Europe and one of the lowest dependency ratios which are mainly due to the decrease in the birth rate.

The demographic ageing of the population in the contemporary societies is an irreversible process. Its consequences have a considerable impact on different aspects of social, economical, political and personal life. The publication of the European Committee "Active ageing and solidarity between generations: A statistical portrait of the European Union 2012" points out that population ageing has an impact on labour and product markets, families and individuals and some of the main challenges that arise for society are:

- Pressure on pension and social security systems with a direct impact on the working age population;
- Possible labour market shortages as the number of working age persons decreases;
- Adjusting the economy and in particular workplaces to an ageing labour force;
- Potential conflict between generations over the distribution of public resources.

The increase in the number and life expectancy of older people leads to a demand for increasing the healthcare system budgets in order to meet adequately the changes that have occurred.

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