

CROATIA: Population Projections - Final

Population, Human Capital and Policy II

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1. Overview

The Republic of Croatia is considered as an aging society. Aging is mainly affected by a decrease in fertility in combination with an ongoing increase in life expectancy and out-migration. The situation is even more serious when focusing on dependency ratios where the child dependency ratio is decreasing while the old-age dependency ratio is increasing. Croatia's current age structure is influenced by long-term low fertility as well as increasing out-migration of the population in reproductive age. This is the main reason why even in case of sudden, unrealistic increase in fertility, population decrease will not stop in Croatia even in the next few centuries. Besides, Croatia is considered one of the oldest world populations, which rate of the old population is still increasing (especially in the 80+ age group) (Čipin et al., 2014). This can be seen as a result of a decrease in mortality that is happening globally. Today, in Croatia, women are expected to live approximately 7 years longer than men¹. Both, low fertility and increased life expectancy are contributing to the accelerated population aging. Additionally, aging is also influenced by ongoing depopulation (Wertheimer-Baletić, 2004).

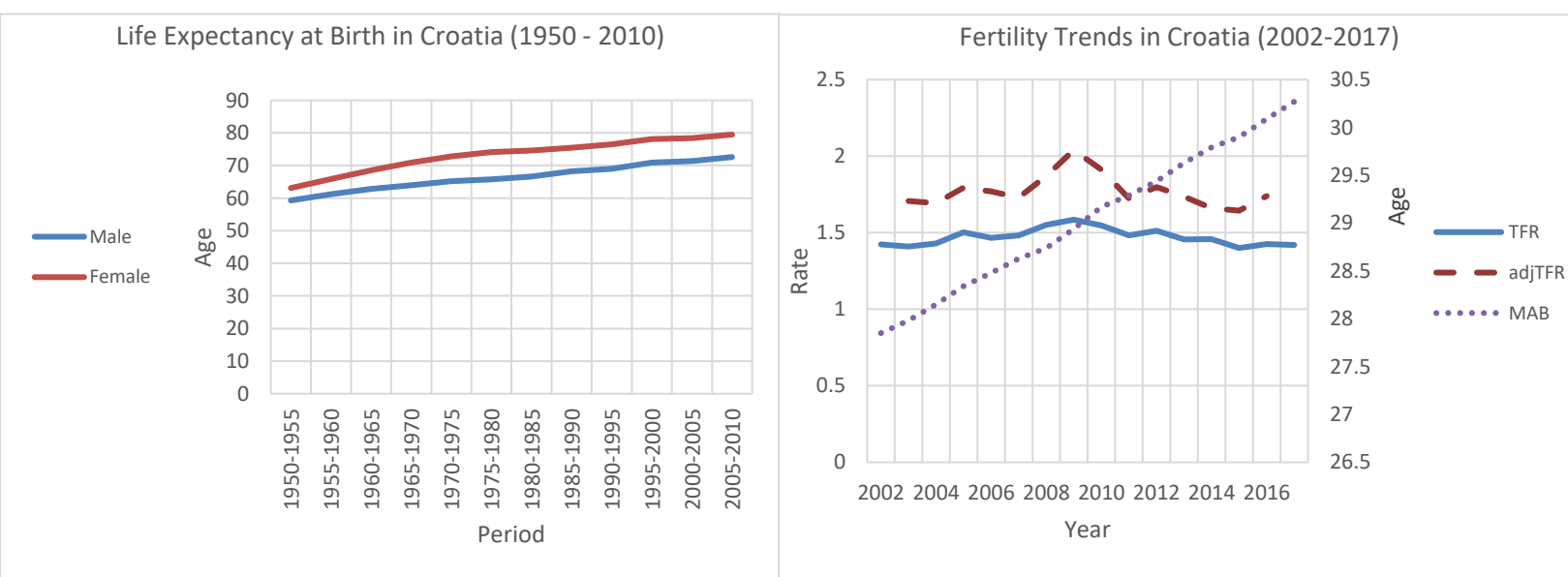


Figure 1

Figure 2

Fertility in Croatia is considerably low so a decrease in population will inevitably continue to happen without significant immigration. Only this type of migration trend would eventually relieve the ongoing depopulation as well as compensate for the decrease in the working-age population (Čipin et al., 2014). Besides, migration has a great impact on the age-sex structure in a certain country. In the case of Croatia, where low fertility is combined with the out-migration of the reproductive-age population, aging and depopulation processes are accelerated.

¹ Although there is not enough research done in this area, it is assumed that this convergence is mainly due to biological and behavioral differences.

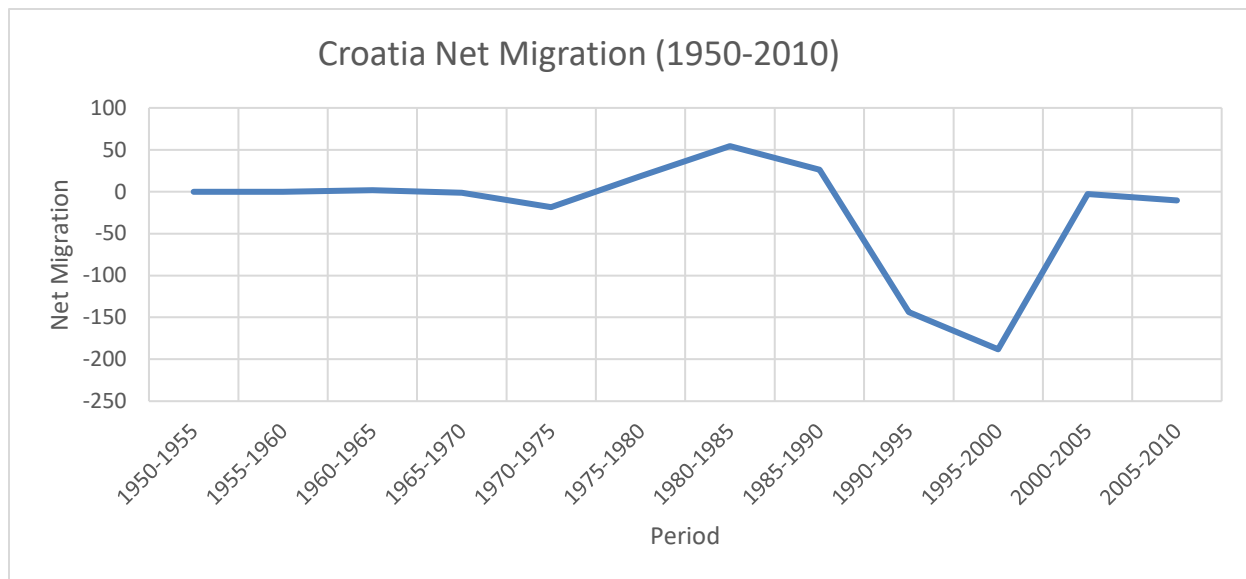


Figure 3

In cases when there are fewer children born, there is an even bigger challenge of supporting the old-age population since these children will once be part of the working-age population. An increase in the old-age dependency ratio combined with the decrease in the working-age population will eventually affect the society in the medium and long-term. Also, due to the fact that it is not realistic to expect the increase of TFR to replacement level (2.1 children per woman), the only way to cope with the increase in the old-age dependency ratio is through immigration of working-age individuals to country. However, the current migration trend in Croatia is much more challenging than the one in the recent past, where most people that were emigrating from the country were unqualified workers. Currently, according to unofficial data, there is an ongoing

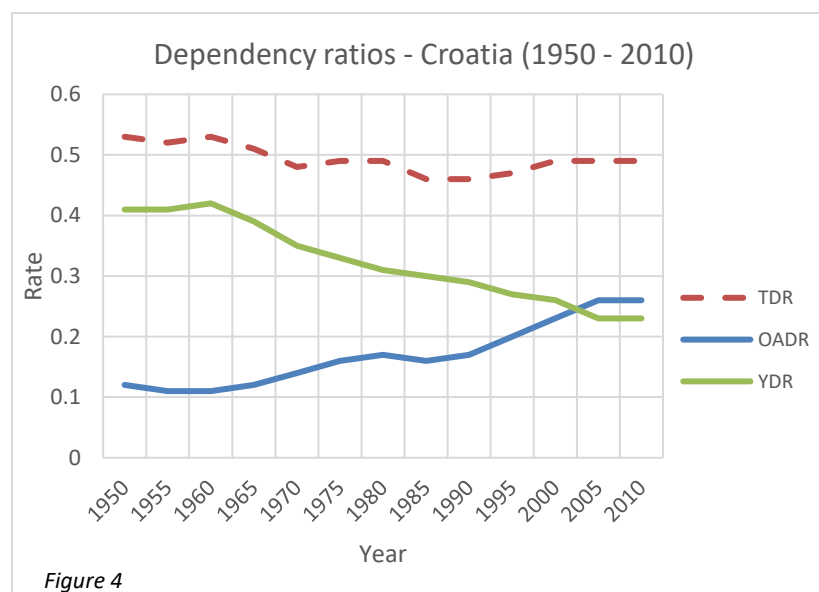


Figure 4

trend of emigration of highly educated and qualified people (brain drain) and this, in turn, presents a great challenge for Croatia (Čipin et al., 2014). Furthermore, according to EUROSTAT, Croatia has one of the highest unemployment rates in the whole EU, especially taking into account the fact that just little over half of the working-age population is employed ².

2. Assumptions

According to literature, analysis of basic economic as well as demographic structures are the base for setting the hypotheses for population projection. If long-term demographic trends are not grasped completely, it is not possible to make objects as well as scientifically grounded assumptions about future demographic trends. Considering the past as well as current trends, in normal conditions (no wars, no severe economic crises, etc.) it is possible to make relatively reliable population projections (Nejasmic and Misetić, 2004).

2.1. TFR

When it comes to TFR assumptions, during my research, besides literature, I also consulted with some experts from the University of Natural Sciences in Zagreb that are doing their research in this field. All things considered, I came up with 3 hypotheses for TFR (high, medium and low TFRs). Hypothesis for the medium TFR was similar to the UN projection³ so I used their precise data. Also, it is important to mention that neither hypothesis assumes the increase of TFR to replacement level (2.1).

YEAR	LOW	MED (UN_Project)	HIGH
2010	1.47	1.51	1.55
2030	1.38	1.49	1.77
2060	1.35	1.64	1.85 ⁴
2095	1.27	1.71	2.0 (last time recorded in 1960s)

² https://ec.europa.eu/eurostat/statistics-explained/index.php/Unemployment_statistics

³ United Nations - World Population Prospects <https://www.macrotrends.net/countries/HRV/croatia/fertility-rate>

⁴ Population projections of the Republic of Croatia, 2010 – 2061

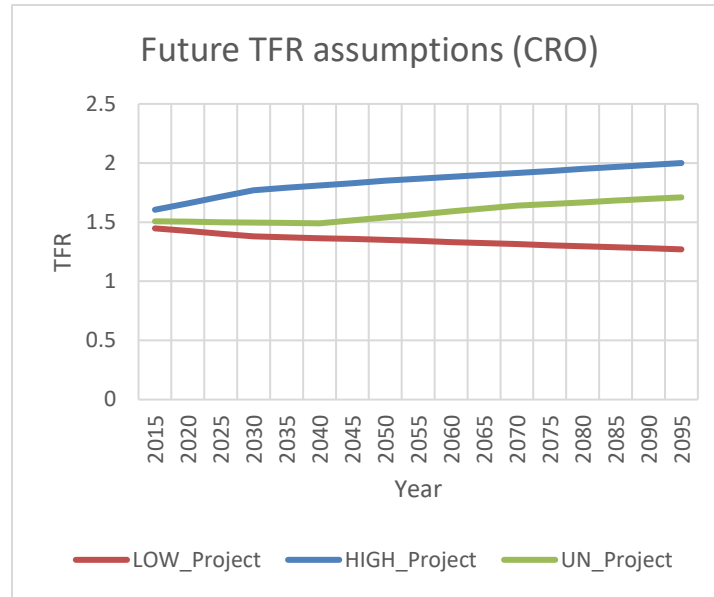


Figure 5

2.2. Mortality

In the case of mortality, due to lack of suitable data in the literature, my assumptions for future mortality trends in Croatia (considering both pessimistic and optimistic hypotheses) are almost the same. This was surprising considering the huge differences between hypotheses in the case of TFR. Thus, I decided to proceed with just one mortality hypothesis. This decision was also grounded in literature research⁵.

YEAR	Male (expectancy at birth)	Female
2010	72.61	79.43
2040	78.12	83.48
2060	81.36	85.8
2095	85.4	89.5

⁵ Population projections of the Republic of Croatia, 2010 – 2061, EUROSTAT (2019). Summary methodology of the 2018-based population projections (EUROPOP2018)

Also, in the next graph, we can see the trajectory of increased age-specific survival rates for the male and female population in Croatia.

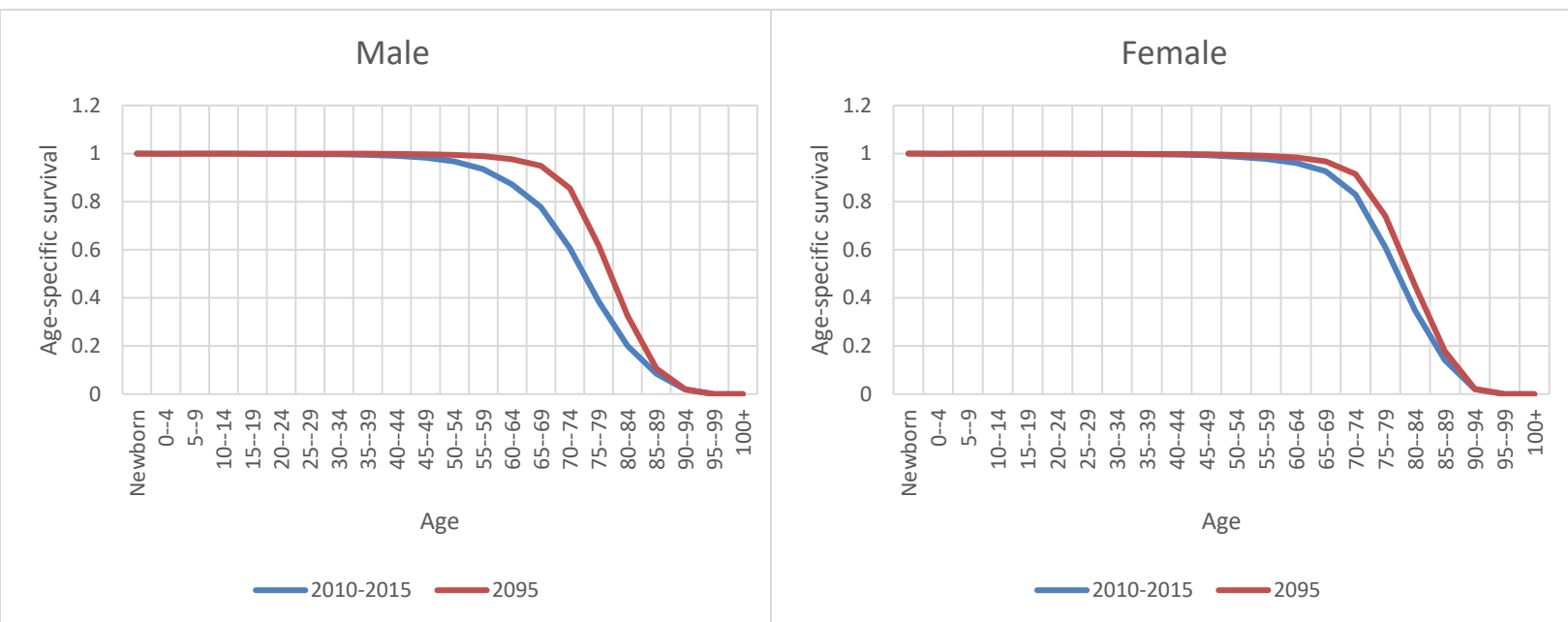


Figure 6

2.3. Migrations

Finally, hypotheses for future migration trends were the most challenging part, compared to mortality and especially TFR assumptions. This was mainly to the fact that migration data are highly dynamic, influenced by external factors (e.g. war, economic crisis, etc.). In addition, migration data is not comprehensively collected in Croatia by authorities so the existing data is highly unreliable (Grizelj and Akrap, 2011). For this reason, in my future steps I just used open migration hypothesis due to the fact that Croatia was and still is famous as a country with significant out-migration⁶.

3. Projections

Using the aforementioned hypotheses, it is possible to set 3 TFR scenarios (most pessimistic, medium/pessimistic, optimistic) combined with open migration hypothesis. Besides, there will be one additional scenario related to the established mortality hypothesis.

⁶ However, there are some indications that this trend will slow in the future.

3.1. Pessimistic – Medium TFR Projection

With this, most probable scenario, on the next graphs, we can see the change in population pyramids (2010 according to SSP2 – middle of the road scenario by Wittgenstein Center and 2095 according to 'UN_Project' (medium) scenario, whereas both scenarios were calculated according to open migration assumption).

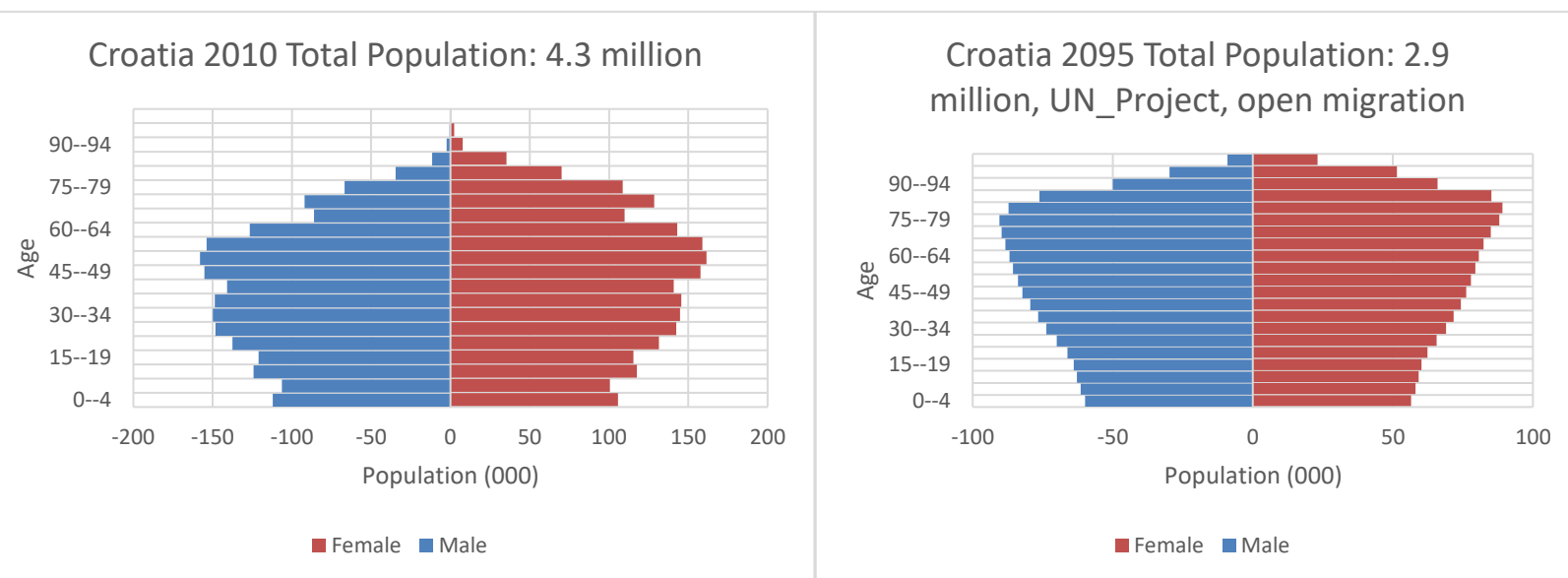


Figure 7

According to these graphs, we can see a considerable decrease in the total population (from 4.3 to 2.9 million). In general, a decrease in population sometimes does not mean something bad, especially from the sustainability aspect. However, if we look closer to the shape of the pyramid -

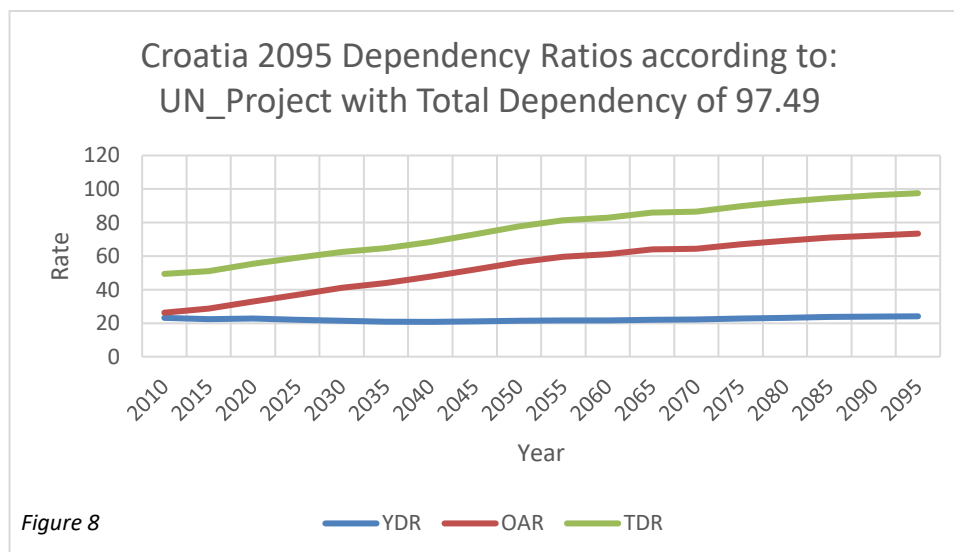


Figure 8

the cone type which suggests that the young population, as well as the working-age population, are shrinking consequently, the old-age population is predominant. This suggests the issue of an increase in the total dependency ratio as seen in the next graph.

As we can see, total dependency according to this scenario in Croatia is 97.49 which indicates an enormous threat to the functioning of the economy. Youth dependency is slightly decreasing by the middle of the century and then again slightly increasing, while old-age dependency is constantly increasing.

To conclude, in the long-term, for keeping the current level of TFR, current active population policies have to be combined with some additional ones (e.g. increasing nursery capacities, increasing child daycare capacities, fighting the discrimination that is happening to working-age women that recently gave births, etc.). Basis of this assumption is the ongoing decrease in the female population that is approaching the reproductive age as well as the general aging of the whole female population in Croatia (Grizelj and Akrap, 2011). Due to this anticipated trend, the only way to cope with this situation is the adoption of suitable pronatalist policies.

Also, when it comes to future migration trends and issues of anticipating it, the only logical way is to relate it ongoing and expected future economic situation. The current socio-economic situation is the main restraint for expecting high immigration in the future⁷. However, without considerably high immigration, anticipated negative trends (low TFR, aging of the population as well as its decrease) cannot be considerably influenced.

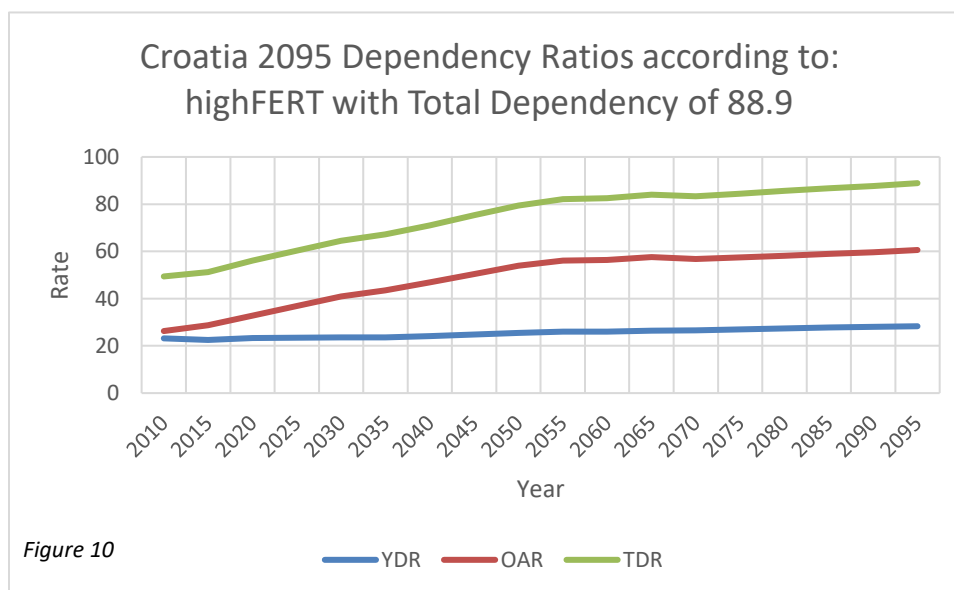
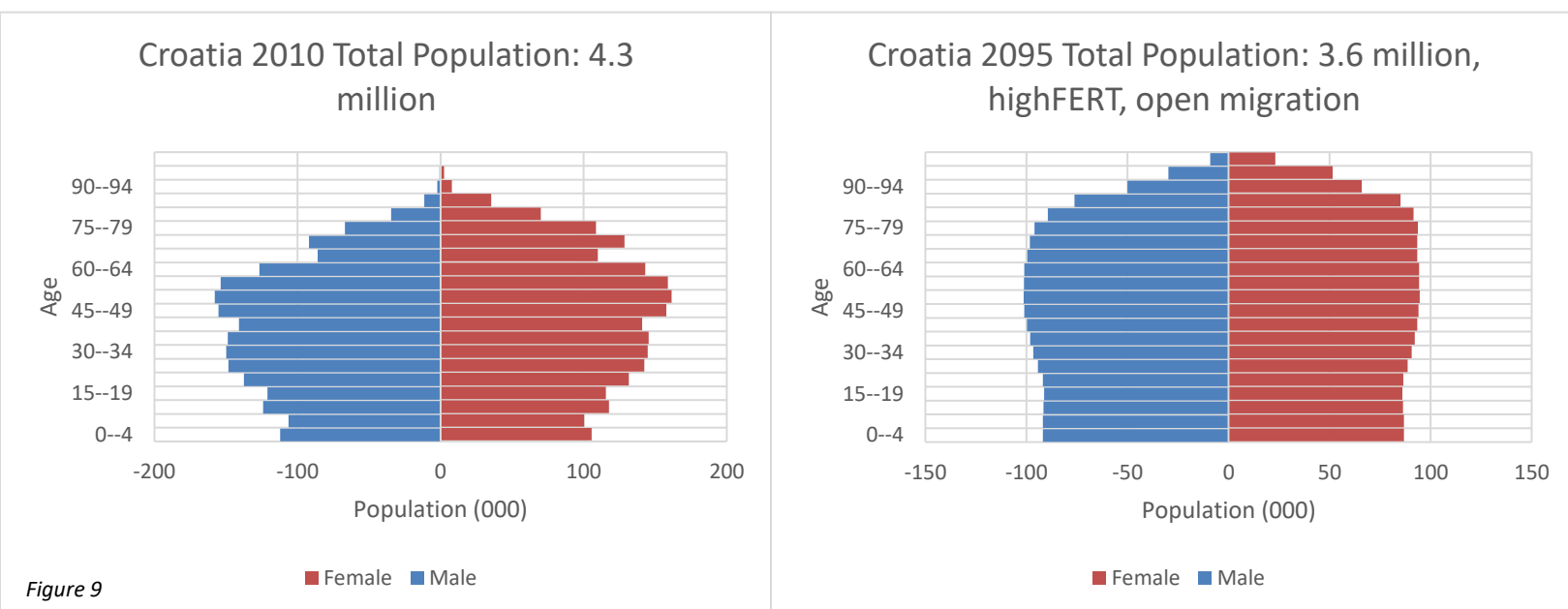
3.2. Optimistic - High TFR Projection

In this scenario, we see how the population pyramid would change. I again used the same scenario for comparison (2010, SSP2 scenario versus 2095 'highFERT' scenario).

Here we also see a decrease in population from 4.3 to 3.6 million. However, we can see the change in the base of the population pyramid which suggests that the young population is slightly growing and suggests a somewhat better situation in the far future regarding the dependency ratios. This assumption is also supported in the following graph where we can see that the old-age dependency

⁷ The main source of immigration is mostly from the region, with Bosnia and Herzegovina as the main source country. However, this is a valid assumption only if the economic development of those countries in the region remain the same (with Croatia as the most developed country besides Slovenia) (Grizelj and Akrap, 2011).

ratio is increasing until the middle of the century but then is almost stagnating. At the same time, youth dependency is slightly increasing.



This, most optimistic variant (but also not so reasonable to expect from the current perspective) is based on the prediction of considerable economic advancement/development which will, in turn, contribute to reversing the negative demographic trends that are currently ongoing. It means a complete shift towards the effective population and pronatalist policies, which in combination with significant economic development would lead to an increase in the number of newborns. The developed economy would attract immigrants from less developed countries (mostly from the region) which would further make the assumption of immigrants furthermore fostering the increase in fertility valid and reasonable (Grizelj and Akrap, 2011).

3.3. Most Pessimistic – Low TFR Projection

Continuity of the current economic challenges in the country, in the medium-term, would affect and further shrink the social programs, increase unemployment and therefore furthermore foster the out-migration. Altogether, this would definitely foster and prolong the current negative demographic trends. This scenario will happen if all negative demographic trends are neglected (not adequately targeted). Specifically, if a decrease in fertility is not properly targeted. Prolongation of low and further decreasing TFR with assumed negative net migration (due to poor socio-economic environment) will definitely influence the ongoing aging process in the country in a negative way. However, since this low TFR is not reasonable to be maintained in the future, this scenario can only happen in case if even currently active population policies are abandoned and the negative socio-economic situation is accelerated (Grizelj and Akrap, 2011).

In the following graphs, we can see how the population pyramid was changing according to this scenario.

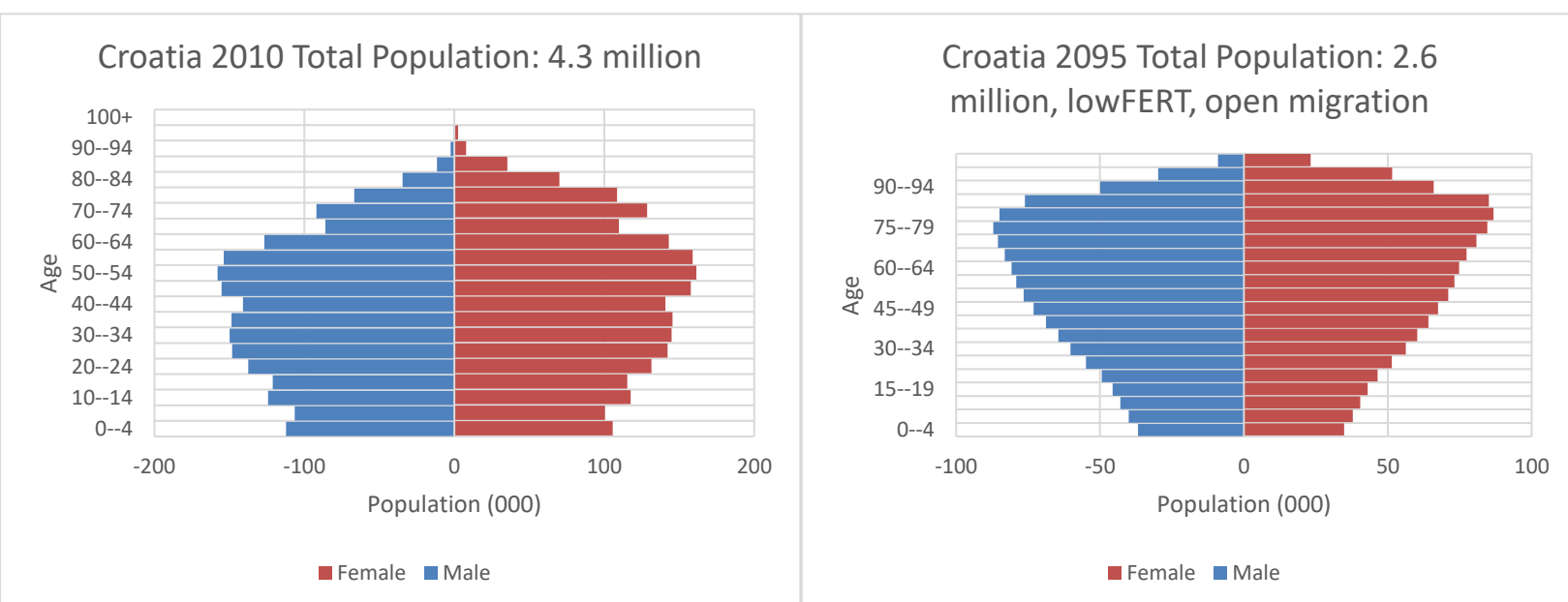


Figure 11

It is evident the most significant decrease in population, from 4.3 to 2.6 million in 2095 according to this most pessimistic scenario. Also, this cone shape of the population pyramid is even more obvious than in the case of medium (UN_project) projection which suggests an even more dominant old-age population with respect to working-age and young population. This, the

most serious sign of economic burden in the future, is also obvious when looking at dependency ratios in case of this most pessimistic scenario.

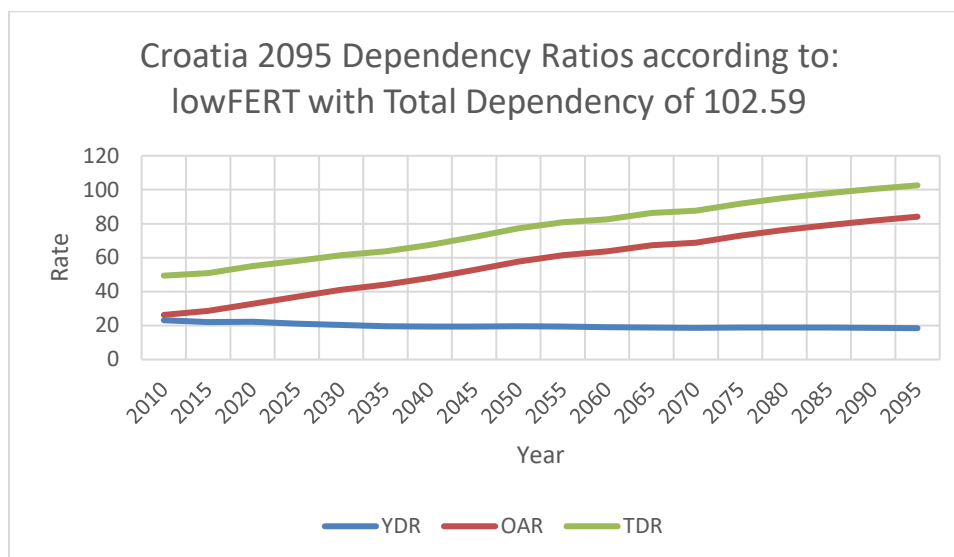


Figure 12

The graph itself shows a serious increase in the old-age dependency ratio while the youth-dependency ratio is constantly sinking.

3.4. Mortality Projection

Finally, one last projection was conducted with respect to the mortality scenario. However, as previously mentioned, variations in mortality did not have significant differences as it was the case with the different TFR scenarios. Regardless, it showed some interesting results.

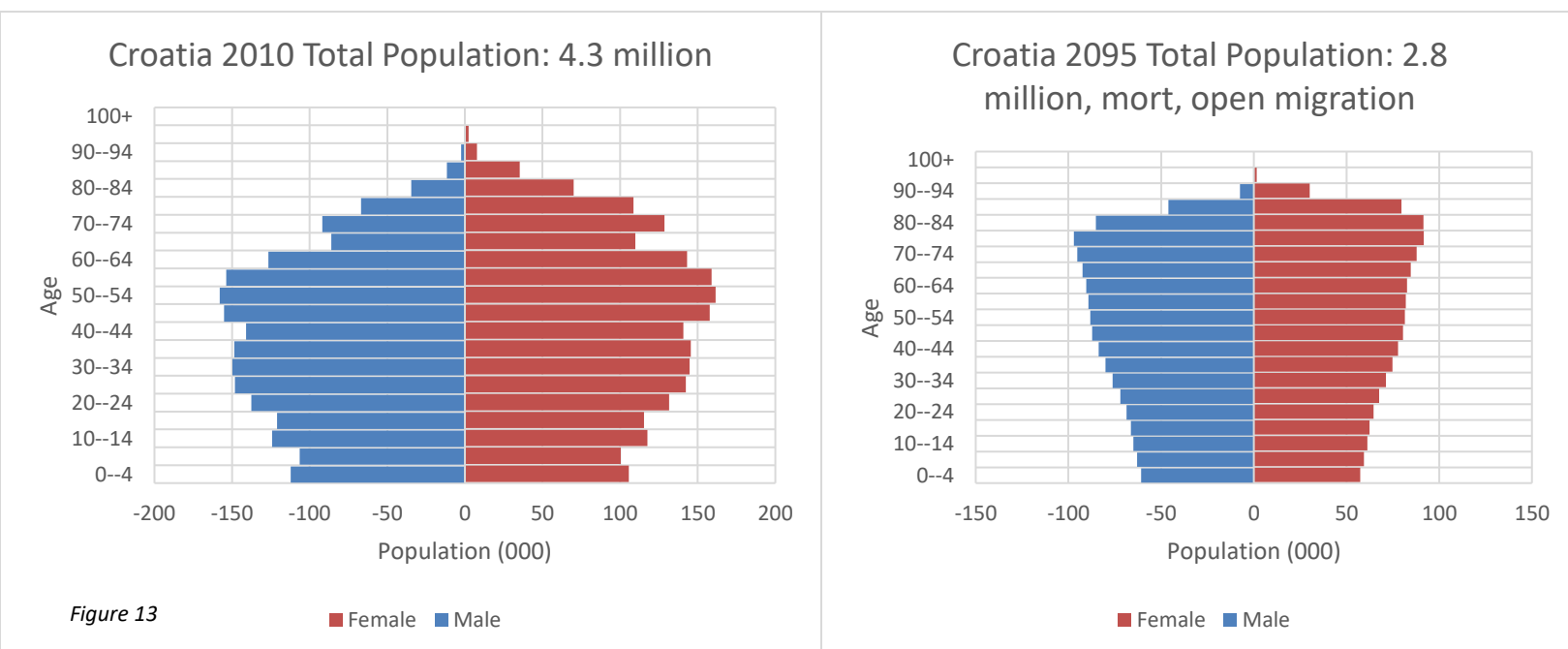


Figure 13

As seen in the following graphs, the population in Croatia according to 'mort' scenario dropped to 2.8 million from 4.3 as in 2010, according to SSP2. However, if we look at the shape of 'mort' population pyramid, we can see that cone type is not so obvious (like in the case of most pessimistic scenario and pessimistic/UN_project scenarios). To understand it even better, we can take a look at dependency ratios according to this scenario.

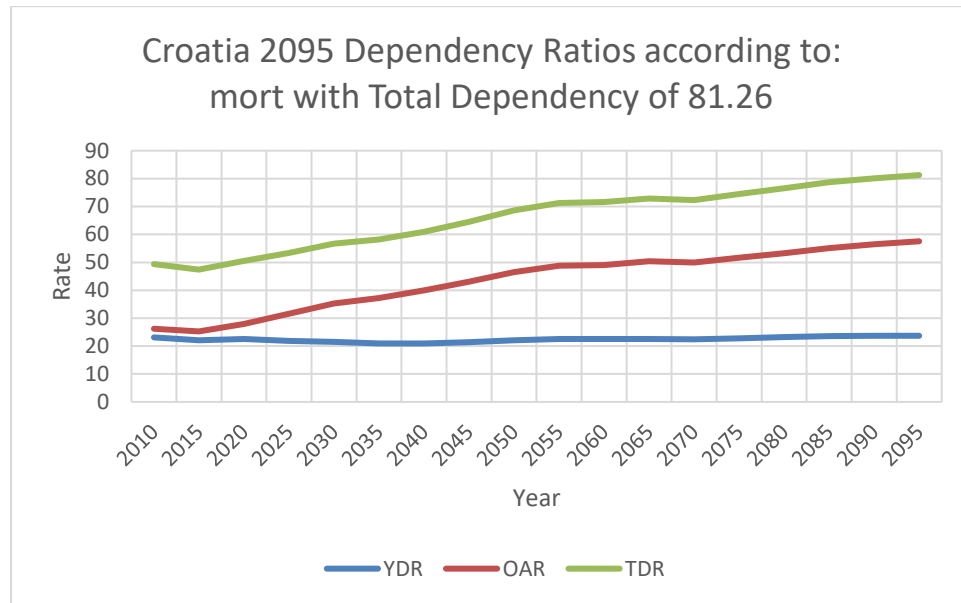


Figure 14

Dependency ratios graph suggests that total dependency is 81.26, which is even lower than in the case of the optimistic scenario (88.9), however still far from good. According to this, we can also conclude that although the biggest drop in population, the future for Croatia's socio-economic system looks the least scary with this scenario.

4. Conclusion

According to conducted population projections, the demographic future of Croatia does not look promising. It is assumed that low fertility rates will most probably persist which will consequently contribute to aging and depopulation. All of this will furthermore contribute to an unappealing socio-economic environment in the future. However, it is absolutely crucial to adopt the public policies according to current as well as anticipated demographic trends, in order for the government to be able to cope with increasingly challenging socio-economic situation in the future. Furthermore, according to some experts, it is assumed that more than half of the population will be older than 50 years of age. In the current context, it would be a real challenge to finance the expenses of the public health system without systematic reforms or eventually through actions to increase the health conditions of the old-age population (e.g. active aging). The same challenge will face the financing of other forms of public policies (e.g. social and retirement policies).

When it comes to the solution, most experts suggest the increase in fertility through effective pronatalist policies (e.g. subsidizing child care) which in turn will eventually lead to slowing down the aging of the population (Nejasmic and Toskic, 2013). Some of the solutions highlight the development of the national economy and improved economic standards as one of the ways for the increase in fertility (Zivic, 2003). Besides, the focus should be also on different migration policies combined with the policies for increasing the (youth) employment. This way, youth out-migration as one of the great challenges so far in Croatia, can be stopped and eventually reversed (Nejasmic and Toskic, 2013). Policies for fostering the positive migration trends would be attracting young workers (and their families) which will also consequently contribute to an increase in fertility. Finally, general policies for coping with aging population challenges would be incentives for working longer or eventually the delayed receiving of social security benefits and promoting active aging.

5. References

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